Performance Services

Peshtigo School District

Facility Study

August 3, 2020

SUBMITTED TO:

Peshtigo School District
341 N. Emery Ave.
Peshtigo, WI 54157

SUBMITTED BY:

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NAESCO ACCREDITED ENERGY SERVICE COMPANY

ENERGY STAR PARTNER

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August 3, 2020

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341 N. Emery Ave.
Peshtigo, WI 54157

Re: Preliminary Facility Study and Report

Background and Objective

Performance Services met with the Peshtigo School District to discuss facility goals, plans, and needs. We would like to thank the school district for your time, effort, and support in assisting us with our analysis. Your input was considered along with our site visits and engineering analysis of data to develop a Preliminary Facility Study and Report to address the objectives of the District while reducing utility costs. The report also includes an overview of District buildings' infrastructure and systems.

The intent of our Preliminary Facility Study and Report is to identify opportunities and offer solutions to save energy, reduce maintenance costs, and replace aging equipment and assemblies serving District facilities.

About Performance Services

Performance Services was founded in 1998 and specializes in the design and delivery of high performing school buildings with optimal learning environment guarantees. We have provided guaranteed energy savings projects for hundreds of school facility projects in more than 500 school buildings. Through open book and transparent pricing, continuous improvement, and a steadfast commitment to 100% customer satisfaction, we offer the greatest long-term value to school districts.

Our company is accredited with the National Association of Energy Services Companies (NAESCO) and is an ENERGY STAR Partner with 133 ENERGY STAR certified customer buildings.

Our team includes experienced professionals such as in-house teams of energy and design engineers, registered architects, project managers, control technicians, performance assurance engineers, and business development professionals. We will collaborate with your District team to deliver high quality and best value solutions that meet your needs and exceed your expectations. We are committed to supporting a long-term and mutually beneficial partnership with your school district!

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Preliminary Contents

Preliminary Recommendations

Preliminary Recommendations

Peshtigo School District

Energy Conservation Measures	Location		Primary Benefit					ECM Category
Description	Peshtigo High / Middle School	Peshtigo Elem. School	Savings/Driver	Convenience/ Maintenance	Capital Improvement	Comfort	Renewable/ Educational	
LED Lighting and Occupancy Sensor	✓	✓	✓	✓				**Lighting**
Outdoor Facilities Improvement				✓	✓			**Exterior Work**
Plumbing Retrofit	✓	✓	✓	✓	✓			**Plumbing**
High-Efficiency Boiler/HW Plant Upgrades	✓	✓	✓	✓	✓	✓		**Mechanical**
High-Efficiency Chiller/CHW Plant Upgrades	N/A	N/A	✓	✓	✓	✓		**Mechanical**
Pumping Improvements	✓	✓	✓	✓	✓	✓		**Mechanical**
DX Equipment (Packaged or Split) Improvements	✓	✓	✓	✓	✓	✓		**Mechanical**
Rooftop Unit Improvements	✓	N/A	✓	✓	✓	✓		**Mechanical**
Air Handling Equipment Improvements	✓	✓	✓	✓	✓	✓		**Mechanical**
Terminal Unit Improvements	✓	✓	✓	✓	✓	✓		**Mechanical**
Classroom Learning Environments	✓	✓	✓	✓	✓	✓		**Mechanical**
Replace Aging Controls System	✓	✓	✓	✓	✓	✓		**Controls**
Domestic HW Heater Replacement	✓	✓	✓	✓	✓	✓		**Mechanical**
Improved Learning/Working Environment	✓	✓			✓		✓	**Behavioral**
Interiors Renovation	✓	✓		✓	✓			**Building**
Roof Replacement	✓	✓	✓	✓	✓	✓		**Building**
Roof Repair (Missing Saddle)	✓	N/A	✓	✓				**Building**
Exterior Drainage	N/A	✓	✓	✓	✓			**Exterior Work**
Paving/Concrete Work	N/A	N/A			✓			**Exterior Work**
Building Envelope Improvements (Windows)	✓	✓	✓	✓	✓	✓		**Building**
Building Envelope Improvements (Walls)	✓	✓	✓	✓	✓	✓		**Building**
Structural Repair (Wrestling Room/Kitchen addition)	✓	N/A						**Building**
Remote Learning Infrastructure	✓	✓			✓		✓	**Behavioral**
Priority - Based on savings impact and/or customer input	Low	Medium	High					

Peshtigo Middle / High School

Building Overview:

Peshtigo Middle School/High School was originally built in 1936 and has had several major renovations, additions and building upgrades in 1959, 1965, 1983, and most recently in the early 2006. In general, the building has a lot of needs ranging from exterior/interior assemblies to HVAC to electrical service and lighting. There remains the flexibility to address these needs in a segmented plan, spanning multiple years with multiple tiers of options to replace aging and failed assemblies and equipment. This report is the first step in identifying the needs at the building and would be followed up with a capital budgeting plan to allow the District the most flexibility in addressing their needs and having the input to adjust the plan and select tiered options as desired. Any repairs and equipment replacement plan for the High School/Middle School should be compared to a building replacement plan to evaluate the cost differential and associated lifespans of a new building versus replacement assemblies. It should be noted the District owns a plot of land that could be a favorable location for a new High School/Middle School.

The building's location is surrounded by designated wetlands and is immediately adjacent to the elementary school, athletics facilities, and parking areas, forming a consolidated campus feel for the entire district. Having a small grouped campus allows for maximum efficiency for the Facilities and Grounds staff to effectively manage the district's buildings and grounds. The Facilities and Grounds team practices diligence in maintaining the building's assemblies and HVAC equipment but the team is experiencing problems with further extending assemblies and equipment that has exceeded their anticipated useful life and has already been repaired multiple times.

The District continues to perform regimented annual maintenance on systems, equipment, 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) Structural Repair – Wrestling Room/Kitchen Area
2) Lighting Improvements
    a. Replace Lighting with LED fixtures/retrofits
3) Roof Repair – Missing saddles
4) Hot Water Boiler Plant Improvements

   a. Boiler Equipment Replacements
   b. Pumping Replacements
5) DX Equipment Improvements
   a. Packaged Rooftop Units (RTUs) Replacements
   b. Split Indoor DX Equipment Replacements
6) Air Handling Unit (AHU) Improvements
   a. Replace AHUs (Fans, motors, add cooling)
   b. Replace distribution ductwork (fiberboard duct in some places)
   c. Replace terminal units with VAV terminal units
7) Controls System Improvements
   a. Replace aging pneumatic controls system
   b. Install new non-proprietary controls system
   c. All new equipment integrated to new controls system
8) Domestic Hot Water Improvements
   a. Replace aging DHW heaters
   b. Evaluate water treatment/conditioning to ensure proper treatment
9) Exterior Assemblies (Walls/control joints, windows, doors, roofing)

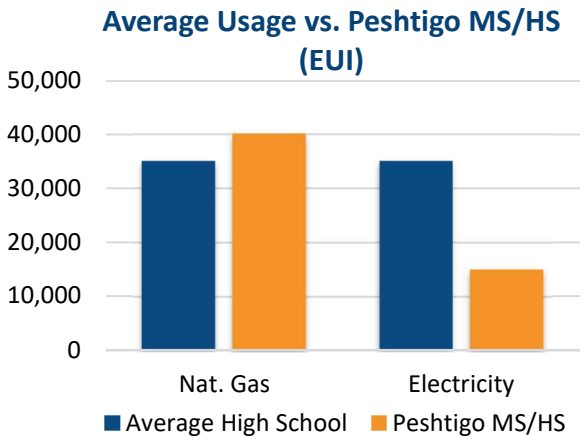
The building performs with a total energy intensity usage of 55,022 BTU/SF which is less than anticipated for a High School/Middle School in the area. There are a couple major factors that influence why the energy usage may appear low but in actuality may be on par or exceed anticipated comparable values.

1) The building does not have air conditioning (A/C) cooling throughout which most similar sized buildings typically do. The benefits of A/C include better comfort in the learning environment and importantly controlling humidity from damaging interior assemblies and electrical equipment.
2) With the COVID-19 pandemic starting in early 2020, typical building operations were not being practiced which would alter the electrical and gas usage rates to be lower. Performance Services has developed controls strategies to help mitigate further exposure of spreading COVID-19 with HVAC equipment. It should be noted that these control strategies are most effective, and in some case exclusive, to newer HVAC equipment with better technologies allowing for control of humidity and outdoor air (ventilation) into the spaces.

Normally, a high performing High School/Middle School has a total EUI (electrical + gas) around 70,000 BTU/SF for energy usage. Further information and a more normalized data set may be needed to perform a true comparison, but our team does feel that the data indicates anticipated comparable results with good confidence.

Building Performance:

Building Area (est):	114,600 SF	
Annual Electric Cost:	$44,373	$0.39/SF
Annual Gas Cost:	$19,778	$0.17/SF
Total Utility Cost:	$64,151	$0.56/SF
Electric Usage Intensity:	14,972 BTU/SF	
Gas Usage Intensity:	40,050 BTU/SF	
Total Energy Intensity:	55,022 BTU/SF	



Building Envelope Conditions

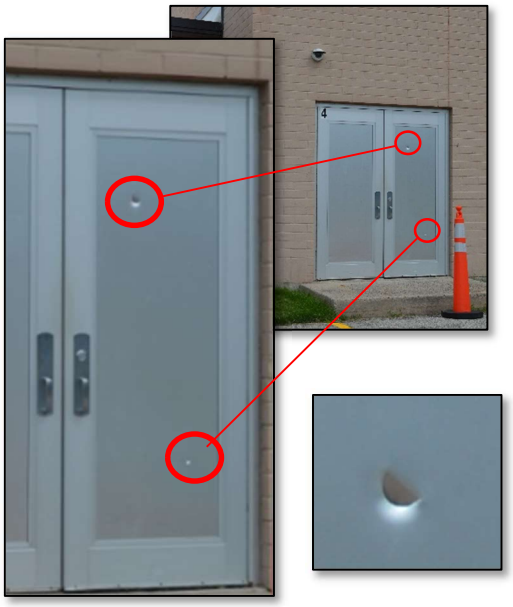
Existing Condition Assessment:

- Main Entrance A: Main entry door was renovated in 1983 with synthetic plater over rigid insulation. This is commonly referred to as Exterior Insulation Finish System or EIFS. The technology behind these types of products was poor during its earlier applications and this product should never be installed within 24" of the ground plane. It should also never be installed adjacent to a walking surface in cold weather climates as de-icing salts are typically deployed and will damage the finish. The aluminum storefront was also installed during the 1983 renovation and the perimeter sealant appears to be in distress and may have a mildew growth on its surface. Over time the sealant can fail if not properly installed or is found to be incompatible with the adjacent construction.

- Exit 2: Door 2 is also aluminum storefront and exhibits similar issues with the sealant as the main entrance. This entrance is adorned with a cast stone frame and in the 1983 renovation paint was applied to the surface of the stone to match the aesthetic of the rest of the exterior renovations. It is not recommended to apply paint to exterior concrete or masonry facades. Stone, clay and concrete exterior building materials need to naturally breath as to expel water vapor that inherently tends to infiltrate the material. If paint is applied to the surface to prevent moisture from being absorbed into the material, and water vapor cannot escape through the drying process, it will be trapped behind the paint. This will cause cracking, spalling and general failure of the material due to the freezing and thawing of the moisture trapped behind the paint. The paint is now peeling and flaking off the surface due to the moisture's attempt to escape.

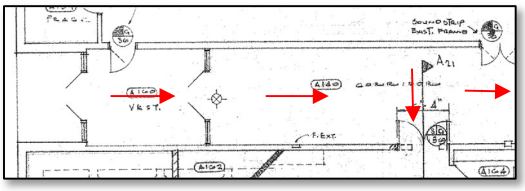
- Exit 3: This door is the exit to grade from the wrestling room added in 1983. This door appears to have been recently re-painted and is in good condition.

- Exit 4: This door is an aluminum framed double emergency exit door with spandrel panels in the leaf lite openings. These are likely insulated panels and it is unclear if these were originally full light glazing as the 1983 addition drawings specify these doors as flush slab. There are two points of damage in the spandrel panels. The lower dent has not broken through the surface; however, the upper dent has. The damage that has compromised the surface will cause deterioration in the insulation in the core. The reduction in thermal value will eventually cause condensation on the interior surface behind the hole.



- Entry/Exit 5: Door No. 5 serves as an exit as well as the public entrance to the fitness center. A full lite aluminum entry that also appears to have potential mildew growth on the perimeter sealant. Being a public entrance for a community amenity, this entrance has a security issue associated with it. The general public that use the fitness center have access to the entire school once they traverse the vestibule. Storefront framing usually requires a weep path at the base of the assembly to prevent condensation build up within the frame. The sealant at bottom of the sidelights on each side of the doors prevents them from properly weeping if the aluminum entry system requires it.

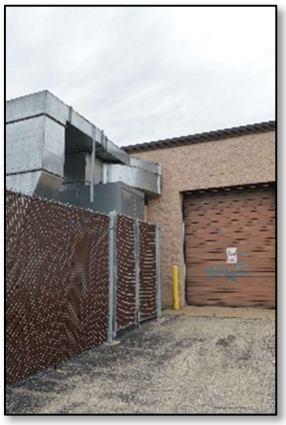
- Exit 6: This door is in relatively good condition, however there is trim at the perimeter that has been fastened to the face of the frame compromising the integrity of the frame. The trim has been interrupted to accommodate a keyless entry receiver.

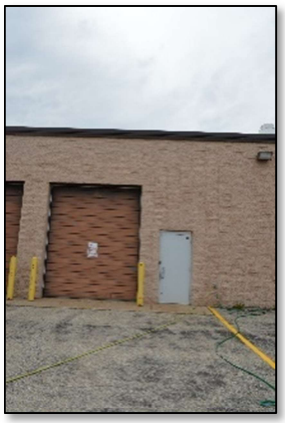


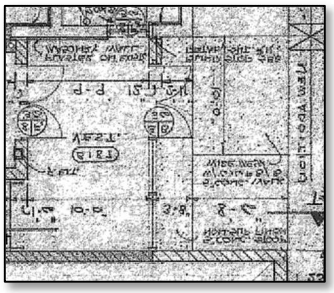
- Exit 7: Very similar condition to exit/entry 5, the same issues apply to this entry. The sweep at the bottom of the left leaf is damaged, and the sealant at the base of the sidelights may be preventing the system from properly weeping.

- Wood Shop Overhead Door & Service/Exit 8: The insulated overhead door has peeling paint. The hollow metal service/exit door is in good condition.

- Metal Shop Overhead Doors & Service/Exit 9: The insulated overhead doors have peeling paint. The hollow metal service/exit door is in good condition.







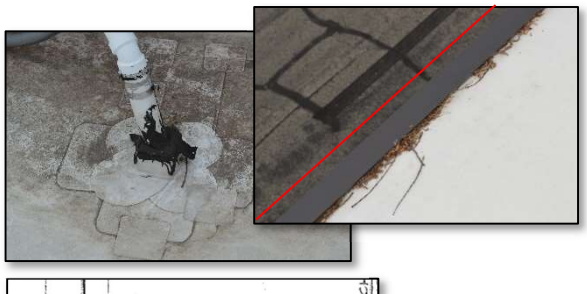
- Entrance/Exit 10: aluminum storefront entrance with a deep EFIS overhang. There are breaks in the sealant.

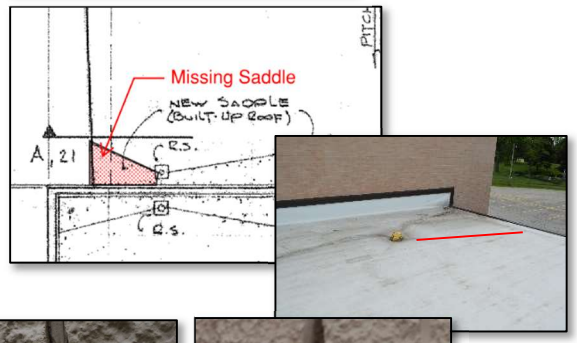
- Exit 11: This exit appears to be rarely used. The painter overpainted the aluminum frame and perimeter sealant.

- Windows General Conditions: The exterior windows are metal clad wood windows, which generally have better thermal value for window units from that era; however, these are an obsolete style. The perimeter sealant is failing as well as the glazing seals. There is evidence of moisture damage on some of the windowsills and sashes. The upper panel is an insulated spandrel, which replaced the tall windows in the original building. This increased the thermal performance but greatly reduced the amount of natural light into the classrooms.

- Overhangs: There are overhangs on one portion of the building (area of the Band room). These are constructed having mass timber beams and Tectum roof deck span past the exteriror wall. The timber beams are only protected with a painted finish. The tectum deck is showing deterioration and staining from past roof leaks. Specifically, adjacent to the multipurpose room there is a failure at the overhang causing significant damage to the Tectum deck, fascia construction and causing algea/mildew staining on the brick from storm water running down the face of the building. This is due to a roofing issue spelled out in the roofing assesment.

- Roofing: The roof is a white TPO membrane on tapered insulation. The roof is fairly new and for the most part cleanly installed. There are a few spots with excessive amount of patching deployed which is a concern as to why that was necessary. The roof edge should have a cap sheet or the roofing membrane covering its edge to prevent the collection of debris. This could also take on water if the volume of rainfall allows the roof to retain water up to the roof edge. This could cause damage to the fascia substrate. A larger issue of concern is at the overhang adjacent to the Multipurpose room as mentioned in the overhangs section. There is a missing tapered insulation saddle under the roofing membrane. The saddle is required to divert water away from the roof edge and to the roof drain. Because this saddle is missing it is causing significant damage to the overhang, fascia and adjacent masonry wall.





- Control Joints: A sample of masonry control joints were observed to be failing. The sealant is separating from one side or the other of the masonry joint. This is due to the movement of the building and possibly incompatibility with the masonry material. Failures such as these will allow water to infiltrate the wall cavity.

Proposed Exterior Solutions & Benefits:

- Wrestling room wall failure: The root of the issue causing the problem needs to be investigated by structural engineering professionals. The solution will need to be designed and implemented to halt the damage occurring to the building including water infiltration mitigation that may not be installed or that have failed in the original construction.

- To improve thermal transfer rates, it is recommended that the older aluminum framed systems are replaced with new thermally broken aluminum storefront systems with Low E tempered insulated glazing. Hollow metal doors should be inspected for surface rust and repainted if necessary. Inspect and replace weather stripping systems. Overhead door should be repainted and inspect the weather-stripping.

- Windows General Conditions: Short-term maintenance will be recommended for immediate action. The existing sealant needs to be removed and replaced and the glazing seals should be replaced. The best course of action is to replace the windows with modern, thermally broken, energy efficient windows. This would significantly reduce the amount of energy consumption due to the current inefficient windows. This will also provide better conditions for the airtight seal around the frame and sill for proper watershed.

- Walls - Paint: Without knowing the properties of the paint applied to the masonry surface the paint should be removed from the entire exterior of the building. A correct paint product with permeability can be re-applied to the exterior however it may be desirable to restore the masonry exterior.

- Walls – EIFS: Inspect all the EIFS for failures. The sections of EIFS that are found to be failing should be removed selectively and replace with the newer product technology that has the integrated drainage planes within the system.

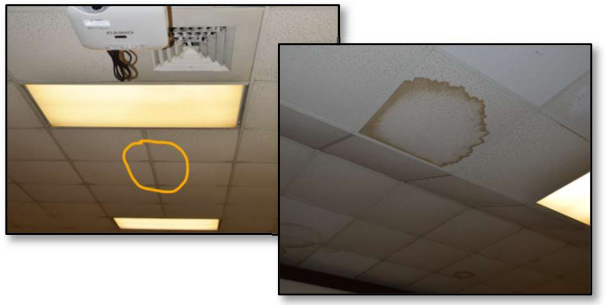
- Walls – Masonry: Faced inspection of the masonry is recommended to find any issues with the faces of the masonry units and the integrity of the mortar joints.

- Control Joints: All failing control joints should be removed, and new systems installed.

- Roofing: First priority action is to repair the issue with the missing saddle to stop the storm water from spilling over the overhang adjacent to the multi-purpose room. Annual roofing inspections are recommended to stay ahead of any issues that may arise. Thermal imaging roof scans are recommended bi-annually or at least every three years as this process can detect leaks that have not found their way to the roof structure and into the building.

Interior Finishes

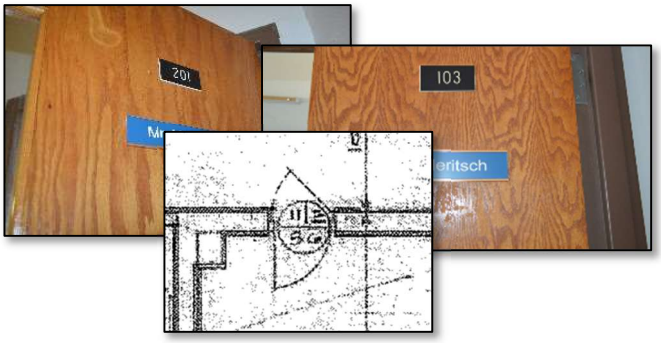
Existing Conditions:



- Ceilings General: Acoustical Ceiling tile are in relatively good condition with only a few locations with mismatched, missing or damaged tiles. 2X2 ceiling grids exist in most spaces preventing the extreme sagging that occurs with 2x4 systems and summer humid conditions. However, without the presence of cooling throughout the building, even the square cut 2x2 tiles will sag at the center and curl at the corners.

- Floors General: Terrazzo floor in the corridors of the oldest portion of the building is covered in most location with carpet tile. The terazzo remains uncovers at the stair well and the building addition has Vinyl compostite tile coverings still in good condition. The older VCT gets it can separate, shrink and crack with humidity and temerature swings. Portions of the second floor corridor have older sheet carpeting that is showing fatigue from use. Ceramic or Porcelain tile is installed at the main entrance to the school. The tile grout is showing some staining that is dificult to correct without grinding out the grout and re-grouting the tile. Regular cleaning and sealing of older grout installtions are required for this type of flooring.

- Walls General: Corridor wall finishes are a combination of painted masonry and gypsum board or plaster. The surfaces appear to be well maintained. There were only minor scuffs and damage in some locations except for the area at the 1983 kitchen and wrestling room addition discussed in the exterior walls portion of this report where cracking in the masonry is present.



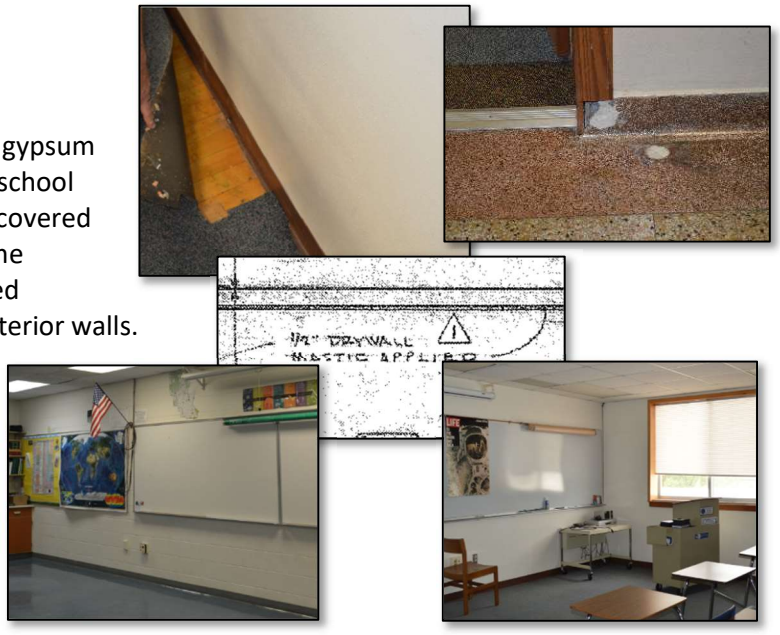
- Classroom Doors: Wood narrow vision lite classroom doors are well maintained with some blemishes and worn finish in select locations. All doors observed have hollow metal frames in good condition. The doors and frames located in the original school would have been wood and were replaced during the 1983 renovation to hollow metal frame and solid core wood with narrow vision lite.

- Classroom Ceilings: 2X2 Acoustical Ceiling tile generally intact with missing tiles in select locations observed. Some ceiling tiles show sagging in the center causing the corners to curl upward from prolonged exposure to humidity in unconditioned spaces. This is typical with older products with standard square tile edges. In select rooms newer 2x2 ceilings have been installed with tegular edges which are more durable and can withstand prolonged exposure to humidity. At the perimeter windows in the original school the ceiling drops below the head of the window.

- Classroom Floors: Most of the classrooms have sheet carpeted floor coverings. Some of these are older and show signs of wear and stains. Carpeting requires more frequent cleaning and with sheet products damage to the carpet is not easily repairable. The carpet tiles in the corridors are more durable and allow for select replacement if damage or stains occur. In lab locations there appears to be a homogenous epoxy floor covering and in the art room there is polished concrete which are very durable but requires polishing maintenance.

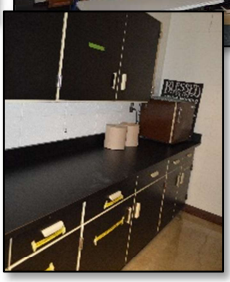
- There are locations in the original school inside the classrooms where carpet covers the original wood floor and one corridor still has the terrazzo flooring exposed.

- Classroom Walls: The walls are predominately painted gypsum board wall coverings in most classrooms. The original school was likely furred or direct applied lath and plaster but covered with adhered drywall during the 1983 renovation. Some classrooms have a mix of framed gypsum board covered partitions and exposed masonry at the corridor and exterior walls. The lab, art and music spaces are painted exposed concrete block. Masonry walls provide durability and inherent noise reduction.



- Casework: In the classrooms and labs are dated but intact and functioning, however eclectic from room to room. Standardized casework can make it easier for attic stock inventory and component replacement if damage occurs.



- Furnishings: Some of the classrooms have two student work tables and chairs for lab condition or collaborative instruction. Most of the classrooms have individual desks allowing for separation of individuals. There are also newer individual tables and chairs in some classrooms that can be reconfigured for individual and collaborative instruction.



- Technology: The classrooms have replaced chalk boards with whiteboards and smart boards. The previously installed overhead projectors have been removed, but the infrastructure appears to still be in place. Some classroom or workspaces have flat panel screen technology deployed. Video capability is not currently installed to accommodate remote instruction situations in the classrooms.



- Wood Shop: The wood shop space is well lit and fairly clean. There appears to be enough space for student function and interaction. At the mezzanine level a louver in the side wall had a screen displaced at the wood shop side. The function of this louver is unclear and should be investigated to be sure dust and fumes are not being transmitted to another space.


- Metal / Automotive Shop: Lighting levels may not be adequate in some areas. The fume extraction for the cutting and welding areas are ducted systems with overhead extraction points. This system is not as effective as point of use extraction arms. However, may be adequate at higher volumes of exhausting.



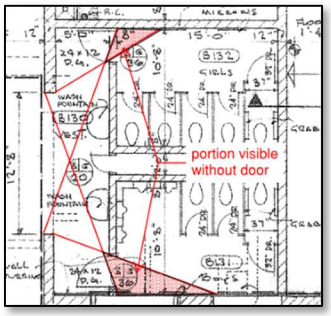

- Boy's Restrooms: The handicapped stall is an ambulatory type stall and does not meet current ADA standards for a fully Accessible stall. The floor mounted urinals are awkwardly arranged, and no privacy screens are present. The mosaic tile flooring appears intact; however, the grout is showing signs of age with cracking and significant staining. See Common Wash Fountains for lavatory observations.
- Girl's Restrooms: The handicapped stall is an ambulatory type stall and does not meet current ADA standards for a fully Accessible stall. The mosaic tile flooring appears intact; however, the grout is showing signs of age with cracking and significant staining. See Common Wash Fountains for lavatory observations.

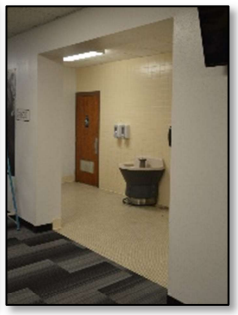



- Common Wash Fountains: Wash fountains are located in an alcove entry at the entrance to both the boys' and girls' bathrooms. Two different types are present, motion- activated and foot-operated. Both types have their merit being touchless; however, both also have their own drawbacks to consider. The infrared activated fountain requires power via low voltage wire or battery that can fail. The foot-operated option has mechanical moving parts that take abuse for the nature of its use.



- Privacy Line of sight: it is important to note the configuration of the alcove to the restrooms provide an obscured line of site if the restrooms had no doors on them (image to the right from '83 drawings). It could be feasible to remove the doors providing a touchless entry to the restrooms. Similarly, the renovated restrooms in the original building exhibit the same qualities.





- Boy's/Girl's Locker Rooms: The boy's locker room is in relatively good condition. The wall have a glazed porcelain tile wainscot, mosaic tile floor and relatively new lockers. The locker room has an accessible toilet room. The shower room has (2) center post gang style showers. This does not allow for privacy of the occupants and many users may choose to forego a shower without the privacy of individual showers. The shower controls are hand operated and there is no special accommodations for accessibility.

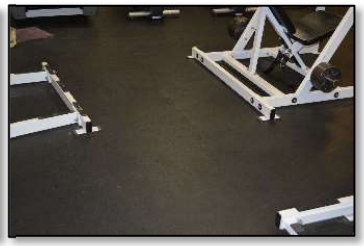

- Note: the girl's locker room was not specifically reviewed. We assume the conditions are similar to the boy's locker room as they were renovated at the same time (1983). The renovation drawings, however, indicated a curb at the entry to the shower. If this condition is truly the case, the shower would be inaccessible by ADA requirements.

- Kitchen: the kitchen was added in the 1983 addition and renovation project. It has the appropriate suppression system over the cooking equipment. The textured quarry tile floor is beneficial for anti-slip conditions.




- Multipurpose Gym /Cafeteria: the multipurpose gym also serves as a cafeteria space. There is not adequate storage space for the folding cafeteria tables in or adjacent to this space.


- Fitness Room: the fitness room is packed full of equipment. The district has noted difficulties with the clean-ability of the rubber mat floor covering. The floor seams to collect dirt immediately after it is cleaned.

- Gymnasium: The gym is in relatively good condition. The wood floor is showing signs of its age but was recently refinished. The bleachers do not appear to have ADA accessible stations available for handicapped spectators.


- Band Room: large open space with small individual practice rooms. The ceiling is an exposed wood beam structure and Tectum deck that provide acoustical value. There was no additional wall applied acoustical treatments observed to be present which could improve sound control. There appeared to be adequate instrument storage capacity.


- Wrestling room: The wrestling room has major horizontal cracking on the entire perimeter of the exterior wall. This indicates significant movement has occurred in the foundation wall or water infiltration in to the cores of the CMU have potentially damaged the CMU in a freeze thaw cycle. This could also explain the water infiltration occurring in the mechanical room below the wrestling room.


- Mechanical room: The main mechanical room added in 1983 houses the main mechanical equipment. Some of the major fuel fired equipment is housed in a fire rated room with a rated ceiling. The water service room below the wrestling room has been taking on water especially during rainstorm events. This indicates a failure in the wall system. Water is entering the wall cavity and not getting wept back to the exterior indicating insufficient or clogged weeps in the cavity wall system. This also could explain the cracking in the wall above in the wrestling room.


- Library: The Library is a nice large space framed with mass timber frames. The original ceiling would have been the exposed wood roof deck. For some reason it has been covered with a drop in ceiling obscuring the wood deck and the full depth of the timber frame.
- There are electrical receptacles run in conduit above the floor creating a tripping hazard. Casework currently has to be placed at or near these conduit runs for safety control.
- The floor covering is a sheet carpet and is showing signs of wear.


- Lecture Hall: The lecture hall has soft tiered seating with carpet tile floor covering at the aisles and the head of the room. There is water damage on some of the ceiling tile that isn't apparent if it is due to an active leak or not. The laminate on the seating is damage on several end panels of the seating. The technology in the lecture hall is dated and could use being updated.



Proposed Interior Solutions & Benefits:

- Ceilings: In the short-term, continue maintenance replacement of ceiling tiles. Inspect ceiling tiles and replace as necessary where damaged and failing due to sagging. The long-term solution would be to replace the ceiling with newer non-sagging or tegular edged tiles. Note: adding cooling to the spaces will also reduce the amount of humidity present in the building that typically causes sagging over time.

- Floors: Provide continued maintenance of existing floor and consider replacing the sheet carpeting with a more durable carpet tile that allows for selective replacement when tiles get damaged or stained.

- Classroom Doors: Continue door maintenance to keep them in good working order. Repair any undesired blemishes and refinish doors in need.

- Classroom Ceilings: The ceiling tile is recommended to be replaced on a scheduled program and full classrooms are recommended to be replaced at a time. The new tile should be a 5/8" or 3/4" non sag tile or tile with a tegular edge. Tiles removed from a classroom in good condition can be repurposed to replace ceiling tiles in other rooms in poor condition until such time that room is scheduled for replacement. This will ensure uniformity in the ceiling tile replacement.

- Classroom Floors: it is recommended to replace the sheet carpeting with a durable carpet tile. If it is desired to return to a hard-flooring condition, the recommendation is to install a high traffic durable vinyl tile system requiring lower maintenance.

- Classroom Walls: Consider repainting individual classrooms only if necessary or if there is a desire to change the environment.

- Casework: Replace casework as necessary with uniform casework for ease of maintenance and attic stock inventory management.

- Furnishings: Maintain the individual seating and the flexible collaborative individual tables and chairs. Consider more flexible collaborative furniture systems for lab spaces in lieu of tables requiring multiple students.

- Technology: Install video capability with remote control panning capability in classrooms and lecture hall to facilitate the ease of remote instruction.

- Wood Shop: Verify dust collection system is working properly. Secure the screen on the louver at the mezzanine level.

- Metal Shop: Verify all exhausting systems are working properly especially in the finishing room. Consider replacing the welding fume extraction system with point of use articulating arm extraction systems.

- Boy's Restrooms: Renovate the restroom to install the correct accessible toilet stall and proper privacy screening at urinals. Replace the mosaic tile flooring with highly durable epoxy flooring system to eliminate the maintenance issues associated with grouted tile in a public restroom.

- Girl's Restrooms: Renovate the restroom to install the correct accessible toilet. Replace the mosaic tile flooring with highly durable epoxy flooring system to eliminate the maintenance issues associated with grouted tile in a public restroom.

- Boy's/Girl's Locker Rooms: Adding partitions to the shower area will allow for individual privacy for the occupants.

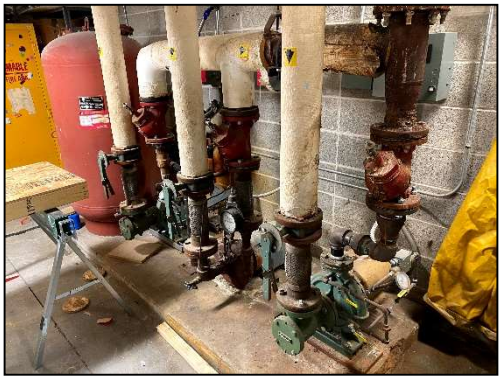
- Kitchen: The dark grout may hide dirt so a proper cleaning schedule should be maintained, as the dirt may not be easy to see. This will be especially important at the dish washing area where the floor takes on extra moisture.

- Multipurpose Gym /Cafeteria: The multipurpose room serving as the cafeteria needs dedicated storage for the cafeteria tables.

- Fitness Room: Investigate alternate solutions for the athletic flooring.
- Gymnasium: Update the bleachers to accommodate Disabled spectators.
- Band Room: Evaluate adding acoustical panel treatments to the walls for sound control. It may not be necessary due to the location of the room.
- Wrestling room: Renovations to this could be done in conjunction with the structural repairs required to mitigate the issue causing the cracks in the wall.
- Water Service room: investigate the cause of the water infiltration and repair in conjunction with the structural repairs required to mitigate the issue causing the cracks in the wall.
- Library: Upgrade sheet carpet to a carpet tile giving the opportunity to install trenched conduit and floor receptacles to be flush with the floor instead of surface mounting. This will eliminate the hazard of the above floor-mounted condition.
- Lecture Hall: Repair or replace damaged furniture systems. Replace ceiling tile and verify there is no active roof leaks above. Upgrade technology for distance learning instruction.

Heating System

Existing Conditions:



- There is one boiler plant that serves the entire building.
- The plant consists of two (2) HW standard efficiency boilers from Kewaunee. The boilers are rated at 2,650 MBH output each and 80% efficient. The boilers were relocated as a part of the 1983 addition and are well past their operational expectancy. One boiler required substantial reconstruction in 2016 and the other will require similar repairs soon.
- The main heating plant capacity equates to roughly 46 BTU/SF (output) compared to the typical heating requirements in Wisconsin of approximately 40 BTU/SF. A wholistic approach is required when assessing the heating capabilities of the main boiler plant. This plant serves HW heating coils in unit ventilators and HW terminal reheat coils.
- The main hot water plant distributes hot water throughout the building by three (3) base-mounted primary pumps. These pumps are constant volume only, with no variable frequency drives, and are approaching or beyond the end of their useful lives.
- The High School has a series of HW cabinet unit heaters and fin pipe radiation which are located at the building perimeters and at entryways. These units are in varying condition but in almost every case, serve transitionary spaces. It would make sense to target the replacement of these units in conjunction with the main boiler replacement project in the future and consider low-temperature hot water heating.
- Hot water piping was insulated throughout the facility. The insulation was in average to poor condition. The majority of piping distribution appears to date to the 1983 addition with some older piping from the 1959 addition still used in the West portion of the building.

Proposed Solutions:

- Highly recommend replacing the entire boiler plant. Provide two (2) new high efficiency condensing boilers with dedicated primary pumping and two (2) HW distribution pumps with variable frequency drives (VFDs). At the same time, replace the terminal heating coils and devices with new capable of delivering required heating with low-temperature HW supplied at 135F degrees.

Benefits:

- Replacing the boilers and pumping systems will address an aging system, reduce maintenance costs and provide increased energy savings. Full savings will be realized when existing three-way control valves are replaced with two-way control valves out in the system.

Cooling System

Existing Conditions:

- Limited areas of the school are served by air conditioning. These spaces include two computer labs, the main offices, Physics classroom and a special education classroom. Cooling equipment is a combination of packaged cooling only rooftop units and ductless split systems. The vast majority of refrigerant in the RTUs is R-22 which is no longer being produced. The market price for R-22 refrigerant is a little unpredictable but figures to eventually increase as demand increases.
- The packaged rooftop units are roughly 22 years old, with the exception of the office rooftop unit that is about 7 years old. The older units are in fair to poor condition and should be replaced.
- The ductless split systems are roughly 4 years old and are in good condition.

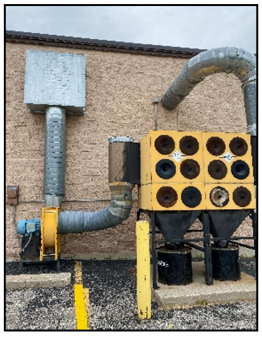
Proposed Solutions:

- Implement a replacement plan that provides air conditioning throughout the school.
- Primary:
    - Provide a chiller and primary pumping system to provide cooling.
    - Replace existing AHUs and unit ventilators serving classrooms with new vertical classroom unit ventilators with dual temperature coils to provide heating, cooling and ventilation to learning environments.
    - Replace existing AHUs serving Wrestling/Multi-purpose, Gymnasium, and Library with new AHUs with dual temperature coils to provide heating, cooling and ventilation to occupied spaces.
- Secondary:
    - Provide split DX cooling for new vertical classroom unit ventilators and new AHUs in lieu of chiller and dual temp distribution.

Benefits:

- If all areas of the School are air conditioned the learning environment can be greatly improved for teachers and students. Air conditioning also protects interior assemblies that area susceptible to humidity problems by eliminating the moisture in the air.

Air Handling Equipment



Existing Conditions:

- The West Classrooms of the building are served by unit ventilators installed during the 1959 addition. A Computer lab classroom is additionally served by two ductless split air conditioners. These unit ventilators are well beyond their expected life and should be replaced.
- The Wrestling room and Multi-Purpose Rooms are served by a single air handling unit (AHU) AHU-1 located in a second-floor mechanical room. This unit was installed during the 1983 addition. The unit consists of a mixing box with filter rack, hot water coil, and supply fan. The supply fan is constant volume. At some point after construction a terminal reheat coil was added to serve the Multi-Purpose room to provide better zone temperature control. The unit is in fair condition but beyond its service life.
- The Weight room is served by a single AHU-2 located within the space. This unit was installed during the 1983 addition. The unit consists of a mixing box with filter rack, hot water coil, and supply fan. The supply fan is constant volume. The unit is located within a drywall enclosure that makes access to the unit difficult. The unit appears to be in fair condition but beyond its service life.
- The Gymnasium is served by a single AHU-3 suspended from the structure within the space. This unit was installed during the 1983 addition. The unit consists of a filter rack, hot water coil with face and bypass dampers, and supply fan. The supply fan is constant volume. The unit provides 100% outside air. Operation of the unit is kept to a minimum during occupied times due to how noisy the unit is. The hot water coil required replacement five years ago after freezing and causing substantial water damage to the gym floor. The unit appears to be in fair condition but beyond its service life.
- The Auto Shop is served by AHU-4 suspended from the structure within the space. The unit was replaced during the 2005 renovation. The unit consists of a mixing box with filters, indirect gas fired heat exchanger and supply fan. The supply fan is constant volume. Two (2) Make-Up air units provide tempered ventilation for the welding exhausts. These units were installed during the 2005 renovation. These units are mounted on grade and consist of mixing boxes with filters, supply fans, and indirect gas fired heat exchangers. The supply fans are constant volume and the units can modulate between 50-100% outside air delivery. The units appear to be in good condition.
- The Wood Shop is served by a recirculating dust collector. This unit was replaced during the 2005 renovation. This unit consists of a cartridge filter bank and fan. The fan is controlled by a VFD allowing for variable air flow based on woodworking equipment use. This unit appears to be in fair condition.

- The East portion of the building is served by four (4) Trane Climate Changer AHUs. These units were installed during the 1983 addition. The units consist of mixing boxes with filters and supply fans. All the supply fans are constant volume. AHU-5 serves the Library, Lecture Hall, and Home Economics classrooms. AHU-6 serves the Science classrooms. AHU-7 serves the North Classrooms (driver's ed., art). AHU-8 serves the First Floor and Second Floor South classrooms. These units appear to be in fair condition but beyond their service life. Ductwork within the mechanical room is galvanized steel. Ductwork located outside of mechanical rooms appears to be fiber board. All four air handlers are constant volume terminal reheat. The majority of spaces served have dedicated reheat coils, however there are several locations where two or three spaces are grouped onto a single reheat coil. This has caused issues where multiple spaces are overheating due to dissimilar occupancy.

Proposed Solution:

- Implement a replacement plan that provides air conditioning throughout the school.
- Primary:
  - Replace existing hot water piping throughout school with new Dual Temp distribution.
  - Provide a chiller and primary pumping system to provide cooling.
  - Replace existing AHUs and unit ventilators serving classrooms with new vertical classroom unit ventilators with dual temperature coils to provide heating, cooling and ventilation to learning environments.
  - Replace existing AHUs serving Wrestling/Multi-purpose, Gymnasium, and Library with new AHUs with dual temperature coils to provide heating, cooling and ventilation to the occupied spaces
- Secondary:
  - Provide split DX cooling for new vertical classroom unit ventilators and new AHUs in lieu of chiller and dual temp distribution.

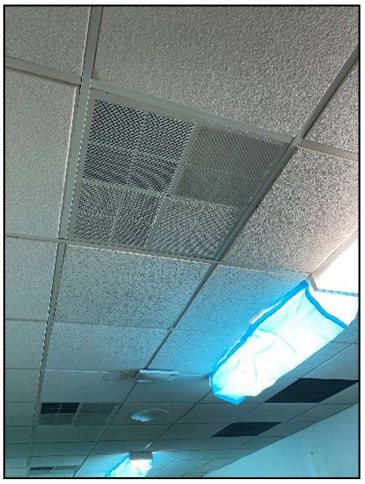
Benefits:

- New equipment will replace aging equipment, improve energy efficiency, improve comfort heating, provide cooling and dehumidification and reduce the District's maintenance costs.

Classroom Air Distribution

Existing Conditions:

- The West classrooms receive air directly from unit ventilators located within the occupied space.
- All other areas of the School are served with overhead air distribution from existing AHUs and RTUs. The RTUs typically serve a single space and modulate cooling and heating to suit the space needs. The AHUs typically serve multiple spaces and utilize hot water terminal reheat coils serving one or more rooms. If a space temperature drops below the setpoint the HW coil valve will open and raise the supply air temperature to the space(s).



Proposed Solution:

- Replace terminal reheat coils with new vertical unit ventilators.

Benefits:

- New vertical unit ventilators will provide better temperature control of the individual spaces.

Domestic Hot Water System

Existing Conditions:

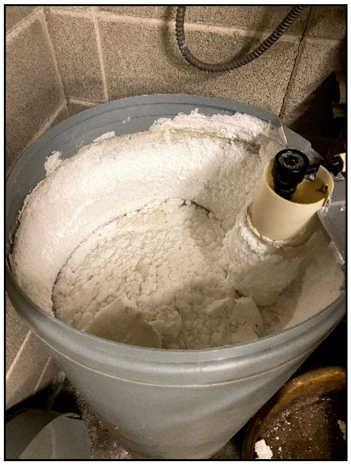
- The High School is served by three (3) domestic hot water heaters that are in poor working condition and vary in age between 21-37 years. Two serve the West half of the school and includes a hot water storage tank. One serves the East half of the school.
- Each domestic hot water system is also served by a water softener. The West softener was replaced in 2016 and is in good condition. The East water softener is from 1983 and is no longer working.

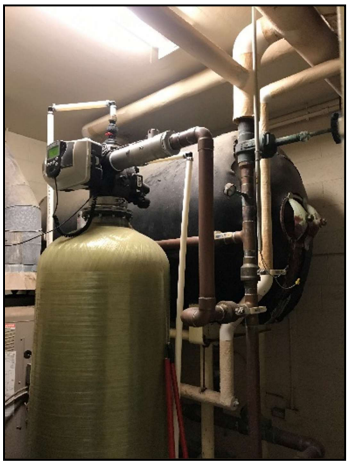
Proposed Solution:

- Replace existing water heaters and East water softener.

Benefits:

- New higher efficiency equipment will reduce operating and maintenance costs.

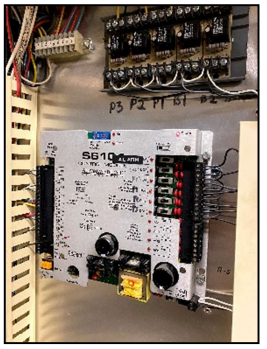
Temperature Control System

Existing Conditions:

- The building controls systems are primarily pneumatic actuation with Direct Digital Control (DDC) overlay for monitoring and control. The pneumatic system was installed as a part of the 1983 addition. The Automated Logic DDC system was installed as a part of the 2005 renovations.

Proposed Solution:

- Remove existing control systems and provide new state of the art system to serve updated HVAC equipment.



Lighting System

Existing Conditions:

- All of the interior lighting appears to be existing fluorescent fixtures that illuminate the space learning environment. There may be LED retrofits throughout the building, but the visible unshielded lamps indicate fluorescent tubes are prevalent throughout the building. Converting to LED fixtures would allow for energy savings, tunable light (color and brightness) and minimize maintenance labor to replace bulbs. Most of the spaces were observed to have adequate light levels but there are areas, that have yellowing lenses or tubes, that would benefit from having consistent color temperature throughout the space. Additionally, sensitive environments where cooler light temperatures are needed can be addressed by installing fixtures that can adjust temperature with either a wall switch or phone-based application.

- The existing lighting controls are the original manual control wall switches with 1, 2, 3 or 4 scenes depending on the size of the space. These existing scene selectors help with zone control within each space to illuminate or cut lighting to the front learning area. Automatic controls in the form of occupancy or vacancy sensors should be considered to manage the lighting when spaces are not being used.

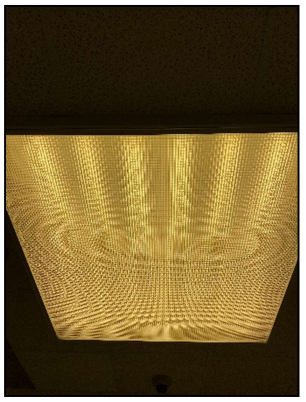
- Exterior lighting is minimal around the building represented by mostly wall sconces.

Proposed Solution:

- Replace the existing fluorescent lighting with new LED fixtures with onboard wireless lighting controls (occupancy and daylighting). Replace the wall switches with new wireless programmable scene control switches.

Benefits:

- New LED lighting will provide more consistent lighting levels and allow for programming to meet changes required in the space. The onboard daylighting sensors will automatically dim fixtures to maintain the programmed lighting levels as the outdoor light becomes brighter throughout the day. The sensors will also increase the lighting output levels to maintain programmed light levels in the mornings and afternoons. The onboard occupancy sensors will automatically save energy by turning off light fixtures after a programmed period of observed absence.



Electrical System

Existing Conditions:

- The electrical service for the building is 208 Volt, 3 phase, 1600 A.
- The existing electrical distribution dates to the 1983 addition, with some areas of the building utilizing electrical equipment from the 1959 addition. Newer panelboards where installed in the Auto Shop and Wood Shop as part of the 2005 renovation.
- Many of the existing distribution panelboard circuits are full having no room for expansion. Most of the classrooms within the original building have limited power receptacles, sometimes as few as three, to serve the power needs of staff and students.

Proposed Solution:

- Recommend updating the electrical system in its entirety.
- The existing service will need to be further studied to determine if it is suitably sized to handle any proposed air conditioning loads.

Peshtigo Middle / High School

Building HVAC Equipment Inventory

Equipment	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: Kewaunee	2	61	24	Poor	✓	✓			Boilers have a maximum efficiency of 80% and has an input capacity of 2,650 max MBH each. One boiler had a low-end re-tubing in 2016.
HW Pumps	1	37	20	Poor	✓	✓			Constant speed Inline pumps for distribution HW.
HW Pumps	2	15+	20	Poor	✓	✓			Constant speed Inline pumps for distribution HW.
DHW Pumps	2	12+	10	Poor/Fair	✓	✓			Constant speed Inline pumps for primary and distribution DHW.
DHW Heater	1	37	18	Poor/Fair		✓	✓		270MBH with 100 gal storage
Water Softener	1	37	18	Poor	✓	✓			Replace with Boilers or DHW, whichever comes first
DHW Heater	2	21+	18	Poor/Fair		✓	✓		270MBH with 100 gal storage
Water Softener	1	4+	18	Good			✓	✓	Recently replaced

Peshtigo Middle School/High School

Building HVAC Equipment Inventory

Equipment	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	
Rooftop Unit (RTU) - East End	1	22	15	Poor	✓	✓			Carrier 1898G21369 - 7ton unit DX/No Gas/HW Reheat
Rooftop Unit (RTU) - East End	1	23	15	Poor	✓	✓			Carrier 29070215409 - 7ton unit DX/No Gas/HW Reheat
Rooftop Unit (RTU) - West End	1	7	15	Fair/Good			✓		Rheem 2G7496ADA - 3ton unit DX/No Gas/HW Reheat
Rooftop Unit (RTU) - East End	1	24	15	Poor	✓	✓			Carrier 3796G40101 - 2.5ton unit DX/No Gas/HW Reheat
Air Handling Unit (AHU-8) - Classrooms	1	37	23	Poor/Fair	✓	✓			Trane K83J05209
Air Handling Unit (AHU-5) - Classrooms	1	37	23	Poor/Fair	✓	✓			Trane K83J05208
Air Handling Unit (AHU-7) - Classrooms	1	37	23	Poor/Fair	✓	✓			Suspended Trane Unit KT5-8920
Air Handling Unit (AHU-6) - Classrooms	1	37	23	Poor/Fair	✓	✓			Trane K83J06301
Makeup Air Unit (MAU) - Welding Shop	1	14+	23	Fair/Good			✓	✓	Suspended Gas fired heating-only. Sterling

Peshtigo Middle School/High School

Building HVAC Equipment Inventory

Equipment	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	
Makeup Air Unit (MAU) - Welding Shop	1	14+	23	Fair/Good			✓	✓	Gas fired heating-only. Grade Mounted. Mestek GMIFW-125-VR
Makeup Air Unit (MAU) - Welding Shop	1	14+	23	Fair/Good			✓	✓	Grade mounted. Gas fired heating-only. Mestek
Mini-Spit Units - North Classroom	2	4+	15	Fair/Good			✓	✓	Serves cooling to classroom
Horizontal Unit Ventilators	10	60+	15	Poor/Fair	✓	✓			Serves North West Classrooms
Air Handling Unit (AHU-2) - Weight room	1	37	23	Poor/Fair	✓	✓			Serves the weight room area
Air Handling Unit (AHU-3) - Gym	1	37	23	Poor/Fair	✓	✓			Serves the Gym, heating-only
Air Handling Unit (AHU-1) - Wrestling	1	37	23	Poor/Fair	✓	✓			Serves the wrestling and Multi-purpose, heating-only
Dust Collection Unit	1	14+	23	Poor/Fair	✓	✓			Serves the Wood Shop
RTU (Rooftop Unit) - SE Area	1	15+	15	Poor/Fair	✓	✓			Ground mounted serving SE area.
Ceiling/Pedestal Unit Heaters	Various	8-37	25	Poor/Fair	✓	✓			Typically used at entry points.

Peshtigo Middle School/High School

Building HVAC Equipment Inventory

Equipment	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	
Exhaust Fans	Various	5-15+	25	Fair		✓	✓		Exhaust fans for locker and/or restrooms.
Lighting	Various	15+	20	Poor/Fair	✓	✓	✓		Fluorescent and HID
Building Automation Systems	Pneumatic Controls	20+	15	Poor/Fair	✓	✓	✓		Pneumatic controls should be replaced.

Peshtigo Elementary School

Building Overview:

Peshtigo Elementary School was originally built in 1967 and has had several major renovations, additions and building upgrades in 1987, 1993, and most recently in the early 2005. In general, the building has minimal needs ranging from exterior drainage to HVAC to lighting. There remains the flexibility to address these needs in a segmented plan, spanning multiple years with multiple tiers of options to replace aging assemblies and equipment. This report is the first step in identifying the needs at the building and would be followed up with a capital budgeting plan to allow the District the most flexibility in addressing their needs and having the input to adjust the plan and select tiered options as desired.

The building's location is surrounded by designated wetlands and is immediately adjacent to the High School/Middle School, athletics facilities, and parking areas, forming a consolidated campus feel for the entire district. Having a small grouped campus allows for maximum efficiency for the Facilities and Grounds staff to effectively manage the district's buildings and grounds. 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, 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) Lighting Improvements
    a. Replace lighting with LED fixtures/retrofits
2) Exterior Drainage Improvements
3) Hot Water Boiler Plant Improvements
    a. Boiler Equipment Replacements
    b. Pumping Replacements
4) DX Equipment Improvements
    a. Split Indoor DX Equipment Replacements
5) Replace terminal units with VAV terminal units
6) Controls System Improvements

a. Replace aging pneumatic controls system
b. Install new non-proprietary controls system
c. All new equipment integrated to new controls system

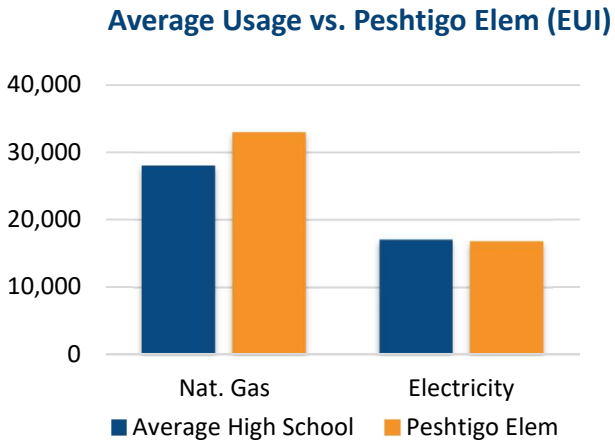
The building performs with a total energy intensity usage of 49,742 BTU/SF which is about what is anticipated for an Elementary School in the area. There is one major item to consider when comparing the energy usage at the Elementary School with similar buildings in the area.

1) With the COVID-19 pandemic starting in early 2020, typical building operations were not being practiced which would alter the electrical and gas usage rates to be lower. Performance Services has developed controls strategies to help mitigate further exposure of spreading COVID-19 with HVAC equipment. It should be noted that these control strategies are most effective, and in some case exclusive, to newer HVAC equipment with better technologies allowing for control of humidity and outdoor air (ventilation) into the spaces.

Normally, a high performing Elementary School has a total EUI (electrical + gas) around 45,000 BTU/SF for energy usage. Further information and a more normalized data set may be needed to perform a true comparison, but our team does feel that the data indicates anticipated comparable results with good confidence.

Building Performance:

Building Area (est):	125,000 SF	
Annual Electric Cost:	$55,968	$0.45/SF
Annual Gas Cost:	$17,492	$0.59/SF
Total Utility Cost:	$73,460	$1.04/SF
Electric Usage Intensity:	16,778 BTU/SF	
Gas Usage Intensity:	32,964 BTU/SF	
Total Energy Intensity:	49,742 BTU/SF	



Building Envelope Conditions

Existing Condition Assessment:

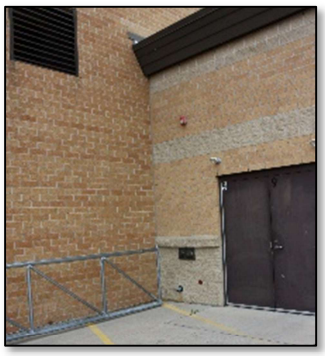
- Main Entrance 1 & 2: The original entrance doors to the school appear to have been replaced from the original single pane aluminum framed doors. It is unclear as to when they were replaced or if the frames are thermally broken as new installation would be.

- Exit 3: The School District admiration office entrance is an insulated steel, full-lite, hollow metal framed door. It is well protected from elements and is in good condition.

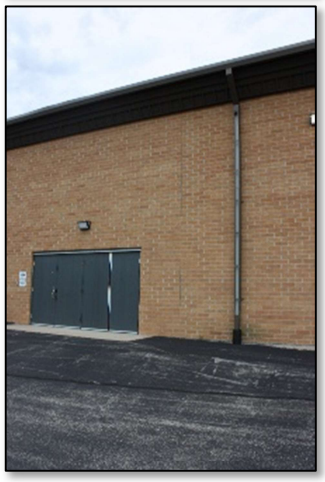
- Exit 4 & 14: Exit doors at the 1993 connector as part of the elementry school addition are aluminum framed with insulating glass; however, these door frames are not thermally broken. Non- thermally broken frames will transfer heat throught the frames creating some energy loss. There is allso staining present on the carpeting at the doors on the east side of the connector (door 4). The presence of white dicoloration suggest ice melting salt is infiltrating with water during winter months.

- Entrance/Exits 5, 6, 7 & 8: These aluminum framed entrances and exits were installed in 2005 with the school additions. These are aluminum framed entrances and are likely thermally broken frames. The entrance and exits installed in 2005 are in good condition and no immediate concerns are anticipated.

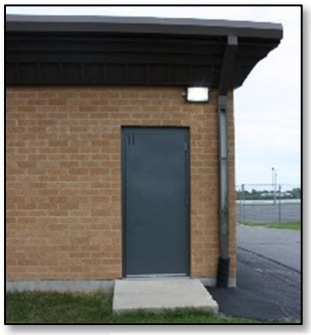
- Exit 9: The kitchen service door is a double insulated steel, hollow metal framed door and is in fair condition. The finish on the door leaves and frames are showing its age as well as some light damage due to the nature of its use as a service door and where deliveries are made.



- Entrance/Exit 10: Gym Exit is a hollow metal framed exit from the 1993 addition. This is an emergency exit and not typically used. Since it is from the '93 addition, the weather stripping may need to be addressed. These doors lead directly into the gym space and leaks could cause damage to the athletic flooring. It is important to conduct regular inspections and maintenance at these doors. The asphalt has been sloped up to the stoop to allow for accessible egress from the gym space.



- Exit 11: this door is the emergency exit from the boy's locker room built in 1993. Although not originally on the drawings, this serves as the second exit required by code from the space. The stoop outside of this space is not ADA compliant; however, there is a path of egress provided through the main gym space. An improvement would be to provide a sloped condition from the stoop for access to the public way.



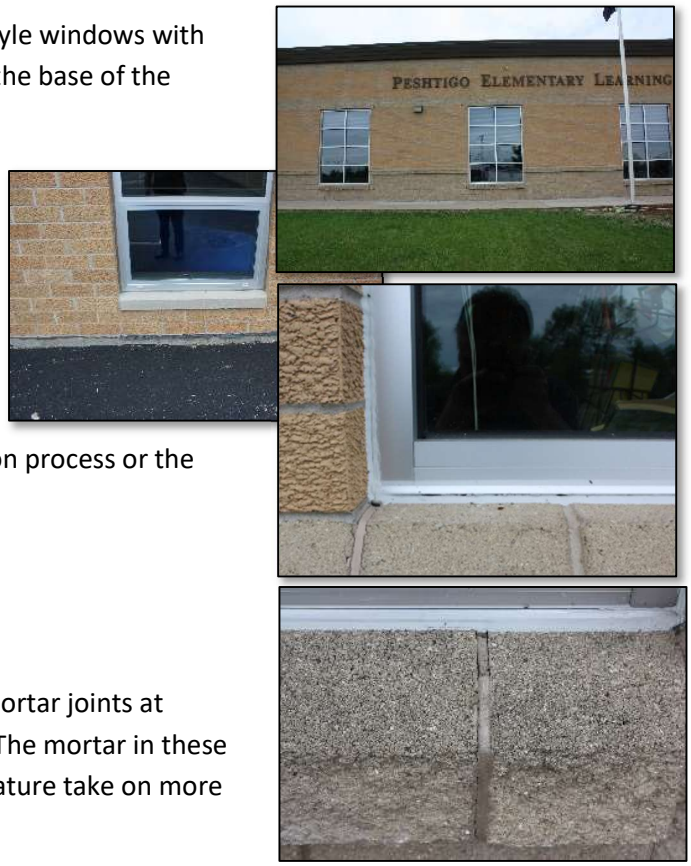
- Exit 12 & 13: This aluminum framed entrances and exits were installed in 2005 with the school additions. These are aluminum framed entrances and are likely thermally broken frames. The entrance and exits installed in 2005 are in good condition and no immediate concerns are anticipated.

- Exit 15, 16 & 17: The original entrance doors to the school appear to have been replaced from the original single pane aluminum framed doors. It is unclear as to when they were replaced or if the frames are thermally broken as new installation would be. Observed light infiltration from the inside which would indicate significant air leakage.

- Exit 18 & 19: These doors were installed with the administration and classroom addition in 1987. They are insulated steel, with insulating glass, hollow metal framed doors. It is well protected from elements and is in good condition. Door 18 facing west has a 4" step down at the door threshold. This prohibits this exit from being an accessible means of egress.

- Windows General Conditions:
- 1967 building has replacement aluminum clad wood single hung windows. The sashes have double paned glass with between the glass blinds. The perimeter sealant is in good condition where observed. A mesh safety screen has been installed over the operable light and several screens are damaged. One window has a damage exterior pane of glass.

- 1987 building has the same windows as the 1967 portion of the building and were likely the basis used to preplace the '67 windows during the Administration and classroom addition in 1987.
- 1993 building has aluminum framed insulating storefront style windows with insulating glass. These include an operable awning sash at the base of the window for the typical classroom construction.
- 2005 building has full storefront divided light window systems included in this construction. These windows are intended to be vision only and do not allow for any natural ventilation.
- The perimeter sealant is failing around some of the windows. This was particularly observed at the 2005 addition. This is potentially due to an error in the installation process or the sealant is incompatible with the adjacent materials.



- Stone and masonry sills: It was common to grout vertical mortar joints at window sill that deploy masonry of multi-piece stone sills. The mortar in these conditions typically fail as the sill move differently and by nature take on more water that a vertical wall surface.

- Overhangs: The overhangs on the original building were redesigned and installed in conjuction with the 1987 additions. They feature som integral gutters and some standard hung gutters. There are several locations where the system is leaking and causing staining on the masonry walls (see wall assesment section). The overhangs and roof edges at the 1993 and the west wing of the 2005 addition project are similar in character and have standard facia mount gutters. The esposed wood decking is well maintained and supported by timber framing.

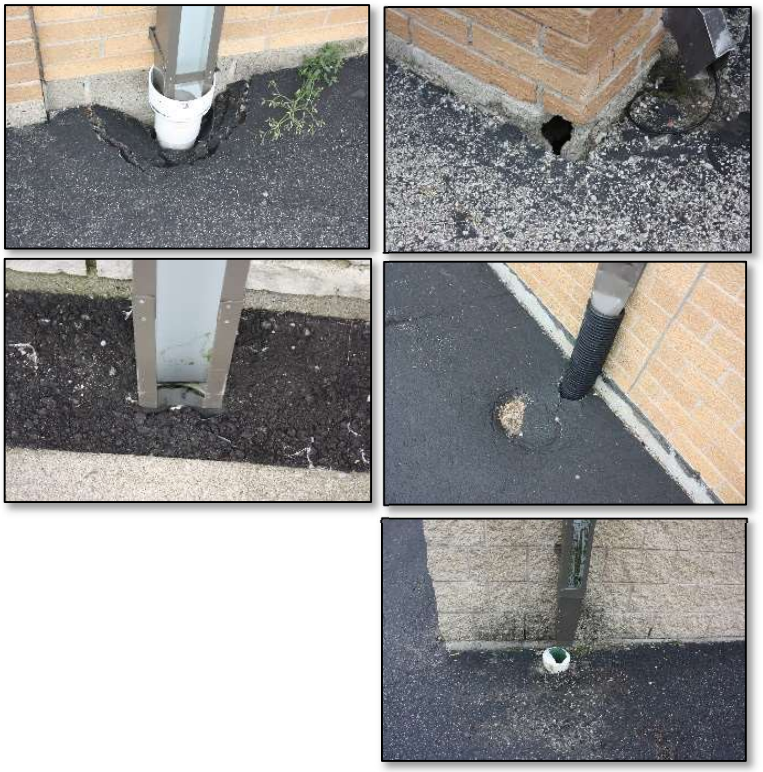
- Roofing: Most of the roof covering is a standing seam roof over rigid insulation and wood timber or Tectum deck on the '67-87'. The 1993 building addition is a steel framed building with steel purlin framing and batt insulated roofing with matching standing seam roof. The east portion of the 2005 additions is a flat metal deck roof with rigid insulation and a white TPO roof covering fully adhered. The west portion is a standing seam roof to match the existing roof on wood trusses and attic type insulation. This roof system is vented with soffit intakes and ridge vent exhaust. No roof leaks were observed at this time. The standing seam roof Is typically a very durable construction when properly installed and usually has a long-life span.

- Control Joints: There are control joints on the buildings in appropriate locations. Some of these have begun to separate from the masonry. This may be due to the incorrect sealant type being used relative to environmental conditions or more likely compatibility with adjacent materials.

- Walls: There are three types of masonry walls.
- TYPE A: Brick or stone masonry over CMU structural backup wall. There is no cavity in this wall, so it is considered a mass masonry type wall. The walls are also furred on the inside. This wall is built on a CMU foundation.
- TYPE B: Brick cavity wall with CMU backup and rigid insulation in the cavity.
- TYPE C: Brick and split faced CMU cavity wall with CMU backup and rigid insulation in the cavity.

- The walls are typically in very good condition. There are weeps installed in the cavity walls with through wall flashing. There is algae and mildew staining from leaking downspouts.

- <u>Perimeter Foundation & Drainage conditions</u>: There is a hole in the wing wall of the exit 16 vestibule due to erosion at the foundation. This hole is taking on water and potential for damage from trapped water and it is freezing. The underground drain tile is failing around the connection points to the downspout termination. Causing the soil to be undermined leading to sink holes at the downspout connections.
- Asphalt was filled in around the perimeter of the original ’67 building encapsulating the exterior underground storm drain. This may have been done to eliminate the landscaping strip along the building to reduce maintenance.



Proposed Exterior Solutions & Benefits:

- Exit Doors: In the Short term, Inspection of all exterior door seals, sweeps, thresholds and weather stripping should be conducted and failing items should be replaced. Clean up and re-paint the few doors that are rusting or corroding to halt the deterioration. Inspect all perimeter sealants at each door and replace any failing sealants with a product compatible to all adjacent materials. Bi- annual inspections of sealants is recommended to be part of a maintenance plan. Repaint fading insulated metal doors for improved appearance. In the long term, consider replacing aluminum storefront systems that are not thermally broken with new storefront entry systems for better thermal performance.
- Windows General Conditions:
- 1967-'87: It is recommended to inspect the perimeter sealants and replace any failing sealants with a product compatible to all adjacent materials. Replace broken panes of glass along with any failing screens. Keep an eye on the between the glass blinds for UV deterioration in nylon cording in the horizontal blind construction
- 1993: It is recommended to inspect the perimeter sealants and replace any failing sealants with a product compatible to all adjacent materials. These window frames may not be thermally broken. A long-term plan to replace with a thermally broken system may be desirable for improved thermal performance.
- 2005: It is recommended to inspect the perimeter sealants and replace any failing sealants with a product compatible to all adjacent materials. The perimeter sealant is failing around some of these windows.
- Bi-annual inspection of perimeter sealants at window openings is recommended to be part of an ongoing maintenance plan.
- Stone and masonry sills: Grind out and replace the vertical joints a minimum of 3/4", and install an elastomeric sealant colored to match the mortar. The finished look of the mortar is a concern, fine aggregates matching the aggregate in the aggregate in the mortar can be imbedded in the surface of the sealant to provide a similar look to the mortar.
- Roofing: Roofing is currently in good condition; no leaks were observed during the field survey visit. Aside from the gutter and downspout included in the overhangs section above, there are not many roofing concerns. Verify there are no active leaks in either of the different roof constructions on the building. It is recommended to do a bi-annual inspection of the roofing systems. The flat TPO roof should have an infrared leak detection scan in conjunction with the roofing inspections. This may be deferred to a three-year schedule unless a leak is apparent.
- Control Joints: inspect all the existing control joints for failures. Remove and replace all control joints showing separation from either of the side of the joint. Choose a sealant product that has compatibility with all adjacent materials to prevent sealant failure.

- Walls: Cursory bi-annual visual inspection of masonry is recommended. At minimum, it is recommended for an extensive inspection for crack in mortar or masonry unit failures every five years. This can prevent any major failure in the building envelope even when the envelope system is as robust as this building. Clean the algae and mildew staining with appropriate cleanser in conjunction with the downspout repair/replacement. This can be done with a mild detergent, scrub brush and potable water to prevent damage to the masonry and mortar.

- Perimeter Foundation & Drainage conditions: grout the hole in the foundation CMU to prevent further damage to the below grade foundation system.

- It is recommended to remove the asphalt where it fills in between the concrete curb and the exterior wall at the 1967 building. It would be better to install 3”-4” of clear 2” minimum stone to prevent the need of landscaping maintenance.

Interior Finishes

Existing Condition Assessment:

- Ceilings General: Corridor ceilings appear to be a newer acoustical ceiling tile (ACT) product or a tegular edge tile, in some locations, which should be more durable and resist humid conditions better than the older ACT technology.

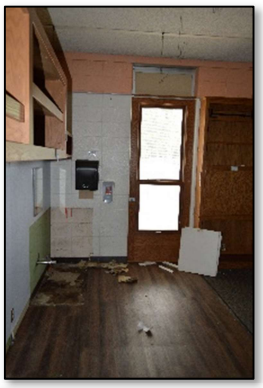
- Floors General: The corridor floors have several different floor coverings. Some of the floors are covered with ceramic tile and some are sheet carpeting and carpet tile. The sheet carpeting and carpet tile are covering an unknown substrate. The 1967 building could potentially have asbestos containing tile and it should be verified before any removal of floor coverings. There is damage to the sheet carpet floor covering at the connector to the 1993 addition.

- Walls General: Corridor walls are painted CMU which is a durable structural material. There were stress cracks observed in at least one location. This may not be concerning, however should be investigated to verify cause and extent of cracking.

- Classroom Doors: Classroom doors are in good condition. Some of which have been painted, but most of them are varnished natural finish.

- Classroom Ceilings: some of the classrooms have a 2X4 ceiling in which the ceiling panels have been replace with a newer ceiling tile. This is evident by the absence of sagging in the center of the tiles and curling at the corners. Some of the classrooms have a tegular edge tile with a center score mark to resemble a 2X2 ceiling tile. A large portion of the classrooms in the '67 building are under renovation and the ceilings are taken down.

Classroom Floors: It is assumed that the classrooms undergoing renovations will be getting a new floor covering. There are sheet carpet and carpet tile floor coverings in some of the other classrooms. There are also classroom spaces with Vinyl Composite Tile (VCT) floor coverings. Some of the old VCT flooring has separated and have gaps which can happen with humidity in a building.



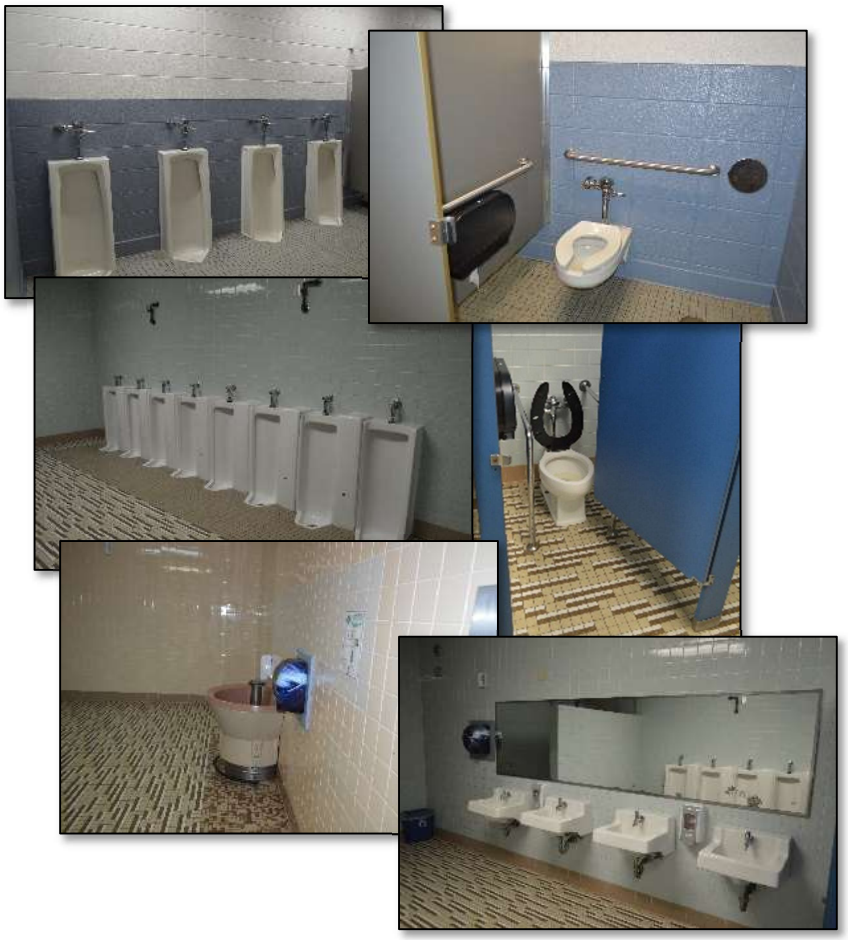
- Classroom Walls: most of the classroom walls are painted CMU. There are some non-bearing partition walls that have gypsum board covered framing as well as the movable partitions being encapsulated during the current renovation project. The areas being renovated are not part of this condition assessment. CMU walls are durable and provide an excellent sound barrier from other occupied spaces.

- Casework: casework in the classrooms vary depending on the age of the construction. Some of the older casework is plastic laminate and in fair condition; however, they do not possess locking hardware to keep materials secure. Even some of the newer casework that is a wood grain look plastic laminate does not have the capability to be secured. The corridor has built-in-place coat hook and bench wall hung casework with a carpeted boot storage underneath. There are also storage cabinets near the exit to the playground. This casework appears fairly new as it is in good condition.

- Furnishings: there are different types of student seating in the school. Most locations have individual seating available in the form of individual desks, individual storage table and chair or configurable collaborative individual table and chair. Lab and art room spaces have two student table and chair furnishings.

- Technology: Smart boards are included in most of the classrooms, the classrooms under renovation may have this equipment taken down and being stored during construction. It is also apparent that some of the classrooms will be receiving interactive flat panel technology.

- Boy's Restrooms: The boys restrooms have button flush floor mounted urinals without privacy screens. The toilet stall in the 2005 and 1993 bathrooms have an accessible stall; however, the accessible stall in the 1967 toilet room is only an ambulatory style stall. The mosaic floor tile looks well maintained. Typically, with floor mounted urinals and tile flooring, there can be an issue with odors associated with the grout taking on extra moisture around the base of the urinals. The sinks are also push-button type faucets for water savings. There appears to be newly installed hand dryers. Another rest room has a foot operated wash fountain.



- Girl's Restrooms: The girl's restroom was observed to be in similar condition to that of the boy's restroom with the same amenities.

- Staff and Unisex Toilet rooms: The staff toilet rooms are unisex toilet rooms and are under sized to be accessible. There are fully accessible unisex toilet rooms in another location in the building.

- Boy's/Girl's Locker Rooms: Lockers are in good condition. An alarmed door was added to the boy's locker room specifically as a second exit from the space to be code compliant. The mosaic tile floor is in good condition as well. The shower room has perimeter mounted shower heads but only one privacy enclosure.
- Note: the girl's locker room is assumed to be in similar condition as the boy's locker room.

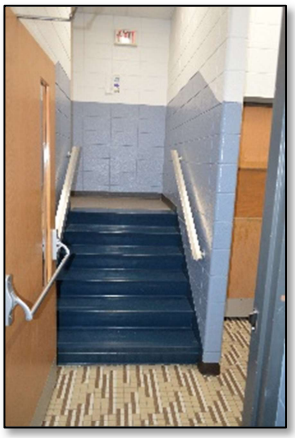
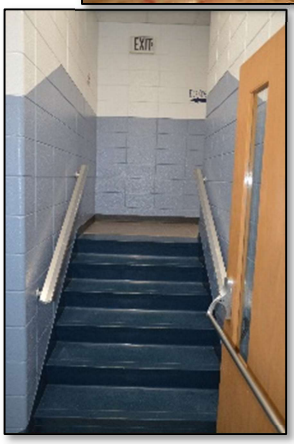
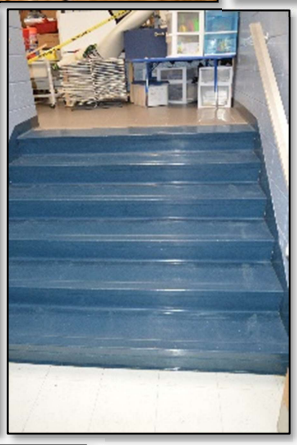
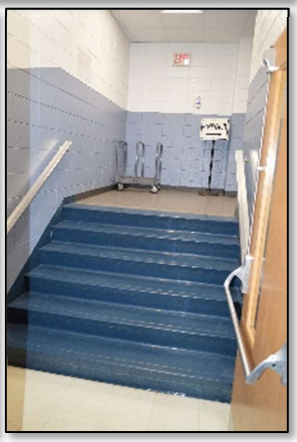
- Kitchen: the kitchen has a tan quarry tile flooring with dark grout which could be a long-term issue if regular cleaning and resealing of the grout is not kept up on. This is prevalent near the dish washer where significant staining has occurred under the stainless-steel equipment. all the work surfaces are stainless steel and provide clean work surfaces when well maintained.

- Multipurpose Gym /Cafeteria: The flooring in the multipurpose room, built in 2005, is showing signs of uncharacteristic fatigue. There is significant tile separation and cracking along control joints. It is concerning why the floor slab is moving that much.

- Drinking Fountains: In some locations the drinking fountain is installed with bottle fillers. This installation is more hygenic as the students can fill their own water bottles without touching the water fountain itself.
- Gymnasium 1993: The gym is in good condition, however there is not very much spectator seating and it is only on one side of the gym. There is also a performance stage at the East end of the gym that is not very large.

- Gymnasium 1967: The original gym is smaller than the 1993 gym and originally served as the cafeteria. The performance stage is also smaller than the stage in the '93 addition. This gym is also not accessible as it is sunken below the main school floor level approximately 28". The area previously serving as the school kitchen is currently used for storage.




- Music Room: The music room in the 2005 addition is adjacent to the multipurpose room. It is a large space with hard surface flooring, exposed masonry walls and standard acoustical tile ceiling. The acoustics in the space are likely difficult to control with the hard surface floor. Acoustical panels that were not noted in the original construction plans were likely added to help control sound.



- Art Room: The kiln in the art room is open to the rest of the room. This is not typically the safest or most controlled way of exhausting the fumes and heat from the use of a kiln.

- Library: The Library has sheet carpet in good condition and a 2x2 ACT ceiling system that look relatively new. There is some soft collaborative seating in one corner for group instruction.

Proposed Interior Solutions & Benefits:

- Ceilings General: No additional action necessary. Continued maintenance and ceiling panel replacement recommended as well. Where 2x4 tiles are being replaced 2x2 tiles are recommended to reduce the opportunity for sagging due to humidity in the space/building.

- Floors General: It may be desirable to have one homogeneous floor type. Due to extensive amounts of traffic the corridor sees during a given school year a durable hard surface is recommended. Pourable or liquid applied epoxy floor products that require reduced maintenance is an option. If a carpeted surface is favorable, a commercial carpet tile would be recommended as the individual tiles could be replaced if damaged of stained.

- Walls General: Grind and repoint mortar joint if it is aesthetically desired to eliminate any cracking in the walls. Repaint the walls as desired for continued maintenance.

- Classroom Doors: No additional action necessary.

- Classroom Ceilings: No additional action necessary. Continued maintenance and ceiling panel replacement recommended as well. Where 2x4 tiles are being replaced 2x2 tiles are recommended to reduce the opportunity for sagging due to humidity in the space/building.

- Classroom Floors: Remove the sheet stock carpeting where installed and replace with a commercial carpet tile as the individual tiles could be replaced if damaged of stained.

- Classroom Walls: No recommendations at this time as a portion of the school is under renovation. Revisit individual classroom needs as they arise and conduct bi-annual maintenance inspections.

- Casework: The casework is in working order. As casework needs replacing, it is recommended that uniform casework be installed to reduce cost as attic stock can be universal. In the short term, install lockable cylinders on all casework that needs to be secure for safety or security reasons within the classrooms.

- Furnishings: For multi student tables, consider replacing with reconfigurable collaborative style furniture systems. This may not work well for such spaces as the Art room; however, reducing the amount might be helpful with the current health concerns.

- Technology: No additional action needed; however, consider adding video capability to the classrooms to accommodate the need for remote instruction if the need arises.

- Boy's / Girl's Restrooms: In an elementary school where it is uncertain that children properly wash their hands; it is recommended to install touchless valves on all the plumbing fixtures. When renovating existing restrooms where there are no ADA compliant facilities available, it is recommended to include the upgrade in the renovation. A durable homogenous epoxy type floor in restrooms may provide easier maintenance and cleanliness. Urinal screens should be installed where possible and potentially reconfiguring the tightly packed row of urinals to allow for urinal screens.

- Staff and Unisex Toilet rooms: Consider relocating the staff restrooms to provide an accessible restroom.

- Boy's/Girl's Locker Rooms: Consider adding more privacy compartments to the shower area.

- Kitchen: The kitchen has a tan quarry tile flooring with dark grout which could be a long-term issue if regular cleaning and resealing of the grout is not kept up on. This is prevalent near the dish washer where significant staining has occurred under the stainless-steel equipment. All the work surfaces are stainless steel and provide clean work surfaces when well maintained.

- Multipurpose Gym /Cafeteria: Replace the floor covering and accommodate for the slab movement with planed control joints. An epoxy floor covering could work nicely here and provide an opportunity for a selective design or theming.

- Drinking Fountains: Replace all drinking fountains with touchless bottle fillers or add it to the drinking fountains capable of reciving the upgrade.

- Gymnasium 1993: There is no feasible solution to add spectator seating to this space due to the choice of structural framing deployed for the gym. The only other option would be to add seating at the end where the stage is and use the '67 gym stage for theater/auditorium productions.

- Gymnasium 1967: A lift needs to be installed in order to make this gym accessible. This gym has a potential to be converted into an auditorium with tiered seating. Could slope or step down from West to East towards the stage. The stage then could be expanded north and south to better facilitate productions.

- Music Room: A soft floor covering such as carpet tile will help control sound.

- Art Room: it is recommended to have the kiln in a separate enclosure to control the exhausting and provide added protection from fire or accidental injury.

- Library: When the carpet needs replacing, consider replacement with a commercial carpet tile as the individual tiles could easily be replaced if damaged of stained instead of complete replacement.

Heating System

Existing Conditions:

- There are (2) boiler plants that serve the building. These plants provide hot water heating to the building through unit ventilators, HW heating coils located in AHUs, duct mounted reheat coils, VAV terminal units and cabinet unit heaters.
- The main plant serving the original construction and ’93 addition consists of two (2) HW boilers from Bryant. The boilers are 2,700 MBH input each and 80% efficient. The boilers were installed in 1993 and are at their expected service life. A future replacement plan should be developed to track this project.
- The second plant serving the ’05 addition consists of (2) HW near-condensing boilers from Patterson Kelly. The boilers are 1200 MBH input each and 85% efficient. The boilers were installed in 2005 and are nearing the end of their expected service life.
- The heating plant capacity equates to roughly 51 BTU/SF (output) which is comparable to the typical heating requirements in Wisconsin of approximately 40 BTU/SF. A wholistic approach is required when assessing the heating capabilities of the boiler plants.
- The main hot water plant distributes hot water to the original building served by two (2) inline primary pumps and two (2) base mounted distribution pumps. A separate inline distribution pump provides hot water from the main hot water plant to the ’93 addition. All the pumps are constant speed, without variable frequency drives. All pumps have exceeded their expected service life.
- The second hot water plant distributes hot water to the ’05 addition by two (2) inline primary pumps and two (2) base mounted distribution pumps. The inline pumps are constant speed only, with no variable frequency drives, and the distribution pumps are variable speed. All pumps are approaching the end of their useful lives.
- The Elementary School has a series of HW cabinet unit heaters which are located at the building perimeters and at entryways. These units are in varying condition but in almost every case, serve transitionary spaces.

Proposed Solutions:

- Highly recommend replacing the entire main boiler plant and distribution piping. Provide two (2) new high efficiency condensing boilers with dedicated primary pumping and two (2) HW distribution pumps with variable frequency drives (VFDs). At the same time, replace the AHU HW heating coils and VAV terminal unit coils with new coils capable of delivering low-temperature HW heating at 135F degrees. This will increase efficiency on the heating plant, save energy and address aging systems.

- Recommend planning for replacement of the secondary boiler plant as the boilers are nearing the end of their service life. Recommend replacing boiler pumps and distribution pumps at the time of boiler replacement.

Benefits:

- Replacing the boilers and pumping systems will address an aging system, reduce maintenance costs and provide increased energy savings. Full savings will be realized when existing three-way control valves are replaced with two-way control valves out in the system.

Cooling System

Existing Conditions:

- The original Elementary school only contains air conditioning in the Office area. This is provided by a residential split direct expansion (DX) unit serving the furnace. This unit is older and is due to be replaced.
- One (1) split DX condensing unit is located on the roof of the 1993 addition and serves the associated addition's Variable Air Volume (VAV) AHU. This unit is beyond its expected service life and should be replaced. It has already experienced a compressor failure.
- One (1) split DX condensing unit is located on the East roof of the 2005 addition and serves the associated addition's VAV AHU. This unit is in good condition and should last the district for some time with proper maintenance.
- One (1) split DX condensing unit is located on the West roof of the 2005 addition and serves the associated addition's VAV AHU. This unit is in good condition and should last the district for some time with proper maintenance.

Proposed Solutions:

- Implement a replacement plan for the AHUs and Condensing units which prioritizes units that are oldest and in the poorest existing condition. Consider replacing the '93 addition equipment as part of the first phase of project work.
- Primary:
    - Provide a chiller and primary pumping system to provide cooling.
    - Replace existing AHUs and unit ventilators serving classrooms with new vertical classroom unit ventilators with dual temperature coils to provide heating, cooling and ventilation to learning environments.
    - Size dual temperature water piping for future expansion capability to serve '05 addition.
    - Provide capability of plant to easily expand to accommodate expansion to serve '05 addition.
- Secondary:
    - Provide split DX cooling for new vertical unit ventilators and new AHU to serve original building interior spaces In lieu of chiller and dual temp distribution.

Benefits:

- The new AHUs and condensing units will replace aging equipment, reduce required annual maintenance, provide better comfort control and have the added benefit of energy savings.
- If all areas of the Elementary school are air conditioned the learning environment can be greatly improved for teachers and students and also protects interior assemblies that area susceptible to humidity problems by eliminating the moisture in the air.

Air Handling Equipment

Existing Conditions:

- The exterior classrooms of the original school are heated and ventilated by classroom unit vents. These units are original to the building and greatly exceed their expected service life.
- The interior spaces of the original school are heated and ventilated by a centrifugal fan located within a plenum return room with filters. This fan is constant volume. Each space served has one or more terminal heating coils to provide independent temperature control. This fan and the terminal heating coils are original to the building.

- There is one (1) variable volume Air-Handling Unit (AHU) that serves the ’93 addition area. This AHU utilizes HW heating and split DX cooling to condition the space. This unit serves multiple classrooms. Each classroom has an independent VAV terminal reheat box for temperature control.
- There is one (1) variable volume Air-Handling Unit (AHU) that serves the West ’05 addition area. This AHU utilizes HW heating and split DX cooling to condition the space. This unit serves multiple classrooms. Each classroom has an independent VAV terminal reheat box for temperature control.

- There is one (1) variable volume Air-Handling Unit (AHU) that serves the East ’05 addition area. This AHU utilizes HW heating and split DX cooling to condition the space. This unit serves multiple classrooms, the kitchen and multi-purpose room. Each space has one or more VAV terminal reheat boxes for temperature control.

Proposed Solution:

- Implement a replacement plan that provides air conditioning throughout the original school.

- Primary:
    - Provide a chiller and primary pumping system to provide cooling.
    - Replace existing AHUs and unit ventilators serving classrooms with new vertical classroom unit ventilators with dual temperature coils to provide heating, cooling and ventilation to learning environments.
    - Size dual temperature water piping for future expansion capability to serve ’05 addition.
    - Provide capability of plant to easily expand to accommodate expansion to serve ’05 addition.

- Secondary:
    - Provide split DX cooling for new vertical unit ventilators and new AHU to serve original building interior spaces In lieu of chiller and dual temp distribution.

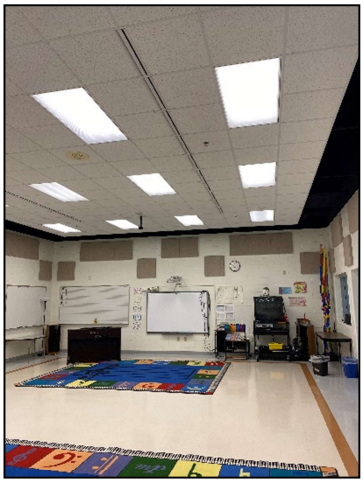
Benefits:

- If all areas of the Elementary school are air conditioned the learning environment can be greatly improved for teachers and students and also protects interior assemblies that area susceptible to humidity problems by eliminating the moisture in the air.

Classroom Air Distribution

Existing Conditions:

- The original school classrooms receive air directly from unit ventilators located within the occupied space.
- All other areas of the original school are served with overhead air distribution from the existing AHU. The AHU serves multiple spaces and utilize hot water terminal reheat coils serving one or more rooms. If a space temperature drops below the setpoint the HW coil valve will open and raise the supply air temperature to the space(s).
- The additions are served with overhead air distribution from the existing AHUs. The AHUs serves multiple spaces and utilize VAV terminal reheat boxes typically only serving a single room. If a space temperature rises above setpoint the VAV box will open to provide more cool air to the space. If a space temperature drops below the setpoint the VAV box reduces the amount of cool air supplied to the space. Upon further drop below setpoint the HW coil valve will open and raise the supply air temperature to the space(s).



Proposed Solution:

- Provide new vertical classroom unit ventilators for original building classrooms.
- Replace terminal reheat coils with new coils capable of supporting full heating at 135F degree hot water supply temperature.

Benefits:

- New vertical unit ventilators will provide better temperature control of the individual spaces.
- Low temperature hot water supply will increase the energy efficiency of the heating system.

Domestic Hot Water System

Existing Conditions:

- The original school and ’93 addition are served by a single standard efficiency gas fired hot water heater and recirculation pump. This unit has exceed its service life and should be replaced.
- The ’05 addition is served by two (2) high efficency gas fired hot water heaters and recirculation pump. These units are nearing their service life expectancy and should be budgeted to be replaced.

Proposed Solution:

- Replace equipment at or exceeding the recommended service life. Replacement equipment should be high efficiency for operational energy savings.

Temperature Control System

Existing Conditions:

- The building controls systems are DDC with an Automated Logic automation system (BAS) interface. This system is comprehensive over all major HVAC equipment with zone/space controllers. The BAS appears to have the ability to fully control, trend, alarm and notify the Customer of needs and inconsistencies in the system.

Proposed Solution:

- Further evaluation of the control system is necessary to determine the expansion capability of the system.
- System is nearing the end of expected service life and may be due for replacement.

Lighting System

Existing Conditions:

- All of the interior lighting appears to be existing fluorescent fixtures that illuminate the space learning environment, with the exception of the original building corridors that have been converted to LED fixtures. Converting the remaining fixtures to LED fixtures would allow for energy savings, tunable light (color and brightness) and minimize maintenance labor to replace bulbs. Most of the spaces were observed to have adequate light levels but there are areas, that have yellowing lenses or tubes, that would benefit from having consistent color temperature throughout the space. Additionally, sensitive environments where cooler light temperatures are needed can be addressed by installing fixtures that can adjust temperature with either a wall switch or phone-based application.
- The existing lighting controls are the original manual control wall switches with 1, 2, 3 or 4 scenes depending on the size of the space. These existing scene selectors help with zone control within each space to illuminate or cut lighting to the front learning area. Automatic controls in the form of occupancy or vacancy sensors should be considered to manage the lighting when spaces are not being used.
- Exterior lighting is minimal around the building represented by mostly wall sconces.

Proposed Solution:

- Replace the existing fluorescent lighting with new LED fixtures with onboard wireless lighting controls (occupancy and daylighting). Replace the wall switches with new wireless programmable scene control switches.

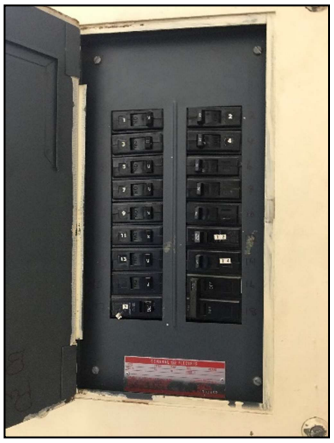
Benefits:

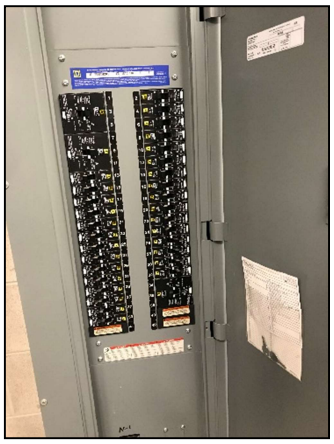
- New LED lighting will provide more consistent lighting levels and allow for programming to meet changes required in the space. The onboard daylighting sensors will automatically dim fixtures to maintain the programmed lighting levels as the outdoor light becomes brighter throughout the day. The sensors will also increase the lighting output levels to maintain programmed light levels in the mornings and afternoons. The onboard occupancy sensors will automatically save energy by turning off light fixtures after a programmed period of observed absence.

Electrical System

Existing Conditions:

- The electrical service for the building is 480 Volt, 3 phase, 1200 A.
- The existing electrical main distribution panel was installed as a part of the '93 addition, with electrical equipment from the original building back fed from the newer main distribution.
- Many of the existing distribution panelboard circuits in the original building are full leaving no room for expansion.





Proposed Solution:

- Recommend updating the electrical system within the original building.
- The existing service will need to be further studied to determine if it is suitably sized to handle any proposed air conditioning loads.

Peshtigo Elementary School

Building HVAC Equipment Inventory

Equipment	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: Bryant	2	27	24	Poor	✓	✓			Boilers have a maximum efficiency of 80% and has an input capacity of 2,000 max MBH each.
HW Pumps	1	27	20	Poor	✓	✓			Constant speed Inline pumps for distribution HW.
HW Pumps	4	27	20	Poor	✓	✓			Constant speed Inline pumps for distribution HW.
Boilers: PK	2	15	20	Poor/Fair	✓	✓			Boilers have a maximum efficiency of 85% and has an input capacity of 1,200 max MBH each. One heat exchanger required replacement in 2018
HW Pumps	2	15	10	Poor/Fair	✓	✓			Constant speed Inline pumps for boiler pumping.

Peshtigo Elementary School

Building HVAC Equipment Inventory

Equipment	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	
HW Pumps	2	15	20	Poor/Fair	✓	✓			Variable speed Base-mounted pumps for distribution HW.
DHW Pumps	2	15+	10	Poor/Fair	✓	✓			Constant speed Inline pumps for primary and distribution DHW.
DHW Heater	1	15+	18	Poor/Fair		✓	✓		260MBH with 100-gal storage
Water Softener	1	10+	18	Fair/Good			✓	✓	Replace with Boilers or DHW, whichever comes first
DHW Heater	2	15	18	Fair/Good			✓	✓	200MBH with 100-gal storage
Water Softener	1	15	18	Fair/Good			✓	✓	Replace with Boilers or DHW, whichever comes first
Unit Ventilators	24	53	25	Poor	✓	✓			Original to facility
AHU - North	1	53	25	Poor	✓	✓			Trane Centrifugal Fan in plenum room with filter bank

Peshtigo Elementary School

Building HVAC Equipment Inventory

Equipment	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	
Furnace & Split DX - Office	1	15+	15	Fair/Good		✓	✓		Replace with fan coil with hot water heating coil
AHU - Central	1	27	25	Poor/Fair	✓	✓			McQuay 3YF01035-04
ACCU - Central	1	27	20	Poor	✓	✓			McQuay 25ton 5YF8505801 Have had compressor failure
AHU - East	1	15	25	Good				✓	Trane K05D55162
ACCU - East	1	15	20	Good				✓	Trane 50ton C05D03721
AHU - West	1	15	25	Good				✓	Trane K05D55154
ACCU - West	1	15	20	Good				✓	Trane 60ton C05D03722
Ceiling/Pedestal Unit Heaters	Various	15-53	25	Poor/Fair	✓	✓			Typically used at entry points.
Exhaust Fans	Various	15+	25	Fair		✓	✓		Exhaust fans for locker and/or restrooms.
Lighting	Various	15+	20	Poor/Fair	✓	✓	✓		Fluorescent and HID
Building Automation Systems	Digital Controls	15+	15	Fair/Good	✓	✓	✓		Controls should be updated