

## **STURGEON BAY SCHOOLS**

FACILITIES ASSESSMENT - APPENDIX

JULY 2019

EUA PROJECT NO. 318509





## APPENDIX TABLE OF CONTENTS

<b>APPENDIX A</b>	<b>7</b>
Photo Library	
<b>APPENDIX B</b>	<b>19</b>
Building System Evaluation Reports	
<b>APPENDIX C</b>	<b>70</b>
Facilities Assessment Summary Presentation	

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## INTRODUCTION

The Facilities Assessment Appendix provides additional detail and documentation to support the conclusions of the Facilities Assessment Report. There are three sections in the Appendix:

- Appendix A contains images documenting the condition of building and site systems and components as seen during on-site tours in June, 2019.
- Appendix B contains a compilation of building systems evaluation reports and findings developed by engineering partners during the Facilities Assessment.
- Appendix C contains the Needs Assessment Summary Presentation that was presented to the Sturgeon Bay School District Board of Education on July 17, 2019 by representatives of EUA and Miron Construction. The presentation includes a summary of the Facilities Assessment process and findings, the potential solutions explored during master planning and estimated costs associated with the potential solutions.

If you have any questions regarding this appendix, please feel free to contact the EUA team.

Sincerely,



Eric Dufek AIA, LEED AP

Principal | Studio Director of Learning Environments





## APPENDIX A

Sawyer Elementary School	8
Sunrise Elementary School	10
Sunset Elementary School	12
T.J. Walker Middle School	14
Sturgeon Bay High School	16



SAWYER - Window caulk / sealant failure



SAWYER - Cracked masonry mortar joint



SAWYER - Door stoop / sidewalk settling trip hazard



SAWYER - Door frame finish failing



SAWYER - Door frame finish failing



SAWYER - Cracked pavement / sidewalks





SAWYER - Incorrect masonry weeps / vents



SAWYER - Inaccessible play area (ADA)



SAWYER - Poor scupper patch at parapet



SAWYER - Cracked masonry at parapet



SAWYER - Millwork damage



SAWYER - Finish showing wear on doors and frames





SUNRISE - Failing windows



SUNRISE - Overgrown shrubs / trees



SUNRISE - Rusting / failing door frames



SUNRISE - Inaccessible (ADA) / unsafe pavement at student pickup / drop-off area



SUNRISE - Poorly fit / sealed louvers and vents



SUNRISE - Downspouts not connected/ improper site drainage





SUNRISE - Failing gutter / downspout / eaves



SUNRISE - Missing masonry mortar



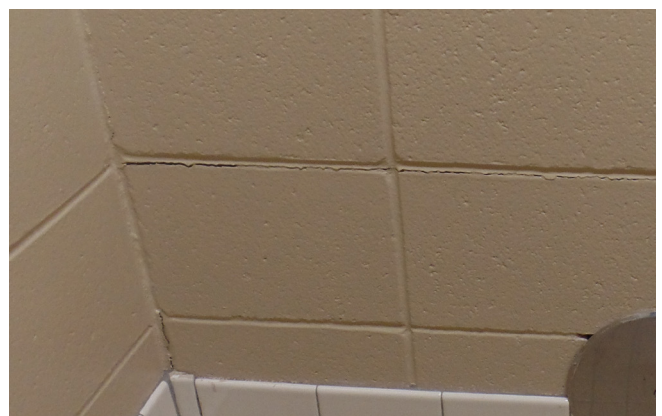
SUNRISE - Roof water damage to wall



SUNRISE - Asbestos floor tile



SUNRISE - Sagging ceiling tiles due to excessive humidity



SUNRISE - Cracked masonry walls





SUNSET - Failing / missing paint



SUNSET - Failing windows



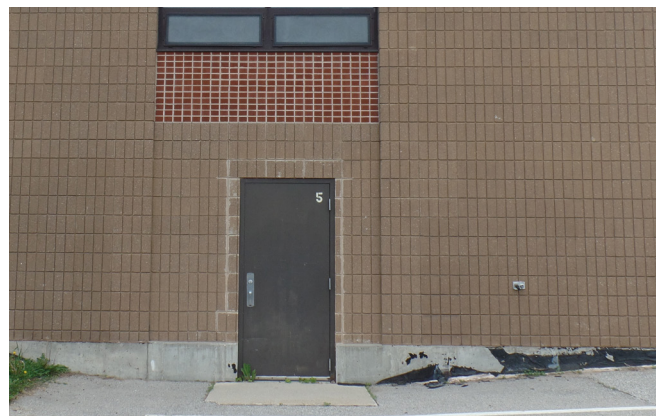
SUNSET - Stoop slab / sidewalk settling causing unsafe conditions.



SUNSET - Deteriorating exterior concrete



SUNSET - Door finish failing



SUNSET - Improper grading, deteriorating waterproofing, failing sealants





SUNSET - Poor site drainage



SUNSET - Inaccessible playground / play area (ADA)



SUNSET - Inaccessible restrooms (ADA)



SUNSET - Failing windows



SUNSET - Asbestos floor tile

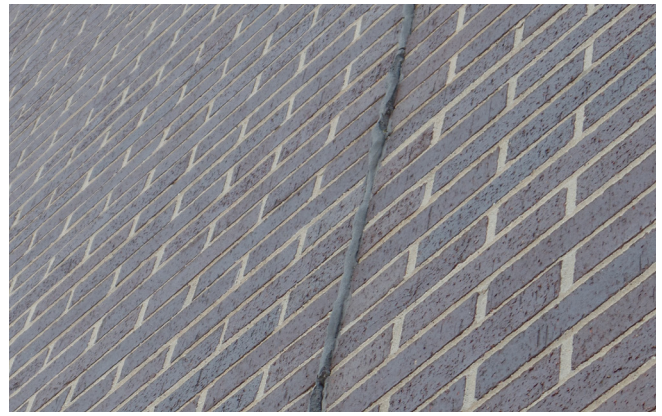


SUNSET - Ceiling tiles damaged / sagging due to high humidity





MIDDLE SCHOOL - Failing sealants at windows and louvers



MIDDLE SCHOOL - Failing sealants at building control joints



MIDDLE SCHOOL - Failing door / frame and uneven stoop / sidewalk slabs



MIDDLE SCHOOL - Failing soffit / asbestos materials



MIDDLE SCHOOL - Rusting masonry supports



MIDDLE SCHOOL - Improper roof drain installation





MIDDLE SCHOOL - Ponding water on roof / rusting roof vents



MIDDLE SCHOOL - Penetrations through wall rusting and staining masonry



MIDDLE SCHOOL - Inaccessible door hardware (ADA)



MIDDLE SCHOOL - Millwork showing signs of wear



MIDDLE SCHOOL - Flooring failing / peeling away from concrete



MIDDLE SCHOOL - Rusting / failing paint on ceiling beams in gym





MIDDLE SCHOOL - Inaccessible (ADA) restroom fixtures and accessories



MIDDLE SCHOOL - Damaged millwork / counter-top



MIDDLE SCHOOL - Peeling paint on walls



MIDDLE SCHOOL - Stained ceiling tiles



HIGH SCHOOL - Cracked block wall



HIGH SCHOOL - Rusting door frames





HIGH SCHOOL - Rusting masonry lintels



HIGH SCHOOL - Tennis court pavement cracked and failing



HIGH SCHOOL - Accessible (ADA) parking and loading zone not properly marked / identified



HIGH SCHOOL - Failing sealant joints



HIGH SCHOOL - Random holes in roof deck at wrestling / work out room



HIGH SCHOOL - Inaccessible drinking fountain (ADA)





HIGH SCHOOL - Radiators showing signs of wear



HIGH SCHOOL - Auditorium seating showing wear



HIGH SCHOOL - Locker room equipment, lockers and flooring showing wear / failing.



HIGH SCHOOL - Outdated laboratory equipment



HIGH SCHOOL - Millwork failing / showing wear



HIGH SCHOOL - Concrete failing



## APPENDIX B

Sawyer Elementary School	20
Sunrise Elementary School	29
Sunset Elementary School	38
T.J. Walker Middle School	47
Sturgeon Bay High School	57

# Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

## Electrical System Review:

The following report is the result of a site visit by Scott Pautz of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

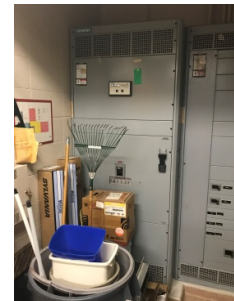
### Main Electric Service

Observations:

- A. This electric service is a 1600 amp, 120/208 volt, three-phase, four-wire system. The service switchboard is manufactured by Siemens and is located in the electrical room at the first level of the facility.
- B. This electrical service is fed underground via pad mounted Utility transformer. Existing incoming electrical conductors are terminated at the main electrical switchboard. This switchboard does contain a main electrical service disconnect switch.
- C. The highest peak electrical demand on this electrical service in the last 12 months was 140 KW recorded in September of 2018.
- D. Electrical meter for this electrical service is located at the Utility transformer at the exterior of the building.
- E. The Utility was noted as Sturgeon Bay Utilities, Meter # 4620146952.
- F. TVSS (Transient Voltage Surge Suppression) unit was present at main electrical switchboard.

Recommendations:

- A. The original interior building switchboard to be original equipment to the building and appears to be in good working condition.
- B. Conduct the following electrical system studies. Performing these studies will give an in-depth report of the existing electrical system, current issues that may exist, and proper safety labeling of electrical equipment within the facility.
  - Short Circuit Study – This study is an analysis of an electrical system that determines the magnitude of the currents that flow during an electrical fault. Comparing these calculated values against the electrical equipment ratings ensures that the power system is safely protected. It is imperative to have the proper rating of electrical equipment.
  - Coordination Study – This study analyzes the characteristic curves of the fuses or circuit breakers (overcurrent protection devices) and compares them against one another on a log plot. Any areas of miscoordination will be apparent by overlapping curves from various devices. If failure occurs in the electrical system, and a short circuit is created, properly



Electrical Main Switchboard



Electrical Main Service Disconnect Switch



Electrical Meter



Utility Transformer





## Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

coordinated system overcurrent protection devices will limit the failure to the smallest portion of the electrical system possible.

- Arc Flash Study – An arc flash study is the evaluation of the facilities power system to determine the incident energy available at each specific electrical equipment / device, that employees would be exposed to while “interacting with” said electrical equipment at the facility. The output of the study is a determination and proper labeling of each piece of electrical equipment and what PPE (Personal Protective Equipment) is required for the employee while interacting with it.

### Panelboards

#### Observations:

- A. The existing panelboards are manufactured by Siemens. They appear to be in good working condition.
- B. Existing panelboards have useful life remaining.
- C. Handwritten panelboard directories were present.

#### Recommendations:

- A. Replace any handwritten panelboard directories with typed panel directories.
- B. Any original building panelboards should be replaced and updated during remodel projects.



Typical Panelboard

### Building Generator / Emergency Lighting System

#### Observations:

- A. An emergency generator is not present at this facility.
- B. Emergency egress lighting is accomplished via wall mounted battery units.

#### Recommendations:

- A. Test and review existing foot-candle levels of existing emergency battery egress lighting units. It is very likely the existing units do not provide code required emergency egress light levels and uniformity.
- B. Review all spaces required by code to have emergency egress lighting installed, if existing is not present in these code required spaces, provide emergency battery units to comply.



Emergency Lighting – Battery Unit

# Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

## Light Fixtures and Controls

### Observations:

- A. The classrooms have 2'x4' acrylic lens recessed troffer fixtures, T8 style, 4100K color temperature lamps. There are (2) switches for lighting control of the room. Occupancy sensors are not present in classrooms.
- B. The corridors are mostly comprised of 2'x4' acrylic lens recessed troffer fixtures. The lamps are T8 and 4100K color temperature. Occupancy sensors are not present in corridors.
- C. The majority of the exterior wall pack lighting appears to be converted to LED type lighting.
- D. Remaining spaces do not utilize occupancy sensors.
- E. Exit lights appear to all be LED type.



Corridor Acrylic Light Fixtures



Exterior LED Wall Pack



LED Exit Light

### Recommendations:

- A. For new and remodeled areas, provide LED type lighting.
- B. Provide dual technology type occupancy sensors in spaces not currently controlled with sensors. Provide ultrasonic occupancy sensors in all restrooms and corridor spaces.
- C. Provide dimmer switches in conjunction with new LED lighting in classroom and work type spaces.
- D. Continue to change any existing HID exterior fixtures to LED type.

## Wiring Devices

### Observations:

- A. Most devices appeared to be original to the building construction with moderate signs of wear. Coverage of existing devices may be lacking for today's needs.

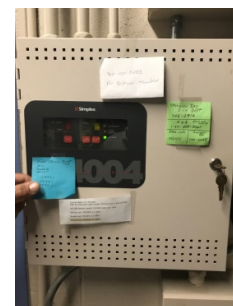
### Recommendations:

- A. Provide tamper resistant receptacles in all spaces that are to be remodeled.
- B. Add additional devices where desired by the needs of the space.
- C. Utilize dimmer switches in conjunction with LED lighting in all classrooms and work type spaces.

## Fire Alarm

### Observations:

- A. The existing fire alarm system is manufactured by Simplex, model 4004.
- B. Existing fire alarm devices may not meet current code required coverages.
- C. There are notification devices including horn/strobes and strobes in the facility. Classrooms have fire alarm strobe devices installed.



Fire Alarm Control  
Panel



**Sturgeon Bay – Sawyer Elementary School  
Sturgeon Bay, WI**

- D. Pull stations are present at exit doors.

**Recommendations:**

- A. It would be recommended to upgrade the existing fire alarm system with future remodels. Provide a code required voice communication fire alarm system with proper coverages.
- B. The IBC 2015 Building Code has been adopted and would require a voice communication type fire alarm system in conjunction with ADA strobes in additions to the building that are separated by an appropriate fire wall construction. A new second fire alarm panel could be added and tied to the existing fire alarm system.
- C. If a remodel project is scheduled, and is more than 50% of the existing space as defined by the IBC, the existing Fire Alarm system devices may need to be upgraded to a new code compliant voice communication type system.



Clock System Equipment

**Clock System**

**Observations:**

- A. The existing master clock system is manufactured by Franklin.
- B. There are analog wired clocks located in offices and teaching spaces.
- C. Clocks were present in corridors.



System Wall Clock

**Recommendations:**

- A. Maintain existing clock system. If remodel projects are scheduled, upgrade existing clock system.
- B. A possible option is to install a central wireless master clock with GPS receiver and utilize 120 volt digital clocks in all corridors, offices, and teaching spaces. This system would have the ability to be interfaced to an upgraded paging system, and work in conjunction with the bell / tone class schedule.
- C. Possibly install digital corridor clocks if a new clock system is installed. New digital corridor clocks have the option of scrolling messages in conjunction with the time reading



Paging System Equipment

**Public Address System**

**Observations:**

- A. The existing public address system is manufactured by Dukane – MCS350 system, and is located in the main office.
- B. There is a combination of recessed ceiling and recessed wall mounted speakers in corridors, classrooms, and work spaces.
- C. Paging is done through the IP telephone system.



Ceiling Paging Speaker



## Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

### Recommendations:

- A. The existing system is functional and can be expanded as necessary. Due to the age of the equipment, upgrading this system should be considered moving forward. To standardize new public address equipment, an option would be the Dukane Carehawk system.

### Ceiling Projector

#### Observations:

- A. Many of the teaching spaces have an overhead projector and smartboard. These projectors are connected to the teacher's desk location via VGA or HDMI cable.

#### Recommendations:

- A. Leave the existing overhead projectors and use them until the end of their life. Then replace with LED touch screen TVs and connect to the building's LAN system.
- B. Today LED TVs are used and wired to the building's LAN system in which the teacher's desk location is also connected to the building's LAN system. Through the LAN system the two are connected together.

### Data System

#### Observations:

- A. There is (1) telecommunications room (MDF) to service the entire school. The MDF is connected to the High School MDF room via fiber optic cable.
- B. The existing data cabling is Cat 5 and Cat 6 cable.
- C. Rack mounted UPS(s) are installed in the MDF rooms.
- D. Wireless Access Points (WAPs) were installed and coverage appeared adequate.
- E. Dedicated grounding system for telecommunications system is not installed.

#### Recommendations:

- A. Additional data wiring can be added to the existing data rack.
- B. Provide vertical and horizontal wire management equipment in MDF room at IT equipment racking.
- C. Provide fire caulking in data closets for any wall or ceiling penetrations of fire rated walls or ceilings.
- D. Create district standard for all equipment and wiring for consistency.
- E. Review dedicated cooling of MDF room with Mechanical report.
- F. Add additional WAPs where needed for full coverage.
- G. Install dedicated grounding system for telecommunications system.



Short Throw Projector



MDF Room



Wireless Access Point

## Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

### Telephone System

#### Observations:

- A. The existing phone system is a VoIP type manufactured by Cisco.
- B. This system is connected to the building paging system where paging can be accomplished.

#### Recommendations:

- A. Leave the existing system as is and expand as required.

### Video Surveillance CCTV System

#### Observations:

- A. The security camera system for this school utilizes Access cameras and Milestone software.
- B. Currently there are interior and exterior cameras installed at this facility.
- C. It was noted that cameras currently installed are IP based. Currently category 5 and 6 cable is routed to the existing IP based cameras.
- D. Exterior and interior coverage of cameras appears to be lacking proper coverage.

#### Recommendations:

- A. The existing system appears to be expandable. A full review of camera coverage should be completed and additional cameras added to complete full coverage.
- B. Continue to utilize and install IP based security cameras.

### Keyless Entry/Access Control System

#### Observations:

- A. The access control system is manufactured by Brivo.
- B. Currently the keyless entry system utilizes mullion mounted card readers in conjunction with electric strikes, and fobs. Only a few selected doors have keyless entry card readers.
- C. Door contacts did not appear to be present.

#### Recommendations:

- A. Expand the existing system to accommodate new entries and additions.
- B. Install IP based door contacts on all doors as remodeling projects or upgrades are scheduled.



Keyless Entry Panel

## Sturgeon Bay – Sawyer Elementary School Sturgeon Bay, WI

### Ai-Phone

#### Observations:

- A. Currently there are AiPhone call-in stations on the wall at the main building entrance to the school. This system is connected to master stations located at the receptionist desk in the main office. This system is connected to the door strike at the main entry for door release and entry to the building.

#### Recommendations:

- A. Leave the existing system as is. If the main office or main entry is relocated, then relocate the existing devices as required and reuse the existing system.
- B. Review all secure entrance areas with Architect.



AiPhone



# Sturgeon Bay Schools – Sawyer Elementary School Sturgeon Bay, WI

## Plumbing System Review:

The following report is the result of a site visit by Ben Nerat of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Water Heaters

Observations:

- A. There is (1) water heater at the elementary school in the mechanical room. The water heater was installed in 2012 and appears to be in good working condition.

Recommendations:

- A. We recommend continued maintenance on the existing water heater.

### Utilities

Observations:

- A. The domestic water system is served by a 4" water service and 3" water meter. The size of this service appears to be adequate for the current domestic water load.
- B. No issues with the water service were reported by the staff.
- C. The sanitary sewer drains by gravity to the city sewers. No sanitary drain and vent issues were reported. The system appears to be in good condition.
- D. The storm sewer drains by gravity to a ditch. No issues were reported about the storm system by the owner. The system appears to be in good condition.



Sawyer Water Meter

Recommendations:

- A. If fire protection were to be required with any future work, a new 6" minimum combination service would be required. x

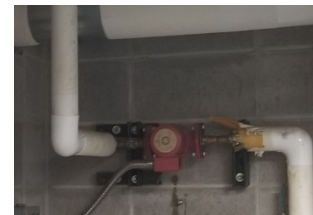
### Pumps and Valves

Observations:

- A. No issues were reported by the owner in regard to the domestic water valves. Valves appeared to be in good working condition.
- B. The hot water return recirculation pump appeared to be in serviceable working condition.

Recommendations:

- A. We recommend adding exercising valves to a regular maintenance schedule. Exercising the valves once or twice a year can extend the life of the valve. If a valve is found to be inoperable, it can be replaced during the off season.



Recirculation Pump

# Sturgeon Bay Schools – Sawyer Elementary School Sturgeon Bay, WI

## Piping and Distribution

### Observations:

- A. The water distribution system appears to be copper. The owner did not report major issues with the system and it appears to be in serviceable working condition. The system is in good condition.
- B. The sanitary drain and vent piping appears to be PVC. The owner did not report major issues with the piping, and the system appears to be in good working condition.
- C. Exposed storm conductor piping was not discovered during the walk-through, but is assumed to be PVC. There is no piped overflow system present in the building. The owner did not report major issues with the piping.

### Recommendations:

- A. We recommend a camera study be conducted on any building drains if any drainage issues present themselves.

## Plumbing Fixtures

### Observations:

- A. Many of the fixtures appear to be original to the building. The owner did not report major issues with the fixtures, and they appear to be in good working condition.
- B. The emergency fixtures appear to be connected to cold water only. The fixtures should be provided with tempered water. The current water distribution system is not adequate to provide hot and cold water at sufficient pressure and flow rates. If these fixtures are relocated or replaced, the water distribution system would need to be evaluated.
- C. The art sinks did not appear to have plaster traps.

### Recommendations:

- A. We recommend installing plaster traps at art sinks.

## Grease Interceptor

### Observations:

- A. This kitchen is mainly used for after-hours events, and no issues were reported with the grease interceptor which serves the 3-pot sink.

### Recommendations:

- A. Continue preventative maintenance.



Restroom



Sink



Art Sinks



# Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

## Electrical System Review:

The following report is the result of a site visit by Scott Pautz of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Main Electric Service

Observations:

- A. This electric service is an 800 amp, 120/208 volt, three-phase, four-wire system. The service switchboard is manufactured by Square D and is located in the mechanical / electrical room at the basement level of the facility.
- B. This electrical service is fed underground via pole mounted Utility transformer. Existing incoming electrical conductors are terminated at the main electrical switchboard I-Line panel. This switchboard does contain a main electrical service disconnect switch.
- C. The highest peak electrical demand on this electrical service in the last 12 months was 106 KW recorded in September of 2018
- D. Electrical meter for this electrical service is located on a street light pole at the exterior of the building.
- E. The Utility was noted as Sturgeon Bay Utilities, Meter # 4620140014.
- F. TVSS (Transient Voltage Surge Suppression) unit was not present at main electrical switchboard.

Recommendations:

- A. Install TVSS unit at main electrical service equipment.
- B. Review mounting height of main electrical service panel. Overall mounting height of branch breakers may exceed NEC requirements.
- C. Conduct the following electrical system studies. Performing these studies will give an in-depth report of the existing electrical system, current issues that may exist, and proper safety labeling of electrical equipment within the facility.
  - Short Circuit Study – This study is an analysis of an electrical system that determines the magnitude of the currents that flow during an electrical fault. Comparing these calculated values against the electrical equipment ratings ensures that the power system is safely protected. It is imperative to have the proper rating of electrical equipment.
  - Coordination Study – This study analyzes the characteristic curves of the fuses or circuit breakers (overcurrent protection devices) and compares them against one another on a log plot. Any areas of miscoordination will be apparent by overlapping curves



Electrical Main  
Panelboard



Exterior Service  
Disconnect Switch



Pole Mounted Utility  
Transformer



Overhead Electrical  
Service



## Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

from various devices. If failure occurs in the electrical system, and a short circuit is created, properly coordinated system overcurrent protection devices will limit the failure to the smallest portion of the electrical system possible.

- Arc Flash Study – An arc flash study is the evaluation of the facilities power system to determine the incident energy available at each specific electrical equipment / device, that employees would be exposed to while “interacting with” said electrical equipment at the facility. The output of the study is a determination and proper labeling of each piece of electrical equipment and what PPE (Personal Protective Equipment) is required for the employee while interacting with it.



Electrical Meter

### Panelboards

#### Observations:

- The existing panelboards are manufactured by Square D. They appear to be in good working condition.
- The majority of the existing electrical panels appear to have been updated and shall remain in place.
- Handwritten panelboard directories where present.

#### Recommendations:

- Replace any hand written panel directories with typed panel directories.
- Any original building panelboards should be replaced and updated during remodel projects.



Typical Panelboard

### Building Generator / Emergency Lighting System

#### Observations:

- An emergency generator is not present at this facility.
- Emergency egress lighting is accomplished via wall mounted battery units.

#### Recommendations:

- Test and review existing foot-candle levels of existing emergency battery egress lighting units. It is very likely the existing units do not provide code required emergency egress light levels and uniformity.
- Review all spaces required by code to have emergency egress lighting installed, if existing is not present in these code required spaces, provide emergency battery units to comply.



Emergency Lighting – Battery Unit

# Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

## Light Fixtures and Controls

### Observations:

- A. The classrooms have 2'x4' acrylic lens recessed troffer fixtures, T8 style, 4100K color temperature lamps. There is a single switch in newer classrooms and (4) switches for older classrooms for lighting control of the room. Occupancy sensors are not present in classrooms.
- B. The corridors are mostly comprised of 2'x4' acrylic lens recessed troffer fixtures. The lamps T8 and 4100K color temperature. Occupancy sensors are not present in corridors.
- C. The gymnasium has HID high bay fixtures. Occupancy sensors are not present.
- D. The majority of the exterior wall pack lighting appears to be converted to LED type lighting.
- E. Remaining spaces do not utilize occupancy sensors.
- F. It was noted a few rooms have LED lighting installed by the Buildings and Grounds staff.
- G. Exit lights appear to all be LED type.
- H. No parking lot pole lighting was present.
- I. Staff noted existing T12 fluorescent lamping is still present in some spaces of school.



Classroom Lighting



LED Wall Pack Light

### Recommendations:

- A. For new and remodeled areas, provide LED type lighting.
- B. Provide dual technology type occupancy sensors in spaces not currently controlled with sensors. Provide ultrasonic occupancy sensors in all restrooms and corridor spaces.
- C. Provide dimmer switches in conjunction with new LED lighting in classroom and work type spaces.
- D. Continue to change any existing HID exterior fixtures to LED type.
- E. Review exterior lighting levels; possibly add additional parking lot lighting.



Exit Light

## Wiring Devices

### Observations:

- A. Most devices appeared to be original to the building construction with moderate signs of wear. Coverage of existing devices may be lacking for today's needs.

### Recommendations:

- A. Provide tamper resistant receptacles in all spaces that are to be remodeled.
- B. Add additional devices where desired by the needs of the space.
- C. Utilize dimmer switches in conjunction with LED lighting in all classrooms and work type spaces.



# Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

## Fire Alarm

### Observations:

- A. The existing fire alarm system is manufactured by EST and is model LSS4/36.
- B. Existing fire alarm devices may not meet current code required coverages and proper mounting heights.
- C. There are notification devices including horn/strobes and strobes in the facility. Classrooms and other required rooms do not have fire alarm notification devices installed.
- D. Pull stations are present at exit doors.



Fire Alarm Control Panel

### Recommendations:

- A. It would be recommended to upgrade the existing fire alarm system with future remodels. Provide a code required voice communication fire alarm system with proper coverages
- B. The IBC 2015 Building Code has been adopted and would require a voice communication type fire alarm system in conjunction with ADA strobes in additions to the building that are separated by an appropriate fire wall construction. A new second fire alarm panel could be added and tied to the existing fire alarm system.
- C. If a remodel project is scheduled, and is more than 50% of the existing space as defined by the IBC, the existing Fire Alarm system devices may need to be upgraded to a new code compliant voice communication type system.

## Clock System

### Observations:

- A. The existing master clock system is manufactured by Franklin.
- B. There are analog wired clocks located in offices and teaching spaces.
- C. Clocks were present in corridors.



Clock System Equipment

### Recommendations:

- A. Maintain existing clock system. If remodel projects are scheduled upgrade existing clock system.
- B. A possible option is to install a central wireless master clock with GPS receiver and utilize 120 volt digital clocks in all corridors, offices, and teaching spaces. This system would have the ability to be interface to an upgraded paging system and work in conjunction with the bell / tone class schedule.
- C. Possibly install digital corridor clocks if a new clock system is installed. New digital corridor clocks have the option of scrolling messages in conjunction with the time reading.



System Wall Clock



# Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

## D. Public Address System

### Observations:

- A. The existing public address system is manufactured by Dukane – MCS350 system, and is located in the main office.
- B. There is a combination of recessed ceiling and recessed wall mounted speakers in corridors, classrooms, and work spaces.
- C. Paging is done through the IP telephone system.

### Recommendations:

- A. The existing system is functional and can be expanded as necessary. Due to the age of the equipment, upgrading this system should be considered moving forward. To standardize new public address equipment, an option would be the Dukane Carehawk system.

## Ceiling Projector

### Observations:

- A. Many of the teaching spaces have an overhead projector and smartboard. These projectors are connected to the teacher’s desk location via VGA or HDMI cable.

### Recommendations:

- A. Leave the existing overhead projectors and use them until the end of their life. Then replace with LED touch screen TVs and connect to the building’s LAN system.
- B. Today LED TVs are used and wired to the building’s LAN system in which the teacher’s desk location is also connected to the building’s LAN system. Through the LAN system the two are connected together.

## Data System

### Observations:

- A. There is (1) telecommunications room (MDF) to service the entire school. The MDF is connected to the High School MDF room via fiber optic cable.
- B. MDF room / space is located on an above ceiling mezzanine.
- C. It was noted that a telecommunication grounding system is not installed in the MDF room.
- D. The existing data cabling is Cat 5 and Cat 6 cable.
- E. Rack mounted UPS(s) are installed in the IDF rooms.
- F. Wireless Access Points (WAPs) were installed and coverage appeared adequate.
- G. Dedicated grounding system for telecommunications system is not installed.



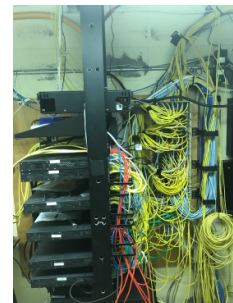
Paging System Equipment



Ceiling Paging Speaker



Short Throw Projector



MDF Room



Wireless Access Point

## Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

### Recommendations:

- A. Additional data wiring can be added to the existing data rack.
- B. Provide vertical and horizontal wire management equipment in MDF room at IT equipment racking.
- C. Current MDF room / space is difficult to access and service and not ideal for installation of telecommunications equipment.
- D. Provide fire caulking in data closets for any wall or ceiling penetrations of fire rated walls or ceilings.
- E. Create district standard for all equipment and wiring for consistency.
- F. Review dedicated cooling of MDF room with Mechanical.
- G. Add additional WAPs where needed for proper coverage.
- H. Install dedicated grounding system for telecommunications system.

### Telephone System

#### Observations:

- A. The existing phone system is a VoIP type manufactured by Cisco.
- B. This system is connected to the building paging system where paging can be accomplished.

#### Recommendations:

- A. Leave the existing system as is and expand as required.

### Video Surveillance CCTV System

#### Observations:

- A. The security camera system for this school utilizes Access cameras and Milestone software.
- B. Currently there are interior and exterior cameras installed at this facility.
- C. It was noted that cameras currently installed are IP based. Currently category 5 and 6 cable is routed to the existing IP based cameras.
- D. Exterior and interior coverage of cameras appears to be lacking proper coverage.

#### Recommendations:

- A. The existing system appears to be expandable. A full review of camera coverage should be completed and additional cameras added to complete full coverage.
- B. Continue to utilize and install IP based security cameras.

### Keyless Entry/Access Control System

#### Observations:

- A. The access control system is manufactured by Brivo.



Keyless Entry System



## Sturgeon Bay – Sunrise Elementary School Sturgeon Bay, WI

- B. Currently the keyless entry system utilizes mullion mounted card readers in conjunction with electric strikes, and fobs. Only a few selected doors have keyless entry card readers.
- C. Door contacts did not appear to be present.

### Recommendations:

- A. Expand the existing system to accommodate new entries and additions.
- B. Install IP based door contacts on all doors as remodeling projects or upgrades are scheduled.

### Ai-Phone

#### Observations:

- A. Currently there is an AiPhone call-in on the wall at the main building entrance to the school. This system is connected to master stations located at the receptionist desk in the main office. This system is connected to the door strike at the main entry for door release and entry to the building.

#### Recommendations:

- A. Leave the existing system as is. If the main office or main entry is relocated, then relocate the existing devices as required and reuse the existing system.
- B. Review all secure entrance areas with Architect.



Card Reader



AiPhone

# Sturgeon Bay Schools – Sunrise Elementary School Sturgeon Bay, WI

## Plumbing System Review:

The following report is the result of a site visit by Ben Nerat of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Water Heaters

Observations:

- A. There are (3) water heaters throughout the elementary school. The water heaters appear to be in fair working condition.

Recommendations:

- A. We recommend continued maintenance on the existing water heaters.

### Utilities

Observations:

- A. The domestic water system appears to be served by a 2" water service and 1-1/2" water meter. No issues with the water service were reported by the staff.
- B. The sanitary sewer drains by gravity to the city sewers. No sanitary drain and vent issues were reported.
- C. The storm sewer drains by gravity to the city sewers. No issues were reported about the storm system by the owner.

Recommendations:

- A. If fire protection were to be required with any future work, a new 6" minimum combination service would be required.

### Pumps and Valves

Observations:

- A. The domestic water valves have been reported to no longer function in the 1954 portion of the building. Where plumbing work is required to take place in this area, the entire building's water system may need to be shut down for service. The system is in critical condition.
- B. No issues were reported with the sump pump in the basement.
- C. The recirculation pump appeared to be in fair working condition.

Recommendations:

- A. We recommend replacing all valves at the fixtures or groups of fixtures with new ball valves in the 1954 area of the building.



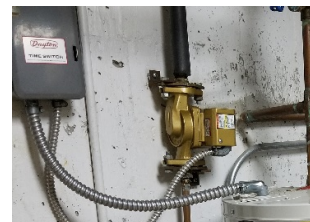
Sunrise Basement  
Water Heater



Sunrise Water Meter



Sump Pump



Recirculation Pump





# Sturgeon Bay Schools – Sunrise Elementary School Sturgeon Bay, WI

## Piping and Distribution

### Observations:

- A. The water distribution system appears to be copper. Based on the age of the water distribution system in the 1954 portion of the building, it is likely near the end of its useful life and in poor condition.
- B. The sanitary drain and vent piping appears to be PVC, cast iron, and galvanized steel piping. The owner did not report major issues with the piping. Based on the age of the sanitary system in the 1954 portion of the building, it is likely near the end of its useful life and in poor condition.
- C. Exposed storm conductor piping was not discovered during the walk-through, but is assumed to be cast iron. There is no overflow system present in the building. The owner did not report major issues with the piping.

### Recommendations:

- A. We recommend replacement of water distribution mains in the 1954 portion of the building during any future renovation project.
- B. We recommend that the sanitary and storm building drains in the original building have a camera study done. The reports from these studies should indicate any potential issues with these systems.
- C. We recommend replacement of sanitary mains in the 1954 portion of the building during any future renovation project.



Water Closet



Sunrise Lavatory



Sunrise Sink

## Plumbing Fixtures

### Observations:

- A. Many of the fixtures appear to be original to the building in the 1954 portion of the building. The owner did not report major issues with the fixtures, and they appear to be well maintained for their age.
- B. Fixtures in the portions of the building from 1978 and newer range from serviceable to good working condition.

### Recommendations:

- A. We recommend replacement of any fixtures involved in future renovations in all areas of the building.

## Grease Interceptor

### Observations:

- A. This school brings in food prepared at the high school; therefore, no grease is created at this school.

### Recommendations:

- A. None.



Sunrise Sink



# Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

## Electrical System Review:

The following report is the result of a site visit by Scott Pautz of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Main Electric Service

Observations:

- A. This electric service is a 400 amp, 120/208 volt, three-phase, four-wire system. The service switchboard is manufactured by Square D and is located in the mechanical / electrical room at the basement level of the facility.
- B. This electrical service is fed underground via pole mounted Utility transformer. Existing incoming electrical conductors are terminated at the main electrical switchboard I-Line panel. This switchboard does contain a main electrical service disconnect switch.
- C. The highest peak electrical demand on this electrical service in the last 12 months was 55 KW recorded in January of 2018.
- D. Electrical meter for this electrical service is located on a street light pole at the exterior of the building.
- E. The Utility was noted as Sturgeon Bay Utilities, Meter # 4620140107.
- F. TVSS (Transient Voltage Surge Suppression) unit was not present at main electrical switchboard.

Recommendations:

- A. Install TVSS unit at main electrical service equipment.
- B. Review mounting height of main electrical service panel. Overall mounting height of branch breakers may exceed NEC requirements.
- C. Conduct the following electrical system studies. Performing these studies will give an in-depth report of the existing electrical system, current issues that may exist, and proper safety labeling of electrical equipment within the facility.
  - Short Circuit Study – This study is an analysis of an electrical system that determines the magnitude of the currents that flow during an electrical fault. Comparing these calculated values against the electrical equipment ratings ensures that the power system is safely protected. It is imperative to have the proper rating of electrical equipment.
  - Coordination Study – This study analyzes the characteristic curves of the fuses or circuit breakers (overcurrent protection devices) and compares them against one another on a log plot. Any areas of miscoordination will be apparent by overlapping curves



Electrical Main Service  
Panelboard



Electrical Main Service  
Disconnect Switch



Pole Mounted Utility  
Transformers



Electrical Meter



## Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

from various devices. If failure occurs in the electrical system, and a short circuit is created, properly coordinated system overcurrent protection devices will limit the failure to the smallest portion of the electrical system possible.

- Arc Flash Study – An arc flash study is the evaluation of the facilities power system to determine the incident energy available at each specific electrical equipment / device, that employees would be exposed to while “interacting with” said electrical equipment at the facility. The output of the study is a determination and proper labeling of each piece of electrical equipment and what PPE (Personal Protective Equipment) is required for the employee while interacting with it.

### Panelboards

#### Observations:

- The existing panelboards are manufactured by Square D. They appear to be in good working condition.
- The majority of the existing electrical panels appear to have been updated and shall remain in place.
- Handwritten panelboard directories where present.

#### Recommendations:

- Replace any hand written panel directories with typed panel directories.
- Any original building panelboards should be replaced and updated during remodel projects.

### Building Generator / Emergency Lighting System

#### Observations:

- An emergency generator is not present at this facility.
- Emergency egress lighting is accomplished via wall mounted battery units.

#### Recommendations:

- Test and review existing foot-candle levels of existing emergency battery egress lighting units. It is very likely the existing units do not provide code required emergency egress light levels and uniformity.
- Review all spaces required by code to have emergency egress lighting installed. If existing is not present in these code required spaces, provide emergency battery units to comply.



Typical Panelboard



Emergency Lighting – Battery Unit

# Sturgeon Bay – Sunset Elementary School

## Sturgeon Bay, WI

### Light Fixtures and Controls

#### Observations:

- A. The classrooms have 2'x4' acrylic lens recessed troffer fixtures, T8 style, 4100K color temperature lamps. There is a single switch in newer classrooms and (4) switches for older classrooms for lighting control of the room. Occupancy sensors are not present in classrooms.
- B. The corridors are mostly comprised of 2'x4' acrylic lens recessed troffer fixtures. The lamps T8 and 4100K color temperature. Occupancy sensors are not present in corridors.
- C. The multipurpose room has LED fixtures. Occupancy sensors are not present.
- D. Remaining spaces do not utilize occupancy sensors.
- E. The majority of the exterior wall pack lighting appears to be converted to LED type lighting.
- F. It was noted a few rooms have LED lighting installed by the Buildings and Grounds staff.
- G. Exit lights appear to all be LED type.
- H. No parking lot pole lighting was present.
- I. Staff noted existing T12 fluorescent lamping is still present in some spaces of school.

#### Recommendations:

- A. For new and remodeled areas, provide LED type lighting.
- B. Provide dual technology type occupancy sensors in spaces not currently controlled with sensors. Provide ultrasonic occupancy sensors in all restrooms and corridor spaces.
- C. Provide dimmer switches in conjunction with new LED lighting in classroom and work type spaces.
- D. Continue to change any existing HID exterior fixtures to LED type.
- E. Review exterior lighting levels; possibly add additional parking lot lighting.

### Wiring Devices

#### Observations:

- A. Most devices appeared to be original to the building construction with moderate signs of wear. Coverage of existing devices may be lacking for today's needs.

#### Recommendations:

- A. Provide tamper resistant receptacles in all spaces that are to be remodeled.
- B. Add additional devices where desired by the needs of the space.
- C. Utilize dimmer switches in conjunction with LED lighting in all classrooms and work type spaces.



Corridor Lighting



Typical Fluorescent Acrylic Lighting



Corridor Lighting



Exterior Canopy Light



Exit Light





# Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

## Fire Alarm

### Observations:

- A. The existing fire alarm system is manufactured by ESL 1500 series.
- B. Existing fire alarm devices may not meet current code required coverages and proper mounting heights.
- C. There are notification devices including horn/strobes and strobes in the facility. Classrooms and other required rooms do not have fire alarm notification devices installed.
- D. Pull stations are present at exit doors.



Fire Alarm Control Panel

### Recommendations:

- A. It would be recommended to upgrade the existing fire alarm system with future remodels. Provide a code required voice communication fire alarm system with proper coverages.
- B. The IBC 2015 Building Code has been adopted and would require a voice communication type fire alarm system in conjunction with ADA strobes in additions to the building that are separated by an appropriate fire wall construction. A new second fire alarm panel could be added and tied to the existing fire alarm system.
- C. If a remodel project is scheduled, and is more than 50% of the existing space as defined by the IBC, the existing Fire Alarm system devices may need to be upgraded to a new code compliant voice communication type system.

## Clock System

### Observations:

- A. The existing master clock system is manufactured by Franklin.
- B. There are analog wired clocks located in offices and teaching spaces.
- C. Clocks were present in corridors.



Clock System

### Recommendations:

- A. Maintain existing clock system. If remodel projects are scheduled, upgrade existing clock system.
- B. A possible option is to install a central wireless master clock with GPS receiver and utilize 120 volt digital clocks in all corridors, offices, and teaching spaces. This system would have the ability to be interfaced to an upgraded paging system and work in conjunction with the bell / tone class schedule.
- C. Possibly install digital corridor clocks if a new clock system is installed. New digital corridor clocks have the option of scrolling messages in conjunction with the time reading.



System Wall Clock

# Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

## Public Address System

### Observations:

- A. The existing public address system is manufactured by Dukane – MCS350 system, and is located in the main office.
- B. There is a combination of recessed ceiling and recessed wall mounted speakers in corridors, classrooms, and work spaces.
- C. Paging is done through the IP telephone system.

### Recommendations:

- A. The existing system is functional and can be expanded as necessary. Due to the age of the equipment, upgrading this system should be considered moving forward. To standardize new public address equipment, an option would be the Dukane Carehawk system.



Paging System Equipment



Ceiling Paging Speaker

## Ceiling Projector

### Observations:

- A. Many of the teaching spaces have an overhead projector and smartboard. These projectors are connected to the teacher's desk location via VGA or HDMI cable.

### Recommendations:

- A. Leave the existing overhead projectors and use them until the end of their life. Then replace with LED touch screen TVs and connect to the building's LAN system.
- B. Today LED TVs are used and wired to the building's LAN system in which the teacher's desk location is also connected to the building's LAN system. Through the LAN system the two are connected together.

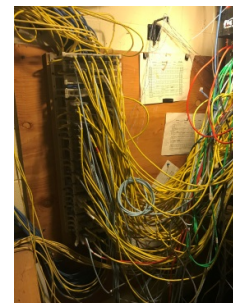


Short Throw Projector

## Data System

### Observations:

- A. There is (1) telecommunications room (MDF) to service the entire school. The MDF is connected to the High School MDF room via fiber optic cable.
- B. MDF room / space is located on an above ceiling mezzanine.
- C. It was noted that a telecommunication grounding system is not installed in the MDF room.
- D. The existing data cabling is Cat 5 and Cat 6 cable.
- E. Rack mounted UPS(s) are installed in the IDF rooms.
- F. Wireless Access Points (WAPs) were installed and coverage appeared adequate.
- G. Dedicated grounding system for telecommunications system is installed.



MDF Room



Wireless Access Point

## Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

### Recommendations:

- A. Additional data wiring can be added to the existing data rack.
- B. Provide vertical and horizontal wire management equipment in MDF room at IT equipment racking.
- C. Current MDF room / space is difficult to access and service and not ideal for installation of telecommunications equipment.
- D. Provide fire caulking in data closets for any wall or ceiling penetrations of fire rated walls or ceilings.
- E. Create district standard for all equipment and wiring for consistency.
- F. Review dedicated cooling of MDF room with Mechanical.
- G. Add additional WAP's where needed for proper coverage.

### Telephone System

#### Observations:

- A. The existing phone system is a VoIP type manufactured by Cisco.
- B. This system is connected to the building paging system where paging can be accomplished.

#### Recommendations:

- A. Leave the existing system as is and expand as required.

### Video Surveillance CCTV System

#### Observations:

- A. The security camera system for this school utilizes Access cameras and Milestone software.
- B. Currently there are interior and exterior cameras installed at this facility.
- C. It was noted that cameras currently installed are IP based. Currently category 5 and 6 cable is routed to the existing IP based cameras.
- D. Exterior and Interior coverage of cameras appears to be lacking proper coverage.

#### Recommendations:

- A. The existing system appears to be expandable. A full review of camera coverage should be completed and additional cameras added to complete full coverage.
- B. Continue to utilize and install IP based security cameras.

### Keyless Entry/Access Control System

#### Observations:

- A. The access control system is manufactured by Brivo.



Keyless Entry System

## Sturgeon Bay – Sunset Elementary School Sturgeon Bay, WI

- B. Currently the keyless entry system utilizes mullion mounted card readers in conjunction with electric strikes, and fobs. Only a few selected doors have keyless entry card readers.
- C. Door contacts did not appear to be present.

### Recommendations:

- A. Expand the existing system to accommodate new entries and additions.
- B. Install IP based door contacts on all doors as remodeling projects or upgrades are scheduled.

### Ai-Phone

#### Observations:

- A. Currently there is an AiPhone call-in on the wall at the main building entrance to the school. This system is connected to master stations located at the receptionist desk in the main office. This system is connected to the door strike at the main entry for door release and entry to the building.

#### Recommendations:

- A. Leave the existing system as is. If the main office or main entry is relocated, then relocate the existing devices as required and reuse the existing system.
- B. Review all secure entrance areas with Architect.



Card Reader



AiPhone



# Sturgeon Bay Schools – Sunset Elementary School

## Sturgeon Bay, WI

### Plumbing System Review:

The following report is the result of a site visit by Ben Nerat of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Water Heaters

Observations:

- A. There are (3) water heaters throughout the elementary school. The water heaters appear to be in fair working condition.

Recommendations:

- A. We recommend continued maintenance on the existing water heaters.

### Utilities

Observations:

- A. The domestic water system appears to be served by a 2" water service and 1-1/2" water meter. No issues with the water service were reported by the staff.
- B. The sanitary sewer drains by gravity to the city sewers. No sanitary drain and vent issues were reported.

Recommendations:

- A. If fire protection were to be required with any future work, a new 6" minimum combination service would be required.

### Pumps and Valves

Observations:

- A. The domestic water valves have been reported to no longer function in the 1954 portion of the building. Where plumbing work is required to take place in this area, the entire building's water system may need to be shut down for service. The system is in critical condition.
- B. No issues were reported with the sump pump in the basement.
- C. The recirculation pump appeared to be in fair working condition.

Recommendations:

- A. We recommend replacing all valves at the fixtures or groups of fixtures with new ball valves in the 1954 area of the building.

### Piping and Distribution

Observations:

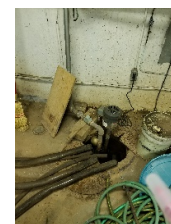
- A. The water distribution system appears to be copper. Based on the age of the water distribution system in the 1954 portion of the building, it is likely near the end of its useful life and in poor condition.



Sunset Basement  
Water Heater



Sump Pump - Addition



Sump Pump - 1954



## Sturgeon Bay Schools – Sunset Elementary School Sturgeon Bay, WI

- B. The sanitary drain and vent piping appears to be PVC, cast iron, and galvanized steel piping. The owner did not report major issues with the piping. Based on the age of the sanitary system in the 1954 portion of the building, it is likely near the end of its useful life and in poor condition.
- C. Storm water is displaced from roof with an exterior gutter system.

### Recommendations:

- A. We recommend replacement of water distribution mains in the 1954 portion of the building during any future renovation project.
- B. We recommend that the sanitary building drains in the original building have a camera study done. The reports from these studies should indicate any potential issues with these systems.
- C. We recommend replacement of sanitary mains in the 1954 portion of the building during any future renovation project.

### Plumbing Fixtures

#### Observations:

- A. Many of the fixtures appear to be original to the building in the 1954 portion of the building. The owner did not report major issues with the fixtures, and they appear to be well maintained for their age.
- B. Fixtures in the portions of the building from 1978 and newer range from serviceable to good working condition.

#### Recommendations:

- A. We recommend replacement of any fixtures involved in future renovations in all areas of the building.

### Grease Interceptor

#### Observations:

- A. This school brings in food prepared at the high school; therefore, no grease is created at this school.

#### Recommendations:

- A. None.



Water Closet



Sunset Lavatory



Sunset Urinals



Sunset Water Cool

# Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

## Electrical System Review:

The following report is the result of a site visit by Scott Pautz of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

## Main Electric Service

Observations:

- A. This electric service is believed to be a 1000 amp (this could not officially be verified – panel nameplate missing), 277/480 volt, three-phase, four-wire system. The service switchboard is manufactured by Westinghouse and is located in the mechanical / electrical room at the first level of the facility.
- B. This electrical service is fed underground via pad mounted Utility transformer. Existing incoming electrical conductors are terminated at the main electrical switchboard panel. This switchboard does contain a main electrical service disconnect switch.
- C. The highest peak electrical demand on this electrical service in the last 12 months was 159 KW recorded in September of 2018.
- D. Electrical meter for this electrical service is located at the Utility transformer.
- E. The Utility was noted as Sturgeon Bay Utilities, Meter # 4620130038.
- F. TVSS (Transient Voltage Surge Suppression) unit was not present at main electrical switchboard.

Recommendations:

- A. The original interior building switchboard appears to be original equipment to the building and should be scheduled for replacement.
- B. Install TVSS unit at main electrical service equipment.
- C. Conduct the following electrical system studies. Performing these studies will give an in-depth report of the existing electrical system, current issues that may exist, and proper safety labeling of electrical equipment within the facility.
  - Short Circuit Study – This study is an analysis of an electrical system that determines the magnitude of the currents that flow during an electrical fault. Comparing these calculated values against the electrical equipment ratings ensures that the power system is safely protected. It is imperative to have the proper rating of electrical equipment.
  - Coordination Study – This study analyzes the characteristic curves of the fuses or circuit breakers (overcurrent protection devices) and compares them against one another on a log plot. Any areas of



Electrical Main Switchboard



Exterior Service Disconnect



Utility Transformer



Electrical Meter



Roof Mounted Transformer



## Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

miscoordination will be apparent by overlapping curves from various devices. If failure occurs in the electrical system, and a short circuit is created, properly coordinated system overcurrent protection devices will limit the failure to the smallest portion of the electrical system possible.

- Arc Flash Study – An arc flash study is the evaluation of the facilities power system to determine the incident energy available at each specific electrical equipment / device, that employees would be exposed to while “interacting with” said electrical equipment at the facility. The output of the study is a determination and proper labeling of each piece of electrical equipment and what PPE (Personal Protective Equipment) is required for the employee while interacting with it.

### Panelboards

#### Observations:

- A. The existing panelboards are manufactured by Square D and Westinghouse. Several panelboards are of older age and appear to be original to the construction of the building.
- B. Some original panelboards appear to have limited spare breaker space.
- C. Handwritten panelboard directories where present on many panelboards.

#### Recommendations:

- A. Replace existing Westinghouse, or original panelboards in areas of remodel.
- B. Replace any handwritten panel directories with typed panel directories. Possibly trace existing circuits for accuracy of new typed panel directories

### Building Generator / Emergency Lighting System

#### Observations:

- A. A natural gas emergency generator is present for this facility. This emergency generator services both the High School and Middle School buildings. It is installed inside the building in a dedicated generator room.
- B. The emergency generator is manufactured by Kohler and is rated at 45 KW, 277/480v, 3 phase unit. This unit is approximately 10 years old.
- C. One (1) automatic transfer switch (ATS) is present for each school and is served via the emergency generator. Each ATS appears to serve Life Safety type loads (emergency egress lighting).



Panelboard - Westinghouse



Emergency Generator  
(HS and MS)



LED Exit Light



## Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

- D. Emergency egress exterior lighting is not present at the exterior of exit doors.

### Recommendations:

- A. Existing emergency generator can remain, continue to exercise equipment.
- B. If additional load is added, or an additional ATS is added to serve Non-Life Safety type loads, the existing emergency generator may need to be replaced / increased in size. Possibly a second emergency generator added to serve either Life Safety or Non-Life Safety loads is an option.
- C. Remove all Non-Life Safety type loads from the emergency Life Safety system. If desired to have mechanical equipment, cooler / freezer, IT data type loads, provide a second ATS to service these non-life safety type loads. Code compliant systems require the separation of Life Safety and Non-Life Safety loads via ATSs.
- D. Replace any non LED type exit lights with new LED exit lights
- E. Provide emergency egress exterior lighting at all exit doors.
- F. It is possible that existing interior emergency egress lighting levels do not meet current code. A review of light levels for interior emergency egress lighting should be reviewed.

### Light Fixtures and Controls

#### Observations:

- A. The classrooms have 2'x4' acrylic lens recessed troffer fixtures, T8 style, 4100K color temperature lamps. There is a single switch for lighting control of the room. Occupancy sensors are present in some classrooms.
- B. The corridors have 2'x4' acrylic lens recessed troffer fixtures. The lamps are T8 style with 4100K color temperature. A lighting control system is in place for the corridors.
- C. The gymnasium has fluorescent high bay fixtures. The lamps are T8 fluorescent. Occupancy sensors are not present.
- D. Exterior wall lighting and parking lot lighting is being converted to LED type and controlled through the BAS system or the existing timeclock system. Some HID fixtures are still present.
- E. Remaining spaces do not utilize occupancy sensors.
- F. Note some interior areas are currently being upgraded to flat panel LED lights by the Building and Grounds staff.
- G. It was noted some T12 fluorescent lampping is still present in the school.



Corridor Lighting



Exterior Wall Pack

#### Recommendations:

- A. For new and remodeled areas, provide LED type lighting.



Parking Lot Pole  
Lighting



## Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

- B. Provide dual technology type occupancy sensors in spaces not currently controlled with sensors. Provide ultrasonic occupancy sensors in all restrooms and corridor spaces.
- C. Provide dimmer switches in conjunction with new LED lighting in classroom and work type spaces.
- D. Continue to change any existing HID exterior fixtures to LED type.

### Wiring Devices

#### Observations:

- A. Most devices appeared to be original to the building construction with moderate signs of wear. Coverage of existing devices may be lacking for today's needs.

#### Recommendations:

- A. Provide tamper resistant receptacles in all spaces that are to be remodeled.
- B. Add additional devices where desired by the needs of the space.
- C. Utilize dimmer switches in conjunction with LED lighting in all classrooms and work type spaces.
- D. Replace original devices in areas of remodels due to the age of devices.

### Fire Alarm

#### Observations:

- A. The existing fire alarm system is an addressable type system. This system is in good working condition and the head end equipment was recently upgraded to an EST panel. The new fire alarm panel appears to be voice communication type compatible for future device upgrades.
- B. The fire alarm system serves both the High School and the Middle School.
- C. There are horn/strobes and strobes throughout the facility.
- D. Existing fire alarm devices may not meet current code required coverages and proper mounting heights.

#### Recommendations:

- A. The existing fire alarm system can be utilized for remodeling projects if not required to upgrade by remodel triggers in current codes.
- B. The IBC 2015 Building Code has been adopted and would require a voice communication type fire alarm system in conjunction with ADA strobes in additions to the building that are separated by an appropriate fire wall construction. A new second fire alarm panel could be added and tied to the existing fire alarm system.



Fire Alarm Control Panel (HS & MS)



Fire Alarm Annunciator Panel



## Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

- C. If a remodel project is scheduled, and is more than 50% of the existing space as defined by the IBC, the existing Fire Alarm system devices may need to be upgraded to a new code compliant voice communication type system.

### Clock System

#### Observations:

- A. The existing master clock system is a standalone 24 volt system.
- B. There are analog wired clocks located in offices, and teaching spaces.
- C. Clocks were present in corridors.
- D. It was noted when clocks are failing the staff is replacing them with American Time clocks.



Combination Wall Clock and  
Paging Speaker

#### Recommendations:

- A. Upgrade existing clock system.
- B. A possible option is to install a central wireless master clock with GPS receiver and utilizes 120 volt digital clocks in all corridors, offices, and teaching spaces. This system would have the ability to be interfaced to an upgraded paging system, and work in conjunction with the bell / tone class schedule.
- C. Possibly install digital corridor clocks if a new clock system is installed. New digital corridor clocks have the option of scrolling messages in conjunction with the time reading

### Public Address System

#### Observations:

- A. The existing public address system is manufactured by Dukane – Star Call Paging system, and is located in the main office.
- B. This paging system serves both the High School and the Middle School.
- C. There is a combination of recessed ceiling and recessed wall mounted speakers in corridors, classrooms, and work spaces.
- D. Paging is done through the IP telephone system.



Ceiling Paging Speaker

#### Recommendations:

- A. The existing system is functional and can be expanded as necessary. Due to the age of the equipment, upgrading this system should be considered moving forward. To standardize new public address equipment, an option would be the Dukane Carehawk system.

### Ceiling Projector

#### Observations:

- A. Many of the teaching spaces have an overhead projector and smartboard. It was noted that some rooms have wall mounted TV in lieu of projector and smartboard installation. These



Ceiling Projector



## Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

projectors and TV's are connected to the teacher's desk location via VGA or HDMI cable.

### Recommendations:

- A. Leave the existing overhead projectors and use them until the end of their life. Then replace with LED touch screen TV's and connect to the building's LAN system.
- B. Today LED TVs are used and wired to the building's LAN system in which the teacher's desk location is also connected to the building's LAN system. Through the LAN system the two are connected together.

### Data System

#### Observations:

- A. There are two telecommunications rooms (IDF's) in the Middle School that are connected to the High School main telecommunication room (MDF) via fiber optic cable
- B. It was noted that a telecommunication grounding system is installed for the IDF rooms.
- C. The existing data cabling is Cat 5 and Cat 6 cable.
- D. Rack mounted UPSs are installed in the IDF rooms.
- E. Wireless Access Points (WAPs) were installed and coverage appeared adequate.



IDF Room

#### Recommendations:

- A. Additional data wiring can be added to the existing data racks.
- B. Provide vertical and horizontal wire management equipment in MDF and IDF rooms at IT equipment racking.
- C. Provide fire caulking in data closets for any wall or ceiling penetrations of fire rated walls or ceilings.
- D. Create district standard for all equipment and wiring for consistency.
- E. Review dedicated cooling of IDF rooms with Mechanical.
- F. Add additional WAPs where needed for additional coverage.

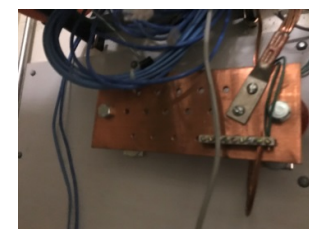


Wireless Access Point

### Telephone System

#### Observations:

- A. The existing phone system is a VoIP type manufactured by Cisco.
- B. This system is connected to the building paging system where paging can be accomplished.



Telecommunications Grounding System

#### Recommendations:

- A. Leave the existing system as is and expand as required.



Security Camera

# Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

## Video Surveillance CCTV System

### Observations:

- A. The security camera system for the Middle School utilizes Access cameras and Milestone software.
- B. Currently there are interior and exterior cameras installed at this facility.
- C. It was noted that cameras currently installed are IP based. Currently category 5 and 6 cable is routed to the existing IP based cameras.
- D. Exterior and interior coverage of cameras appears to be appropriate.

### Recommendations:

- A. The existing system appears to be expandable. A full review of camera coverage should be completed and additional cameras to complete full coverage may be required.
- B. Continue to utilize and install IP based security cameras.

## Keyless Entry/Access Control System

### Observations:

- A. The access control system is manufactured by Brivo.
- B. Currently the keyless entry system utilizes mullion mounted card readers in conjunction with electric strikes, and fobs. Only a few selected doors have keyless entry card readers.
- C. Door contacts did not appear to be present.

### Recommendations:

- A. Expand the existing system to accommodate new entries and additions.
- B. Install IP based door contacts on all doors as remodeling projects or upgrades are scheduled.

## Ai-Phone

### Observations:

- A. Currently there is an AiPhone call-in station mounted on the wall at the main building entrance to the Middle School. This system is connected to master stations located at the receptionist desk in the main office. This system is connected to the door strike at the main entry for door release and entry to the building.

### Recommendations:

- A. Leave the existing system as is. If the main office or main entry is relocated, then relocate the existing devices as required and reuse the existing system.
- B. Review all secure entrance areas with Architect.



Keyless Entry Panel



Card Reader



AiPhone



# Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

## Plumbing System Review:

The following report is the result of a site visit by Ben Nerat of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### **Water Heaters**

Observations:

- A. There is (1) water heater at the middle school in the mechanical room. The water heater was installed in 2004 and is nearing the end of its expected life.

Recommendations:

- A. We recommend continued maintenance on the existing water heater.

### **Utilities**

Observations:

- A. The domestic water system is served by a 4" water service and 4" water meter. The size of this service appears to be adequate for the current domestic water load.
- B. No issues with the water service were reported by the staff.
- C. The sanitary sewer drains by gravity to the city sewers. No sanitary drain and vent issues were reported. The system appears to be in fair condition.
- D. The storm sewer drains by gravity to the city sewers. No issues were reported about the storm system by the owner. The system appears to be in fair condition.

Recommendations:

- A. If fire protection were to be required with any future work, a new 6" minimum combination service would be required.

### **Pumps and Valves**

Observations:

- A. The domestic water valves have been reported to no longer function. Where plumbing work is required to take place, the entire building's water system may need to be shut down for service.

Recommendations:

- A. We recommend replacing all valves at fixtures or groups of fixtures with new ball valves due to the critical condition.



MS Water Heaters



MS Water Meter



# Sturgeon Bay Schools – Middle School Sturgeon Bay, WI

## Piping and Distribution

### Observations:

- A. The water distribution system appears to be copper. The owner did not report major issues with the system and it appears to be in serviceable working condition. The system is in fair condition.
- B. The sanitary drain and vent piping appear to be in serviceable condition. The owner did not report major issues with the piping.
- C. Exposed storm conductor piping was not discovered during the walk-through but is assumed to be cast iron. There is no overflow system present in the building. The owner did not report major issues with the piping.
- D. There is a chemical waste system in place and appears to be in serviceable working condition. The acid basin is between the MS locker rooms. The science room fixtures have glass traps. The piping just downstream of the traps is metallic, but the material type is unclear. The owner did not report major issues with the piping, and the piping appeared to be in good condition.
- E. Roof drain covers were reported to be plastic and would often become removed from the drain location.

### Recommendations:

- A. We recommend replacement of water distribution piping involved in any future renovation project.
- B. We recommend replacement of sanitary piping involved in any future renovation project.
- C. We recommend replacement of all roof drain covers with cast iron covers.

## Plumbing Fixtures

### Observations:

- A. Many of the fixtures appear to be original to the building. The owner did not report major issues with the fixtures, and they appear to be well maintained for their age.
- B. Water coolers are in process of being replaced by the owner.
- C. The emergency fixtures appear to be connected to cold water only. The fixtures should be provided with tempered water. The current water distribution system is not adequate to provide hot and cold water at sufficient pressure and flow rates. If these fixtures are relocated or replaced, the water distribution system would need to be evaluated.
- D. Although well maintained, all fixtures appear to be in poor condition.

### Recommendations:

- A. We recommend replacement of any fixtures involved in future renovations.



MS Water Closet

MS Urinals



MS Water Cooler



MS Lab Sink



MS Shop Lavatory

## **Sturgeon Bay Schools – Middle School Sturgeon Bay, WI**

### **Grease Interceptor**

#### Observations:

- A. This school brings in food prepared at the high school; therefore, no grease is created at this school.

#### Recommendations:

- A. None.



# Sturgeon Bay Schools – High School Sturgeon Bay, WI

## Electrical System Review:

The following report is the result of a site visit by Scott Pautz of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Main Electric Service

Observations:

- A. This electric service is a 3000 amp, 277/480 volt, three-phase, four-wire system. The service switchboard is manufactured by Westinghouse and is located in the mechanical / electrical room at the first level of the facility.
- B. An exterior main service disconnect has been recently installed adjacent to the Utility transformer, taking the place of the existing main service disconnect that was removed in the main electrical switchboard.
- C. This electrical service is fed underground via pad mounted Utility transformer. Existing incoming electrical conductors are terminated at the new exterior main service disconnect switch. This switch then serves the original building main switchboard inside the building via electrical bus duct.
- D. The highest peak electrical demand on this electrical service in the last 12 months was 336 KW recorded in September of 2018.
- E. Electrical meter for this electrical service is located at the Utility transformer.
- F. The Utility was noted as Sturgeon Bay Utilities, Meter # 4620140121.
- G. TVSS (Transient Voltage Surge Suppression) unit was not present at main electrical switchboard.

Recommendations:

- A. The existing service ampacity for this facility is adequate, and existing exterior electrical service disconnect equipment can remain. The original interior building switchboard appears to be original equipment to the building and should be scheduled for replacement.
- B. Install TVSS unit at main electrical service equipment.
- C. Conduct the following electrical system studies. Performing these studies will give an in-depth report of the existing electrical system, current issues that may exist, and proper safety labeling of electrical equipment within the facility.
  - Short Circuit Study – This study is an analysis of an electrical system that determines the magnitude of the currents that flow during an electrical fault. Comparing these calculated values against the electrical equipment ratings ensures that the power system is safely



Electrical Main  
Switchboard



Exterior Service  
Disconnect



Utility Transformer



Electrical Meter





## Sturgeon Bay Schools – High School Sturgeon Bay, WI

protected. It is imperative to have the proper rating of electrical equipment.

- Coordination Study – This study analyzes the characteristic curves of the fuses or circuit breakers (overcurrent protection devices) and compares them against one another on a log plot. Any areas of miscoordination will be apparent by overlapping curves from various devices. If failure occurs in the electrical system, and a short circuit is created, properly coordinated system overcurrent protection devices will limit the failure to the smallest portion of the electrical system possible.
- Arc Flash Study – An arc flash study is the evaluation of the facilities power system to determine the incident energy available at each specific electrical equipment / device, that employees would be exposed to while “interacting with” said electrical equipment at the facility. The output of the study is a determination and proper labeling of each piece of electrical equipment and what PPE (Personal Protective Equipment) is required for the employee while interacting with it.

### Panelboards

#### Observations:

- A. The existing panelboards are manufactured by Square D and Westinghouse. The Westinghouse panelboards are of older age and appear original to the construction of the building.
- B. Some original panelboards appear to have limited spare breaker space.
- C. Handwritten panelboard directories where present on many panelboards.

#### Recommendations:

- A. Replace existing Westinghouse, or original panelboards in areas of remodel.
- B. Replace any handwritten panel directories with typed panel directories. Possibly trace existing circuits for accuracy of new typed panel directories

### Building Generator / Emergency Lighting System

#### Observations:

- A. A natural gas emergency generator is present for this facility. This emergency generator services both the High School and Middle School. It is installed inside the building in a dedicated generator room.



Electrical Panel -  
Westinghouse



Emergency Generator  
(HS and MS)

**Sturgeon Bay Schools – High School  
Sturgeon Bay, WI**

- B. The emergency generator is manufactured by Kohler and is rated at 45 KW, 277/480v, 3 phase unit. This unit is approximately 10 years old.
- C. One (1) automatic transfer switch (ATS) is present for each school and is served via the emergency generator. Each ATS appears to serve Life Safety type loads (emergency egress lighting).
- D. It was noted that the main telecommunications room may have receptacles circuited to the emergency generator. Life Safety type loads (emergency egress lighting) and Non-Life Safety type Loads (Data equipment, mechanical equipment, etc) may not be served from the same automatic transfer switch (ATS). If both type loads are desired to be on emergency generator power, they must be circuited to a dedicated ATS for each branch of emergency power. A Non-Life Safety ATS does not appear present in the school.
- E. Emergency egress exterior lighting is not present at the exterior of exit doors.



High School Automatic Transfer Switch



Receptacle on EM – MDF Room

**Recommendations:**

- A. Existing emergency generator can remain, continue to exercise equipment.
- B. If additional load is added, or an additional ATS is added to serve Non-Life Safety type loads, the existing emergency generator may need to be replaced / increased in size. Possibly, a second emergency generator can be added to serve either Life Safety or Non-Life Safety loads as an option.
- C. Remove all Non-Life Safety type loads from the emergency Life Safety system. If desired to have mechanical equipment, cooler / freezer, IT data type loads, provide a second automatic transfer switch (ATS) to service these non-life safety type loads. Code compliant systems require the separation of Life Safety and Non-Life Safety loads via ATS(s).
- D. Replace any non-LED type exit lights with new LED exit lights
- E. Provide emergency egress exterior lighting at all exit doors.
- F. It is possible that existing interior emergency egress lighting levels do not meet current code. A review of light levels for interior emergency egress lighting should be reviewed.



LED Exit Light



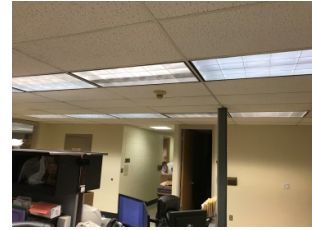
Classroom Lighting

# Sturgeon Bay Schools – High School Sturgeon Bay, WI

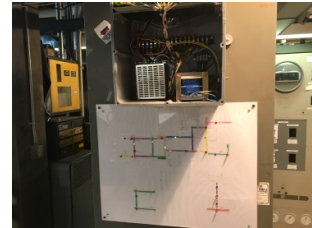
## Light Fixtures and Controls

### Observations:

- A. The classrooms have 2'x4' acrylic lens recessed troffer fixtures, T8 style, and 4100K color temperature lamps. There is a single switch for lighting control of the room. Occupancy sensors are present in classrooms.
- B. The main offices have 2'x4' parabolic recessed troffer fixtures. The lamps are T8 and 4100K color temperature. There are no occupancy sensors.
- C. The corridors have 2'x4' acrylic lens recessed troffer fixtures. The lamps are T8 and 4100K color temperature. A lighting control system is in place for the corridors.
- D. The gymnasium has fluorescent high bay fixtures. The lamps are T8 fluorescent. Occupancy sensors are not present.
- E. Exterior wall lighting and parking lot lighting is being converted to LED type and controlled through the BAS system or the existing timeclock system. Some HID fixtures are still present.
- F. Remaining spaces do not utilize occupancy sensors.
- G. Note some interior areas are currently being upgraded to flat panel LED lights by the B & G staff.
- H. It was noted some T12 fluorescent lamping is still present in the school.



HS Office Lighting



Lighting Control System –  
Corridors – HS & MS

### Recommendations:

- A. For new and remodeled areas, provide LED type lighting.
- B. Provide dual technology type occupancy sensors in spaces not currently controlled with sensors. Provide ultrasonic occupancy sensors in all restrooms and corridor spaces.
- C. Provide dimmer switches in conjunction with new LED lighting in classroom and work type spaces.
- D. Continue to change any existing HID exterior fixtures to LED type.

## Wiring Devices

### Observations:

- A. Most devices appeared to be original to the building construction with moderate signs of wear. Coverage of existing devices may be lacking for today's needs.

### Recommendations:

- A. Provide tamper resistant receptacles in all spaces that are to be remodeled.
- B. Add additional devices where desired by the needs of the space.
- C. Utilize dimmer switches in conjunction with LED lighting in all classrooms and work type spaces.





## Sturgeon Bay Schools – High School Sturgeon Bay, WI

- D. Replace original devices in areas of remodels due to the age of devices.

### Fire Alarm

#### Observations:

- A. The existing fire alarm system is an addressable type system. This system is in good working condition and the head end equipment was recently upgraded to an EST panel. The new fire alarm panel appears to be voice communication type compatible for future device upgrades.
- B. The fire alarm system serves both the High School and the Middle School.
- C. There are horn/strobes and strobes throughout the facility.
- D. Existing fire alarm devices may not meet current code required coverages and proper mounting heights.



Fire Alarm Control  
Panel (HS & MS)

#### Recommendations:

- A. The existing fire alarm system can be utilized for remodeling projects if not required to upgrade by remodel triggers in current codes.
- B. The IBC 2015 Building Code has been adopted and would require a voice communication type fire alarm system in conjunction with ADA strobes in additions to the building that are separated by an appropriate fire wall construction. A new second fire alarm panel could be added and tied to the existing fire alarm system.
- C. If a remodel project is scheduled, and is more than 50% of the existing space as defined by the IBC, the existing Fire Alarm system devices may need to be upgraded to a new code compliant voice communication type system.

### Clock System

#### Observations:

- A. The existing master clock system is a standalone 12 volt system.
- B. There are analog wired clocks located in offices, teaching spaces, and corridors.
- C. Clocks were present in corridors.
- D. It was noted when clocks are failing the staff is replacing them with American Time clocks.



Clock System  
Equipment

#### Recommendations:

- A. Upgrade existing clock system.
- B. A possible option is to install a central wireless master clock with GPS receiver and utilize 120 volt digital clocks in all corridors, offices, and teaching spaces. This system would have the ability to be interfaced to an upgraded paging system, and work in conjunction with the bell / tone class schedule.



Combination Wall Clock and  
Paging Speaker

## Sturgeon Bay Schools – High School Sturgeon Bay, WI

- C. Possibly install digital corridor clocks if a new clock system is installed. New digital corridor clocks have the option of scrolling messages in conjunction with the time reading

### Public Address System

#### Observations:

- A. The existing public address system is manufactured by Dukane – Star Call Paging system, and is located in the main office.
- B. This paging system serves both the High School and the Middle School.
- C. There is a combination of recessed ceiling and recessed wall mounted speakers in corridors, classrooms, and work spaces.
- D. Paging is done through the IP telephone system.

#### Recommendations:

- A. The existing system is functional and can be expanded as necessary. Due to the age of the equipment, upgrading this system should be considered moving forward. To standardize new public address equipment, an option would be the Dukane Carehawk system.



Paging Headend  
Equipment

### Ceiling Projector

#### Observations:

- A. Teaching spaces have a wall mounted TV or overhead projector and smartboard. These projectors and TV's are connected to the teacher's desk location via VGA or HDMI cable.



Classroom Ceiling Projector

#### Recommendations:

- A. Leave the existing overhead projectors and use them until the end of their life. Then replace with LED touch screen TV's and connect to the building's LAN system.
- B. Today LED TVs are used and wired to the building's LAN system in which the teacher's desk location is also connected to the building's LAN system. Through the LAN system the two are connected together.

### Data System

#### Observations:

- A. There is a main telecommunication room (MDF) and (3) additional telecommunication rooms (IDF's) that serve the High School (1) and Middle School (2) in this facility. Each remote data closet is connected to the main closet via multi strand fiber optic cable. The MDF is located on the first floor.
- B. The MDF is the central location for the entire district. Existing district schools are connected via fiber optic cable to the main data room at the High School.



MDF Room



IDF Room

## Sturgeon Bay Schools – High School Sturgeon Bay, WI

- C. It was noted that a telecommunication grounding system is installed for the telecommunications rooms.
- D. The existing data cabling is Cat 5 and Cat 6 cable.
- E. Rack mounted UPSs are installed in MDF and IDF rooms.
- F. Wireless Access Points (WAPs) were noted in some corridors.

### Recommendations:

- A. Additional data wiring can be added to the existing data racks.
- B. Provide vertical and horizontal wire management equipment in MDF and IDF rooms at IT equipment racking where not currently present.
- C. Provide fire caulking in data closets for any wall or ceiling penetrations of fire rated walls or ceilings.
- D. Create district standard for all equipment and wiring for consistency.
- E. The MDF equipment appears to be connected to receptacles wired to the emergency generator. The MDF loads would be considered Non-Life Safety type loads and should be powered from a Non-Life Safety ATS branch of emergency power and separated from Life Safety loads. Life Safety and Non-Life Safety type loads must be circuited to their own dedicated ATS. See the Building Generator / Emergency Lighting System section of this report for additional information.
- F. Review dedicated cooling of MDF and IDF rooms with Mechanical report.
- G. Add additional WAPs where needed for additional coverage.

### Telephone System

#### Observations:

- A. The existing phone system is a VoIP type manufactured by Cisco.
- B. This system is connected to the building paging system where paging can be accomplished.

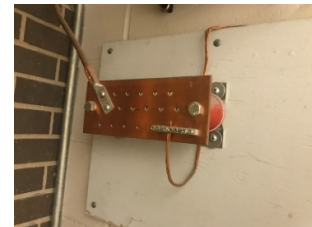
#### Recommendations:

- A. Leave the existing system as is and expand as required.

### Video Surveillance CCTV System

#### Observations:

- A. The security camera system for the High School utilizes Access cameras and Milestone software.
- B. Currently there are interior and exterior cameras installed at this facility.
- C. It was noted that cameras currently installed are IP based. Currently category 5 and 6 cable is routed to the existing IP based cameras.



Telecommunications Grounding System



Security Camera

## Sturgeon Bay Schools – High School Sturgeon Bay, WI

- D. Exterior and Interior coverage of cameras appears to be appropriate.

### Recommendations:

- A. The existing system appears to be expandable. A full review of camera coverage should be completed and additional cameras to complete full coverage may be required.
- B. Continue to utilize and install IP based security cameras.

## Keyless Entry/Access Control System

### Observations:

- A. The access control system is manufactured by Brivo.
- B. Currently the keyless entry system utilizes mullion mounted card readers in conjunction with electric strikes, and fobs. Only a few selected doors have keyless entry card readers.
- C. Door contacts did not appear to be present.

### Recommendations:

- A. Expand the existing system to accommodate new entries and additions.
- B. Install IP based door contacts on all doors as remodeling projects or upgrades are scheduled.



Card Reader

## Ai-Phone

### Observations:

- A. Currently there is an AiPhone call-in on the wall at the main building entrance and back of building entrance. This system is connected to master stations located at the receptionist desk in the main office. This system is connected to the door strike at the main entry for door release and entry to the building.

### Recommendations:

- A. Leave the existing system as is. If the main office or main entry is relocated then relocate the existing devices as required and reuse the existing system.
- B. Review all secure entrance areas with Architect.



AiPhone



# Sturgeon Bay Schools – High School

## Sturgeon Bay, WI

### Plumbing System Review:

The following report is the result of a site visit by Ben Nerat of Muermann Engineering, LLC that occurred on June 20th, 2019. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

### Water Heaters

Observations:

- A. There are (2) water heaters at the high school in the mechanical room. One water heater is relatively new from 2014. The other has an older tank, but new heater and exchanger from 2017. They are in fair condition.
- B. There is piping in place for a third water heater.

Recommendations:

- A. We recommend continued maintenance on the existing water heaters.
- B. We recommend installation of condensate water neutralizers at each water heater.



HS Water Heaters

### Utilities

Observations:

- A. The domestic water system is served by a 4" water service and 4" water meter. The size of this service appears to be adequate for the current domestic water load.
- B. No issues with the water service were reported by the staff.
- C. The sanitary sewer drains by gravity to the city sewers. The owner indicated that there has been past drain issues from the kitchen area, but they believe it may be fixed with the recent installation of a new grease interceptor. No other issues were reported.
- D. The storm sewer drains by gravity to the city sewers. No issues were reported about the storm system by the owner, and it appears to be in fair condition.
- E. There are sump pumps in the basement and a recirculating pump for the hot water system. These pumps appear to be in serviceable condition.



HS Water Meter

Recommendations:

- A. If fire protection were to be required with any future work, a new 6" minimum combination service would be required.

# Sturgeon Bay Schools – High School

## Sturgeon Bay, WI

### Pumps and Valves

#### Observations:

- A. The domestic water valves have been reported to no longer function. Where plumbing work is required to take place, the entire building's water system may need to be shut down for service.

#### Recommendations:

- A. We recommend replacing all valves at fixtures or groups of fixtures with new ball valves due to the critical condition.



Domestic Water Valves

### Piping and Distribution

#### Observations:

- A. The water distribution system appears to be copper. The owner did not report major issues with the piping, but based on the age of the distribution system it is likely near end of its useful life and in poor condition.
- B. The sanitary drain and vent piping appears to be cast iron and galvanized steel piping. The owner did not report major issues with the piping, but based on the age of the system it is likely near end of its useful life.
- C. The owner indicated that there has been past drain issues from the kitchen area, but they believe it to be fixed with the recent installation of a new grease interceptor. No other issues were reported.
- D. Exposed storm conductor piping was not discovered during the walk-through, but is assumed to be cast iron. There is no overflow system present in the building. The owner did not report major issues with the piping.
- E. There is a chemical waste system in place and appears to be in serviceable working condition. The location of the dilution basin was unknown, but science room fixtures have glass traps. The piping just downstream of the traps is metallic, but the material type is unclear. The owner did not report major issues with the piping, and the piping appeared to be in good condition.
- F. Roof drain covers were reported to be plastic and would often become removed from the drain location.



HS Lab Drains



Sump Pump

#### Recommendations:

- A. We recommend replacement of water distribution mains during any future renovation project.
- B. We recommend replacement of sanitary mains during any future renovation project.
- C. We recommend replacement of all roof drain covers with cast iron covers.



# Sturgeon Bay Schools – High School Sturgeon Bay, WI

## Plumbing Fixtures

### Observations:

- A. Many of the fixtures appear to be original to the building. The owner did not report major issues with the fixtures, and they appear to be well maintained for their age.
- B. Water coolers are in process of being replaced by the owner.
- C. The emergency fixtures appear to be connected to cold water only. The fixtures should be provided with tempered water. The current water distribution system is not adequate to provide hot and cold water at sufficient pressure and flow rates. If these fixtures are relocated or replaced, the water distribution system would need to be evaluated.
- D. Although well maintained, all fixtures appear to be in poor condition due to their age.

### Recommendations:

- A. We recommend replacement of any fixtures involved in future renovations.

## Grease Interceptor

### Observations:

- A. A new grease trap was installed at the dishwasher and is said to be in good working condition. There is an older grease trap near the 3-pot sink, and was reported to be in serviceable condition.

### Recommendations:

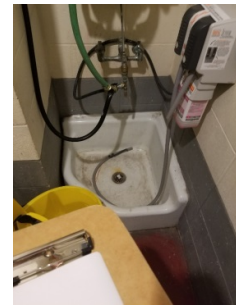
- A. Provide continued maintenance on existing grease interceptors.



HS Urinals



Art Sink



Mop Sink



Emergency Eye wash



Grease Interceptor







## **APPENDIX C**

Facilities Assessment Summary Presented to the Board of Education July 17, 2019	70
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# Sturgeon Bay Schools Long-Range Facilities Planning

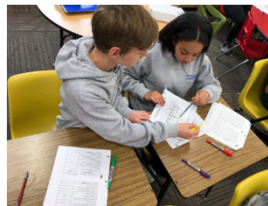
July 17, 2019



## AGENDA



- Long Range Planning Work to Date
  - How We Got Here
  - Enrollment
  - Building Needs
  - District Capacity by Building
- Potential Solutions
  - Option Diagrams
  - Preliminary Cost Estimates
- Estimated Tax Impact
- Next Steps





Every Student --  
Every Day



We would like to have facility statement that fits with our approach and the facility study components that are ahead of us. The statement could then be included in our Strategic Action Plan & Priorities document (*later in our agenda*), and could also serve as a guide to keep us focused during the process. Here are a few samples to get you thinking.

**Sample A**

The School District of Sturgeon Bay is committed to serving the learning needs of Every Student, Every Day. We need to provide school buildings that are safe, efficient, well maintained and support modern teaching and learning, which is critical to our student’s success.

**Sample B**

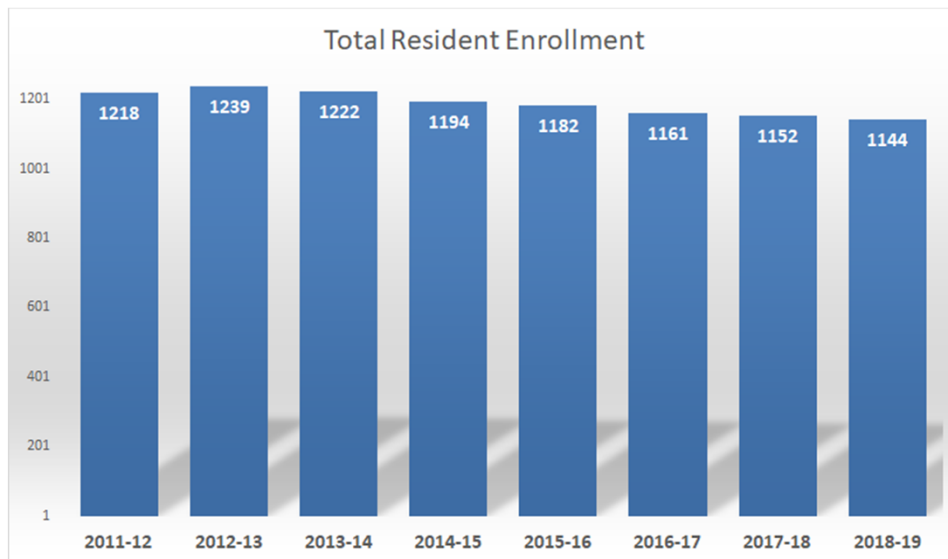
The School District of Sturgeon Bay is committed to ensuring safe, secure and accessible facilities for all students, staff and community members. We work to provide well maintained, cost effective and sustainable buildings that support our academic programming and co/extra-curricular offerings.

**Sample C**

We strive to create and maintain safe, secure, and efficient facilities that support the instructional program, staff, students, and community members who utilize our school buildings, fields and grounds. We aim to provide value to all stakeholders by maximizing efficiencies while addressing the current and future learning needs of our students.

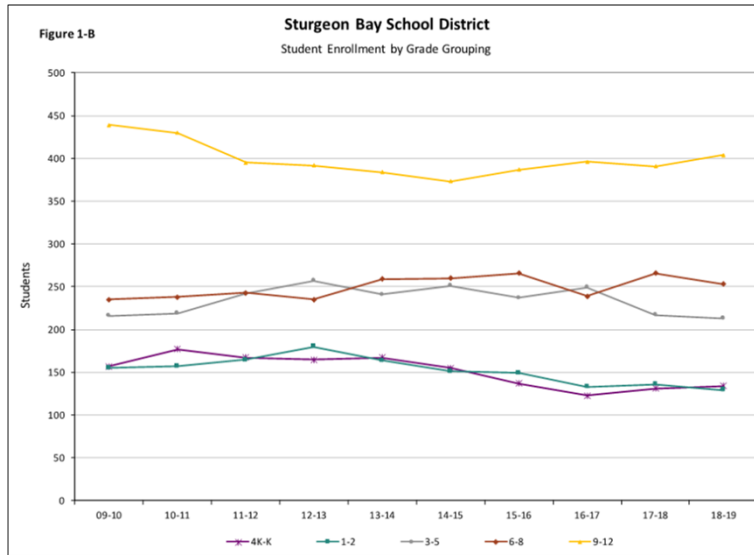


- ❖ Applied Populations Lab (APL) study to project enrollment trends in the next 10 years
- ❖ APL bases projections on:
  - Historical enrollment data
  - Birth rate information
  - Population trends
- ❖ Study provides a variety of trend estimates
  - Most conservative - 10 year, or “baseline” trend
  - Least conservative - high growth trend
- ❖ Using the 5-year trend estimate for planning purposes

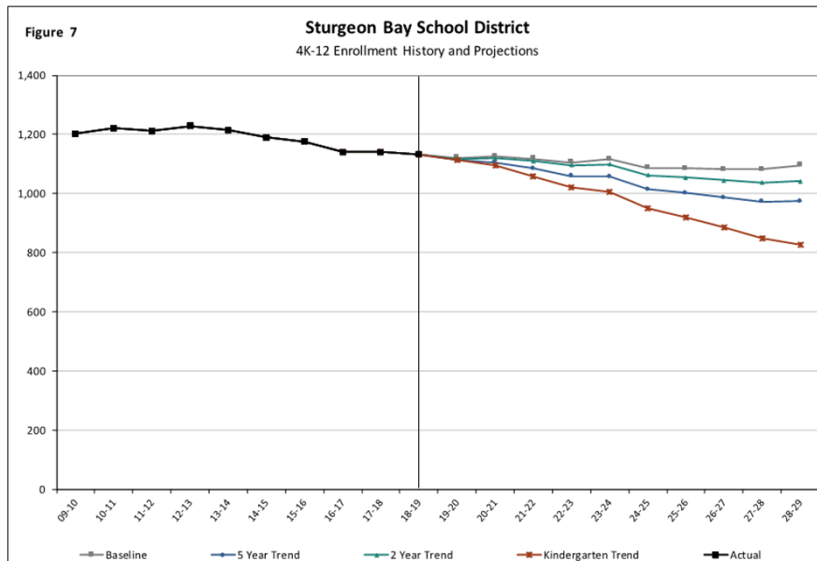




## Recent Enrollment



## Enrollment Projections





## Enrollment Projection Summary



- **Districtwide Decline** in 4K-12 enrollment is expected to continue over the next 5 to 10 years
- **4K – K** enrollment is expected to grow slightly in the next 2 – 3 years and then level off
- **Stable** enrollment at high school level is expected over next 5 years followed by decline

## INTRODUCTIONS - BY THE NUMBERS

FIRM PROFILE

**220+**  
EMPLOYEES

**111**  
YEARS IN BUSINESS

**5**  
MAJOR MARKETS

**4**  
OFFICE LOCATIONS



LEARNING ENVIRONMENTS

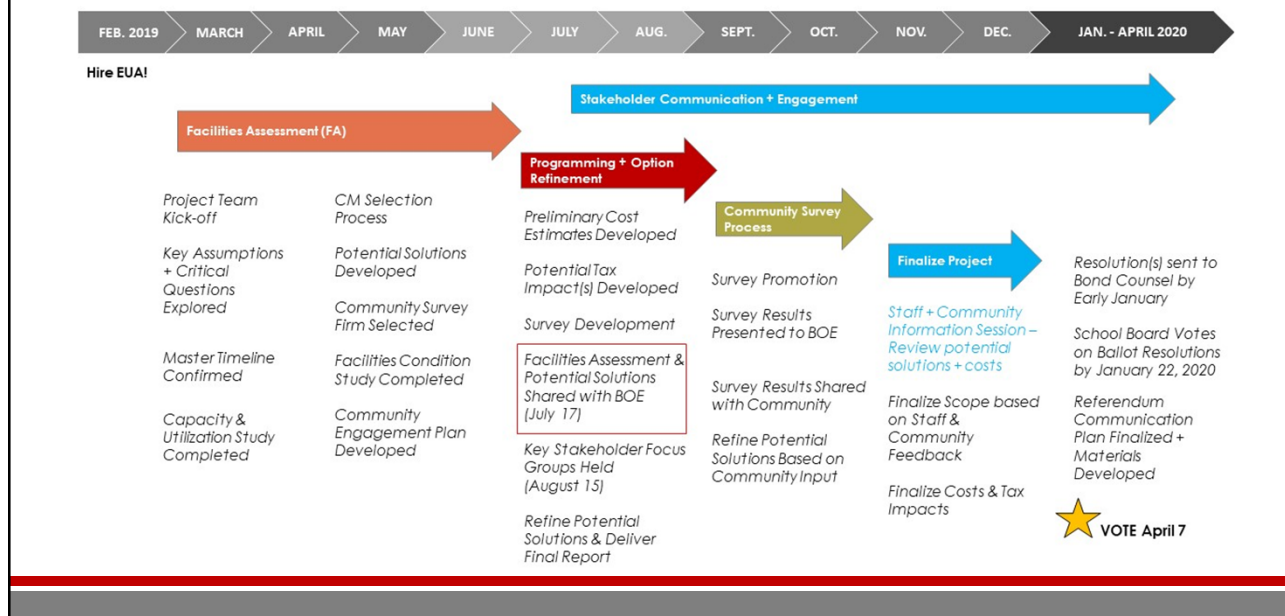
**30+**  
DEDICATED LEARNING STAFF

**160+**  
SCHOOL DISTRICTS SERVED

**\$1B+**  
CONSTRUCTION VALUE SCHOOL PROJECTS

**20+**  
RECENT MASTER PLANNING PROJECTS





**Findings are based on:**

- Observations during walk-throughs at each building
- Floor plan analyses
- Interviews with building principals, and director of buildings and grounds
- Review with administrative team





### Four Categories

- Safety & Security
- Aging Building Components & Systems
- Educational Flexibility
- Operational Efficiency & Building Utilization



### SCHOOL SAFETY & SECURITY



- Most buildings have added secure entry sequences
- High school main entrance security not equitable with other schools in district
  - Solution is more challenging than other schools
- Exterior door monitoring is recommended on all schools





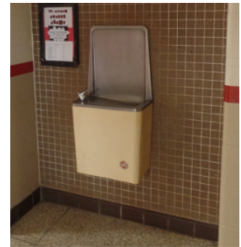
**AGING  
BUILDING  
COMPONENTS  
& SYSTEMS**



- Buildings are well maintained for their age but component replacements are needed
- Mechanical, Electrical, Plumbing, Fire Protection upgrades
- Building shells require improvements
- Various accessibility issues for those with mobility impairments



Category	Sawyer	Sunrise	Sunset	Middle School	High School	
NEW	NEW OR LIKE NEW CONDITION; NO ISSUES; REPLACE IN 8 TO 10 YEARS					5
GOOD	GOOD CONDITIOIN, NO REPORTED ISSUES OR CONCERNS. REPLACE IN 6 TO 8 YEARS					4
FAIR	AVERAGE WEAR FOR BUILDING AGE, NOT NEW BUT NO ISSUES TO REPORT. REPLACE IN 4 TO 6 YEARS					3
POOR	WORN FROM USE, END OF EXPECTED LIFECYCLE. REPLACE IN 2 TO 4 YEARS					2
CRITICAL	EXTREMELY WORN OR DAMAGED. REPLACE WITHIN 2 YEARS.					1
ADA	3.8	2.2	2.3	3.0	2.4	
Civil / Site	3.5	3.2	3.3	3.8	3.8	
Electrical	3.4	3.4	3.4	3.3	3.4	
Exterior Enclosure	2.2	2.0	2.3	2.0	2.8	
Foundation	4.0	4.0	3.3	4.0	4.0	
Interior	3.8	2.9	2.6	3.0	2.9	
Mechanical	3.9	4.0	4.0	3.9	3.9	
Miscellaneous	4.5	3.2	2.0	3.4	3.3	
Plumbing	4.0	2.2	2.2	2.4	2.5	
Roofing	3.5	1.8	3.0	1.0	2.5	
Structural System	4.0	4.0	4.0	4.0	4.0	
Average Deficiency Score by Building	3.6	3.0	3.0	3.2	3.3	





**EDUCATIONAL FLEXIBILITY**



- Outdated learning environment configurations (Tech Ed, Family and Consumer, CAD, Libraries, etc.)
- Lack of collaboration/small group space
- Lack of transparency for supervision of student-directed learning modalities (*building would need a sprinkler system*)
- Furniture is not flexible/mobile for small group learning



**OPERATIONAL  
EFFICIENCY/  
BUILDING  
UTILIZATION**



- All buildings are under capacity
- Sawyer could absorb an entire grade
- HS could absorb two grades
- Many classrooms are not fully utilized
  - Few students in classrooms
  - Empty classrooms used as offices
  - Classrooms open several periods of the day
- Traveling staff lowers room utilization



**Definition of school capacity:** *The number of students that can be reasonably accommodated by a school building and site*

**Capacity is affected by:**

- Physical variables (size and number of spaces)
- Operational variables (staffing, funding, utilization rates)
- Programmatic variables (educational offerings, specialty programs, schedules)





## Maximum vs Functional Capacity

**Maximum:** Total number of student seats in a school

- Every seat full, every room, every hour of the day
- Unrealistic expectation

**Functional:** The practical expected total based on fluctuations in class size and scheduling procedures

- 90% utilization at elementary (*core classrooms only*)
- 80% utilization at middle and high schools (*all scheduled classes contribute*)



### 1) Functional Capacity By District Desired Class Size

*Most realistic measure of capacity based on current building practices*

### 2) Functional Capacity By Available Learning Area

*Shows what potential capacity could be, if practices or configurations were altered*

### 3) Capacity Based on Gross Building Area

*Shows how your total building size compares with industry standard best practices*



Sawyer Elementary

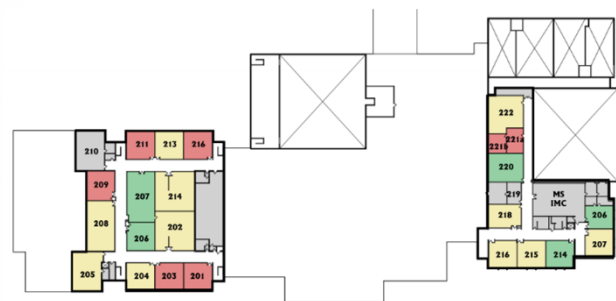


Room Number	Room Name	Room Area (SF)	Capacity by Desired Class Size	Capacity by Learning Area	Capacity by Gross Building Area of 40,348 sf	Notes
101	Conference Room	373				
101A	Principal's Office	162				
101B	Nurse	103				
101C	Toilet					
101D	Office	437				
101E	Counselor	162				
104	Art	910				half day
104A	Art Office/Storage/Kin					
106	Music	933				half day
106A	Music Office/Storage					
107	Electrical					
109	Maintenance Office					
108	PE Storage					
110	PE Office					
112	Kitchen					
114	Gym/Caf	6000				
114 (2nd Fl)	Machinery Room					
114A (2nd Fl)	Equipment					
201	LMC	2192				
201A	LMC Office	408				
201B	Storage					
Max Capacity			160	224		
Functional Capacity (90%)			144	201	269	216 & 296 if all rooms used
Jan 2019 Enrollment			134			



**% of use**

- 81-100% UTILIZATION
- 51-80% UTILIZATION
- 0-50% UTILIZATION
- NO CORE CLASSES



**% of use**

- 81-100% UTILIZATION
- 51-80% UTILIZATION
- 0-50% UTILIZATION
- NO CORE CLASSES





### The Positives:

- Your buildings are ***well maintained for the age***
  - Maintenance budget doesn't allow for significant improvements
- The district has already done a lot to address high priority ***safety issues***
  - Secure entry sequences created at elementary and middle schools
- There are opportunities to use your buildings more efficiently



### The Challenges:

- Building systems, shells, and finishes are in need of renewal
- There are significant ***capacity and utilization issues*** at all buildings
  - An entire elementary school could be closed
- Current ***learning environments*** were not designed for today's student-centered learning practices



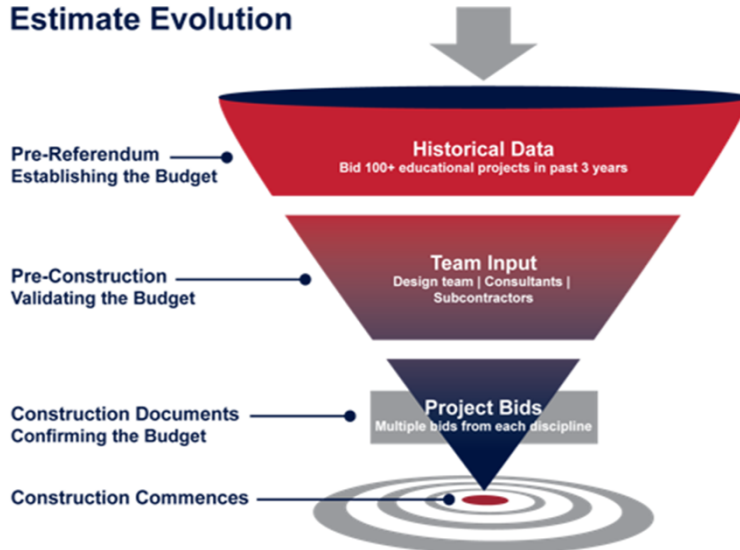


### Firm Overview

- Neenah, WI
- 100+ year heritage
- 3rd generation family-owned business
- 300M+ educational construction
- Currently working in:
  - Southern Door
  - Sevastopol
  - West De Pere
  - Green Bay
  - Demark School Districts



### Estimate Evolution





## Estimate Evolution – Pre-Referendum Phase



Numbers based on historical data, current projects and project complexity

- Use square foot cost
- Light, medium, heavy renovation, additions



A low to high range

- Cost range varies based on level of finishes, etc.
- Numbers will be more narrowly defined as scope of work becomes more defined
- Defined numbers are created prior to adoption of resolution



### Budgets are Total Project Cost

Included:

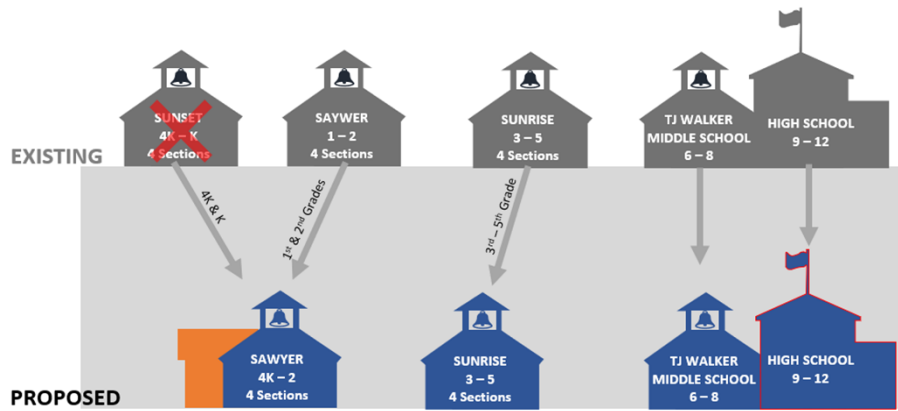
- Design & Construction Fees
- Contingency
- Site Development / Storm Water Management
- Technology (smartboards, projectors, etc.)
- Furnishings, Fixtures, Equipment (FF&E)
- Inflation
- Asbestos Abatement



## Potential Option #1



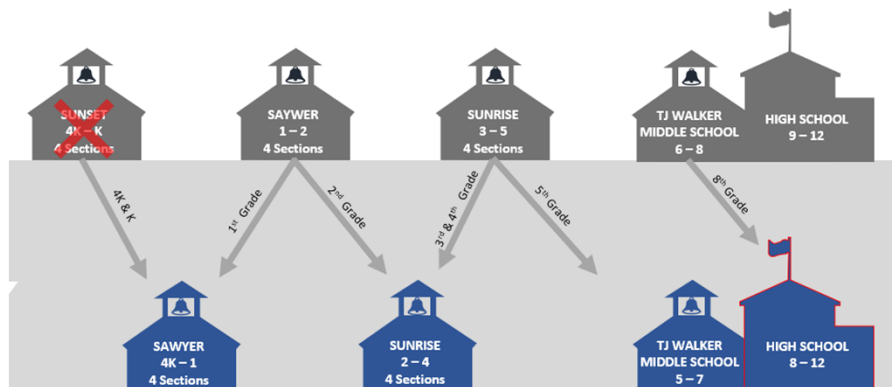
- Classroom Addition at Sawyer to accommodate 4K-2<sup>nd</sup> Grade
- Minor remodeling for age appropriate amenities at Sawyer
- Updating for Modern Learning as prioritized at all buildings
- Prioritized capital maintenance at all buildings
- Secure front entrance at High School



## Potential Option #2

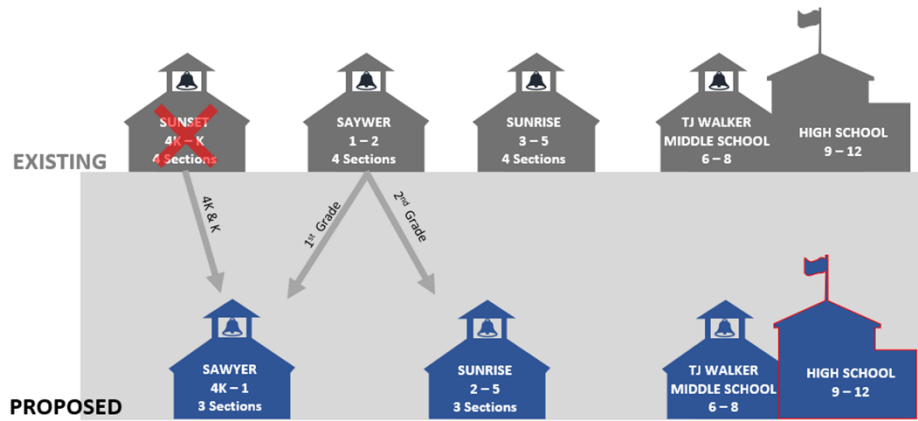


- 5<sup>th</sup> Grade moves to Middle School
- 8<sup>th</sup> Grade moves to High School
- Minor remodeling for age appropriate amenities at Sawyer
- Updating for Modern Learning as prioritized at all buildings
- Prioritized capital maintenance at all buildings
- Secure front entrance at High School





- 1<sup>st</sup> Grade stays at Sawyer
- Potentially larger elementary class sizes
- Minor remodeling for age appropriate amenities at Sawyer
- Updating for Modern Learning as prioritized at all buildings
- Prioritized capital maintenance at all buildings
- Secure front entrance at High School



While this option is not seen as a necessary or viable solution by district leaders, we felt it was important to explore as part of our due diligence.



**STURGEON BAY SCHOOLS - DISTRICT DESIRED CLASS SIZE**

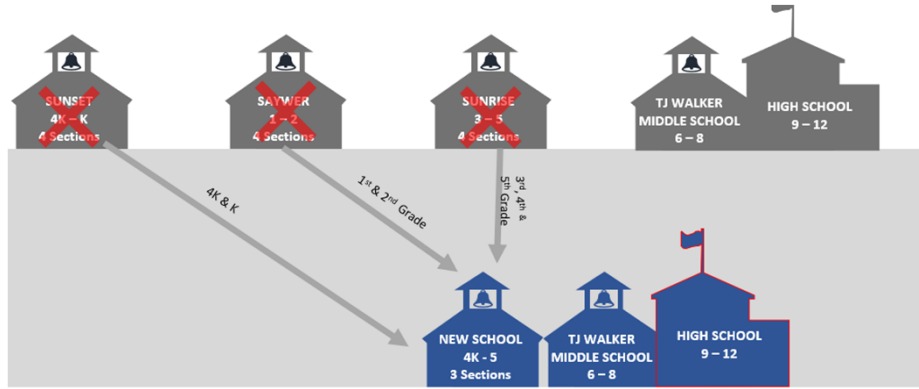
GRADE LEVEL		DESIRED CLASS SIZE	(4) SECTION CLASS SIZE TODAY	(3) SECTION CLASS SIZE WHEN CHANGE COULD HAPPEN 2022	(3) SECTION CLASS SIZE IN 2028
4K	WOULD REMAIN (4) SECTION IN ALL OPTIONS TO THE RIGHT	18	20	18	19
Kindergarten		18	15	23	23
Grades 1 - 3		20	15-17	20-24	21-22
Grades 4 - 5		22	16-19	18-20	21-22



## Alternative Idea - "B"



- Replace Sunset, Sawyer & Sunrise with new elementary school for grades 4K-5
- Updating for Modern Learning as prioritized at MS & HS
- Prioritized capital maintenance at MS & HS
- Secure front entrance at High School



While this option is not seen as a necessary or viable solution by district leaders, we felt it was important to explore as part of our due diligence.

## Preliminary Cost Estimates



### Facility Study Capital Maintenance Items

Item	Description	Cost
ROOF	Roof or building condition: No items to report, no reported items for replacement in 10 years	\$0
DOOR	Good condition for reported items or windows. Some minor issues present. Consider replacement in 6 to 8 years	\$2
FAR	Average wear for building age. Not new, but few major issues (many minor issues to report). Replace within 4 to 5 years.	
	High School	\$1,010,000
	Middle School	\$2,490,000
	Sawyer	\$840,000
	Sunrise	\$1,740,000
	Sunset	\$1,870,000
	<b>Total</b>	<b>\$7,950,000</b>
DOOR	Work Item (end) of existing structure. Replace within 2 to 4 years	
	High School	\$1,340,000
	Middle School	\$1,240,000
	Sawyer	\$160,000
	Sunrise	\$2,430,000
	Sunset	\$1,210,000
	<b>Total</b>	<b>\$6,780,000</b>
WINDOWS	Existing windows damaged. Replace within 2 years	
	High School	\$300,000
	Middle School	\$1,140,000
	Sawyer	\$110,000
	Sunrise	\$430,000
	Sunset	\$800,000
	<b>Total</b>	<b>\$2,280,000</b>

### Master Planning Survey Options

<b>Potential Option 1</b>	High School / Middle School	\$10,710,000
	Sawyer	\$970,000
	Sunrise	\$940,000
	Sunset	\$550,000
	<b>Option 1 Total</b>	<b>\$13,170,000</b>
<b>Potential Option 2</b>	High School / Middle School	\$10,710,000
	Sawyer	\$970,000
	Sunrise	\$940,000
	Sunset	\$550,000
	<b>Option 2 Total</b>	<b>\$13,170,000</b>
<b>Alternative Idea "A"</b>	High School / Middle School	\$10,410,000
	Sawyer	\$1,570,000
	Sunrise	\$710,000
	Sunset	\$550,000
	<b>Alternative Idea "A" Total</b>	<b>\$13,240,000</b>
<b>Alternative Idea "B"</b>	High School / Middle School	\$10,410,000
	Sawyer	\$600,000
	Sunrise	\$100,000
	Sunset	\$100,000
	New 4K - 5th Grade School	\$1,000,000
	<b>Alternative Idea "B" Total</b>	<b>\$12,210,000</b>

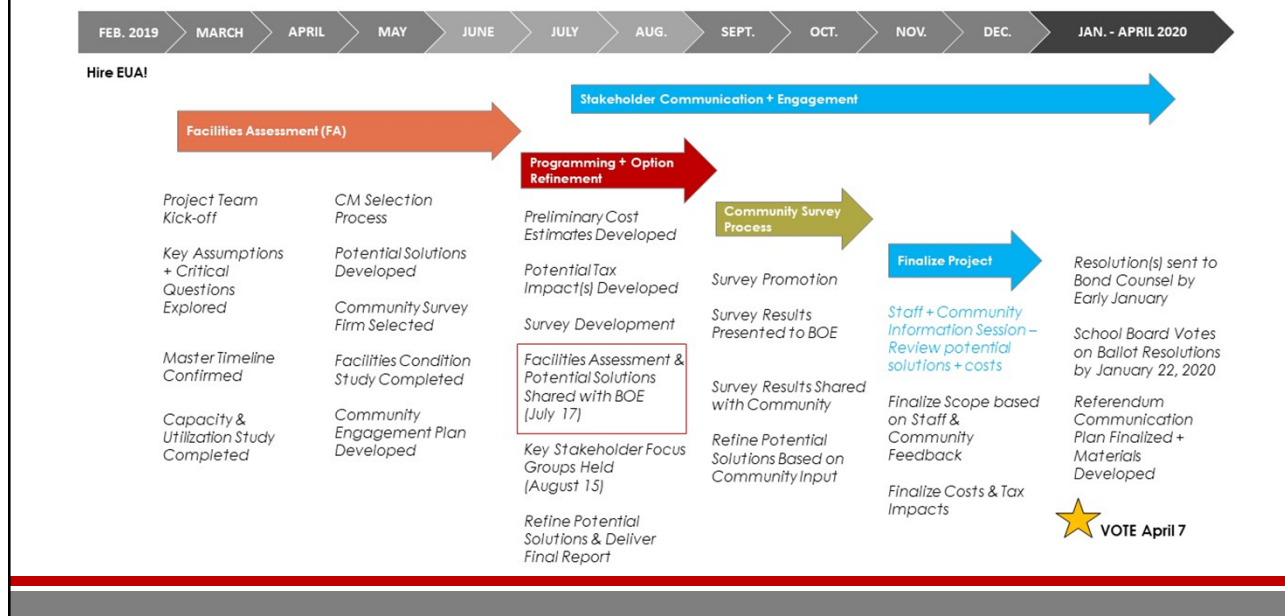


Option	Preliminary Cost Estimate
Priority 1 Capital Maintenance	\$2,930,000
Priority 2 Capital Maintenance	\$8,302,000
Priority 3 Capital Maintenance	\$10,876,000
Potential Solution #1	\$15,390,000
Potential Solution #2	\$13,306,000
Alternative Idea - "A"	\$13,740,000
Alternative Idea - "B"	\$42,863,000



## The School District of Sturgeon Bay SUMMARY OF EXAMPLE 2020 REFERENDUM FINANCING SCENARIOS

SCENARIO	1	2	3	4	5
<b>BORROWING AMOUNT</b>	\$10,000,000	\$15,000,000	\$20,000,000	\$25,000,000	\$30,000,000
<b>ESTIMATED TAXPAYER IMPACT</b>	Per \$1,000 of Property Fair Market Value ("FMV")				
<b>HIGHEST MILL RATE IMPACT</b>	\$0.94	\$1.41	\$1.88	\$2.35	\$2.81
<b>EXAMPLE PROPERTY TAX IMPACT</b>					
<b>\$100,000 FMV</b> (based on highest mill rate)					
Annual	\$94.00	\$141.00	\$188.00	\$235.00	\$281.00
Monthly	\$7.83	\$11.75	\$15.67	\$19.58	\$23.42
<b>\$200,000 FMV</b> (based on highest mill rate)					
Annual	\$188.00	\$282.00	\$376.00	\$470.00	\$562.00
Monthly	\$15.67	\$23.50	\$31.33	\$39.17	\$46.83
<b>\$300,000 FMV</b> (based on highest mill rate)					
Annual	\$282.00	\$423.00	\$564.00	\$705.00	\$843.00
Monthly	\$23.50	\$35.25	\$47.00	\$58.75	\$70.25
<b>\$400,000 FMV</b> (based on highest mill rate)					
Annual	\$376.00	\$564.00	\$752.00	\$940.00	\$1,124.00
Monthly	\$31.33	\$47.00	\$62.67	\$78.33	\$93.67



- Gather and incorporate the community’s feedback into the survey component
- Delivery of Long-Range Master Plan Report
- Launch community-wide survey
- Board of Education workshop October 2, 2019
- Refine potential solutions and costs with core planning team based on survey & Board feedback





