

appendix

ENGINEERING REPORTS

The following pages include the original plumbing, mechanical, electrical, life safety, and civil reports provided by our engineering consultants.

Facilities Study Document | Kiel School District, Zielanis Elementary School

Building Systems Summary Checklist

Completed by: Alex Feudner and Ben Nerat, MSA Professional Services

Date of Walk-through: 05/18/2022

PLUMBING

Category:	Good/Fair/Poor:	Notes:
Domestic Water Service		
Water Service	Fair	3" Ductile Iron, 2" Water meter
Water Distribution Piping	Fair	
Water Softening System	Fair	Hellenbrand H-15 supplies the water heaters and other equipment
Sanitary System		
Sanitary Waste System	Fair	Cast iron is original, with PVC repairs. Tunnel area was replaced with PVC sanitary piping. No comments were made by the owner in regards to the underground piping.
Sanitary Waste + Vent Piping	Fair	Cast iron is original, with PVC repairs. Tunnel area was replaced with PVC sanitary piping.
Sanitary ejector	Fair	The sump cover appeared to be well sealed.
Interceptors	Fair	Grease interceptor is in a location that does not offer the 18" minimum clearance required for maintenance in the Wisconsin Plumbing Code.
Storm System		
Storm System	Fair	Primary roof drains are piped throughout building. Overflow scuppers are present for the gymnasium addition.
Storm Waste Piping	Fair	
Sump Pump	Fair	Serves area well and drain tile.
Natural Gas System	Fair	
Plumbing Equipment		
Water Heater	Fair Good Good	Gas water heaters: <ul style="list-style-type: none"> • Original Building: 199,000 BTU/H, 100 gallon; Standard Atmospheric Vent Installed around 2005 • Kitchen Addition: 125,000 BTU/H, 60 gallon; High efficiency installed around 2018 Electric water heater:

		<ul style="list-style-type: none"> • 4500/4500, 80 Gallon; Installed around 2015
Circulator Pump	Original Building: Fair Kitchen Addition: fair	
Hot Water System	Fair	
Plumbing Fixtures		
Water Closets	Fair	
Urinals	Fair	Piping is exposed.
Lavatories	Fair	
Drinking Fountains/Electric Water Coolers	Old fixtures: Poor	Many of these have been replaced with new fixtures, but the original fixtures are in poor condition.
Classroom Sinks	Good	
General Sinks	Fair	
Mechanical Sinks	Fair	

Consider:

Provide entire drain and waste system with auguring and or jetting cleaning maintenance as required.

The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.

Replace original water coolers with new water coolers and bottle fillers.

Replace the existing original building water heater with new high efficiency water heater.

If future additions/renovations require fire sprinklers, a new 6" minimum water service will be required.

The existing water meter has no by-pass, we recommend installing a full size bypass to meet current plumbing codes.

If the kitchen area is remodeled in the future, the existing grease interceptor should be replaced and relocated in an accessible location.

Replace existing fixtures in future remodeled areas.

Plumbing System Review:

The following report is the result of a site visit by Alex Feudner and Ben Nerat of MSA Professional Services that occurred on May 18, 2022. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

The original building was built in the 1960s. The building has had three additions with known additions in 1993 and 2000.

Domestic Water System

Observations

- A. Water Service(s) include(s) the following:
 - 1. 3” Ductile Iron water service supplied by the local municipal water utility with a 2” water meter without bypass piping and valves.
- B. Piping system material is copper.
- C. The domestic water distribution system appears to be in fair condition.
- D. Pipe insulation appears to be in fair condition.

Recommendations

- A. The original copper water distribution piping is reaching the end of its life expectancy. We recommend replacing main piping during any major renovations.
- B. Repair all leaks on piping as required with new copper or approved piping material.
- C. If future additions/renovations require fire sprinklers, a new 6” minimum water service will be required.
- D. The existing water meter has no by-pass, we recommend installing a full size bypass to meet current plumbing codes.

Sanitary Drain, Waste and Vent System

Observations

- A. Piping system material is Cast Iron & PVC. PVC located in repaired areas and sections, including the tunnel.
- B. Sanitary piping system appears to be in fair condition.
- C. Greasy waste piping system & grease interceptor was in the building. It appeared to be in fair condition.
- D. The lower level drainage system relies on a sanitary ejector pump. It appears to be in fair condition.

Recommendations

- A. If the kitchen area is remodeled in the future, the existing grease interceptor should be replaced and relocated in an accessible location.
- B. Provide entire drain and waste system with auguring and or jetting cleaning maintenance as required.



- C. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- D. All interceptors shall be maintained as required and pumped out twice a year.

Storm and Clear Water Drain, Waste and Vent System

Observations

- A. Piping system material appears to be cast iron in the original building and PVC in the addition.
- B. Storm piping system appears to be in fair condition.
- C. The lower level has a sump system for an area drain and the drain tile. This system appeared to be in fair condition.
- D. Interior roof drain and conductor piping system discharges to storm building drain. There are not secondary overflow roof drains serving roof. Overflow scuppers are present on gymnasium addition only.

Recommendations

- A. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- B. Provide entire drain and waste system with auger and or jetting cleaning maintenance as required.

Other Plumbing Systems

Observations

- A. The natural gas piping appears to be in fair condition.

Plumbing Equipment

Observations

- A. Water Softener(s)
 - 1. 1qty. Hellenbrand H-151.
 - 2. It appears to be in fair condition.
- B. Gas Water Heater(s)
 - 1. 2qty
 - a. Original building: 199,000 BTU/H, 100 gallon
 - b. Kitchen Addition: 125,000 BTU/H, 60 gallon
 - 2. They appear to be in fair condition.
- C. Electric Water Heater(s)
 - 1. 1qty. 80-gal.
 - 2. 4500 Watts non-simultaneous.
 - 3. It appears to be in fair condition.
- D. Circulating Pump(s)



1. 2qty.
2. They appear to be in fair condition

Recommendations

- A. Replace the existing original building water heater with new high efficiency water heater.
- B. Provide regular maintenance on all plumbing equipment.

Plumbing Fixtures

Observations

- A. Water Closets are wall mount with flush valve. Flush valves are manual lever and sensor battery operated.
 1. The fixtures appear to be in fair condition.
- B. Lavatories are wall mount. Faucets are manual lever operated.
 1. The fixtures appear to be in fair condition.
- C. Urinals are floor mount with flush valve. Flush valve sensor battery operated.
 1. The fixtures appear to be in fair condition.
- D. Showers are public showers.
 1. The fixtures appear to be in fair condition.
- E. Electrical Water Coolers are a mixture with and without bottle filling stations.
 1. The original fixtures appear to be in poor condition.
 2. Some of the original fixtures have been replaces with new water coolers and bottle fillers.
- F. Mop basins are concrete
 1. The fixtures appear to be in fair condition.
- G. Sinks – General
 1. The fixtures appear to be in good condition.
- H. Sink – Classroom with drinking fountains.
 1. The the fixtures appear to be in good condition.
- I. Service Sink – Mechanical room.
 1. The the fixtures appear to be in fair condition.

Recommendations

- A. Replace original water coolers with new water coolers and bottle fillers.
- B. Replace fixtures and piping in renovated/remodeled areas

Facilities Study Document | Kiel School District, Kiel Middle School

Building Systems Summary Checklist

Completed by: Alex Feudner and Ben Nerat, MSA Professional Services

Date of Walk-through: 05/18/2022

PLUMBING

Category:	Good/Fair/Poor:	Notes:
Domestic Water Service		
Water Service	Poor	4" Ductile Iron with 3" water meter with bypass 2" Ductile Iron with 2" water meter without bypass
Water Distribution Piping	Poor Fair	The original buildings and older additions. The newer additions.
Water Softening System	Fair	Water softener supplies main water heater and building mixing valve. The gym area water is not softened.
Sanitary System		
Sanitary Waste System	Poor to Fair	<ul style="list-style-type: none"> • Cast Iron and PVC piping. A majority of the above ground cast iron piping appears to have been replaced with PVC. • No comments were made by the owner in regards to the underground piping. The underground piping for the older portions of the building are likely in poor condition due to the age of the pipes. The visible cast iron piping appears to be in poor condition.
Sanitary Waste + Vent Piping	Poor to Fair	See "Sanitary Waste System" Notes.
Acid Waste Piping + Basin	Fair	Sinks appear to have Polypropylene pipe material.
Interceptors	Fair	Exterior grease interceptor. No negative comments were made by the owner.
Sump Pump	Fair	Lower levels rely on sump systems.
Storm System		
Storm System	Fair	Cast Iron and PVC piping
Storm Waste Piping	Fair	
Sump Pump	Fair	Lower levels rely on sump systems.
Plumbing Equipment		

Water Heater	Fair	<ul style="list-style-type: none"> • Original and 1951 addition: 199,999 BTU/hr, 100 gallon. High efficiency installed around 2014 • 1956 addition: 199,999 BTU/hr, 100 gallon. High efficiency installed around 2014 • Kitchen: 199,999 BTU/hr, 60 gallon. High efficiency installed around 2021
Circulator Pump	Fair	
Water Softener	Fair	Impression by Water Right
Thermostatic mixing valve	Fair	
Sanitary Ejector Pumps	Assumed Fair	No issues with these systems were reported by the owned.
Clear Water Sump Pumps	Assumed Fair	No issues with these systems were reported by the owned.
Plumbing Fixtures		
Water Closets	Fair	The majority of the fixtures appeared to be in fair condition. There were a few original fixtures that appeared to be in poor condition.
Urinals	Fair	The majority of the fixtures appeared to be in fair condition. There were a few original fixtures that appeared to be in poor condition.
Lavatories	Fair	The majority of the fixtures appeared to be in fair condition. There were a few original fixtures that appeared to be in poor condition.
Drinking Fountains	Fair	Many of these have been replaced with new fixtures, but the original fixtures are in poor condition.
Classroom Sinks	Fair	The majority of the fixtures appeared to be in fair condition. There were a few original fixtures that appeared to be in poor condition.
General Sinks	Fair	The majority of the fixtures appeared to be in fair condition. There were a few original fixtures that appeared to be in poor condition.
Art Room Sinks	Fair	
Science Sinks	Fair	
Service Sinks	Fair	
Emergency Eyewash Stations	Fair	Appears to just have cold water supply

Consider:

Replace original water coolers with new water coolers and bottle fillers.

If future additions/renovations require fire sprinklers, a new 6" minimum water service will be required.

Replace original sanitary and storm piping in lower level.

The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.

Provide entire drain and waste system with auguring and or jetting cleaning maintenance as required.

One of the existing water meters has no by-pass, we recommend installing a full size bypass to meet current plumbing codes.

Replace existing fixtures in future remodeled areas.

Provide tempered water to the emergency fixtures. The existing piping is likely not sized large enough to handle the additional load, so water main piping to these fixtures might also need to be replaced.

Plumbing System Review:

The following report is the result of a site visit by Alex Feudner and Ben Nerat of MSA Professional Services, Inc. that occurred on May 18, 2022. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in the 1928. The building has had several renovations/additions including but not limited to, 1951, 1952, 1956, 1957, 1989, 2013.

Domestic Water System

Observations

- A. Water Service(s) include(s) the following:
 - 1. 4" Ductile Iron water service supplied by the local municipal water utility with a 3" water meter with bypass piping and valves for original building.
 - 2. 2" Ductile Iron water service supplied by the local municipal water utility with a 2" water meter without bypass piping and valves for 1951 addition.
- B. Domestic water distribution piping material is copper piping.
- C. Domestic water distribution system appears in fair condition in the newer additions and poor condition in the original building/older additions.
- D. Insulation in lower level and mechanical rooms, specifically to mixing valve, appears to be in poor condition.

Recommendations

- A. The original copper water distribution piping is reaching the end of its life expectancy. We recommend replacing main piping during any major renovations.
- B. Provide new pipe insulation as required on exposed and damaged piping areas and sections.
- C. One of the existing water meters has no by-pass, we recommend installing a full size bypass to meet current plumbing codes.
- D. If future additions/renovations require fire sprinklers, a new 6" minimum water service will be required.

Sanitary Drain, Waste and Vent System

Observations

- A. Piping system material is Cast Iron & PVC.
- B. The PVC sanitary piping system appears to be in fair condition.
- C. The cast iron sanitary piping system appears to be in poor condition.
- D. The Kitchen greasy waste led to an exterior grease interceptor.
- E. The lower lever drainage systems rely on sanitary ejector systems. The owner had no negative comments against these systems, so they are assumed to be in fair condition.



- F. Acid waste polypropylene piping system appears to be in fair condition.
- G. Acid waste neutralization basin is present. It appears to be in fair condition.

Recommendations

- A. Provide entire drain and waste system with auguring and or jetting cleaning maintenance as needed.
- B. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- C. All interceptors shall be maintained as required and pumped out as needed.
- D. Replace original sanitary piping in lower level.
- E. Provide regular maintenance on the sump systems. Replace components as necessary.

Storm and Clear Water Drain, Waste and Vent System

Observations

- A. Piping system material appears to be Cast Iron & PVC.
- B. Storm piping system appears to be in fair condition.
- C. Interior roof drain and conductor piping system discharges to storm building drain.
- D. The lower lever drainage systems rely on clear water sump systems. The owner had no negative comments against these systems, so they are assumed to be in fair condition.

Recommendations

- A. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- B. Provide entire drain and waste system with auger and or jetting cleaning maintenance as required.
- C. Provide regular maintenance on the sump systems. Replace components as necessary.
- D. Replace original storm piping in lower level.

Other Plumbing Systems

Observations

- A. The natural gas piping appears to be in fair condition.

Plumbing Equipment

Observations



- A. Water Softener(s)
 - 1. 1qty. Impression by Water Right
 - 2. It appears to be in fair condition.
- B. Gas Water Heater(s)
 - 1. 3qty.
 - a. Original and 1951 addition: 199,999 BTU/hr, 100 gallon
 - b. 1956 addition: 199,999 BTU/hr, 100 gallon.
 - c. Kitchen: 199,999 BTU/hr, 60 gallon
 - 2. They appear to be in fair condition.
- C. Circulating Pump(s)
 - 1. 2qty.
 - 2. They appear to be in fair condition
- D. Thermostatic Mixing Valve(s)
 - 1. 120 degree outlet temperature.
 - 2. It appears to be in fair condition.

Recommendations:

- A. Provide regular maintenance on all plumbing equipment.

Plumbing Fixtures

Observations

- A. Water Closets are mixture of floor mount with flush valve and wall mount with flush valve. Flush valves are manual lever and sensor battery operated.
 - 1. The fixtures appear to be in fair condition.
- B. Lavatories are wall mount. Faucets are manual lever.
 - 1. The fixtures appear to be in fair condition.
- C. Lavatory Wash Stations are wall mount. Faucets are sensor operated.
 - 1. The fixtures appear to be in fair condition.
- D. Urinals are floor mount with flush valve. Flush valves are sensor battery operated.
 - 1. The fixtures appear to be in fair condition.
- E. Showers are a mixture of private use and multiple use gang units.
 - 1. The fixtures appear to be in fair condition.
 - 2. Gang showers are no longer in use.
- F. Electrical Water Coolers are a mixture with and without bottle filling stations.
 - 1. The fixtures appear to be in fair condition.
 - 2. Replace original water coolers with new water coolers and bottle fillers.
- G. Mop Basin
 - 1. The fixtures appear to be in fair condition.

- H. Sinks – General
 - 1. The fixtures appear to be in fair condition.
- I. Sink – Classroom
 - 1. The fixtures appear to be in fair condition.
- J. Sinks – Art
 - 1. The fixtures appear to be in fair condition.
- K. Sinks – Science have centrally located acid neutralization basin.
 - 1. The fixtures appear to be in fair condition.
- L. Service Sinks – Mixture of plastic floor mount and cast iron wall mount laundry tubs.
 - 1. The fixtures appear to be in fair condition.
- M. Emergency Fixtures.
 - 1. The fixtures appear to be in fair condition.
 - 2. Eye washes are in the science rooms.
 - 3. Eye wash is in mechanical space.

Recommendations

- A. Replace fixtures and piping in renovated/remodeled areas
- B. Provide regular testing of all emergency fixtures.
- C. Replace original water coolers with new water coolers and bottle fillers.
- D. Provide tempered water to the emergency fixtures. The existing piping is likely not sized large enough to handle the additional load, so water main piping to these fixtures might also need to be replaced.
- E. Replace existing fixtures in future remodeled areas.

Facilities Study Document | Kiel School District, Kiel High School

Building Systems Summary Checklist

Completed by: Alex Feudner and Ben Nerat, MSA Professional Services

Date of Walk-through: 05/18/2022

PLUMBING

Category:	Good/Fair/Poor:	Notes:
Domestic Water Service		
Water Service	Fair	<ul style="list-style-type: none"> • Pool Water service of unknown size and material with water meter and bypass • 3-4" Ductile Iron water service supplied by the local municipal water utility with a 3" water meter with bypass piping and valves. • 6" water service supplied by local municipal water utility with a 3" water meter and bypass
Water Distribution Piping	Fair	
Water Softening System	Fair	Water softeners supply water heaters and equipment
Fire Sprinkler System	Fair	6" service and one riser
Sanitary System		
Sanitary Waste System	Fair	<ul style="list-style-type: none"> • Cast Iron and PVC piping
Sanitary Waste + Vent Piping	Fair	
Acid Waste Piping + Basin	Fair	<ul style="list-style-type: none"> • Floor Acid Basin • Point of use Acid Basins
Interceptors	Fair	<ul style="list-style-type: none"> • Grease interceptor: only serves 3 compartment sink and is inaccessible. • Point of use solid interceptors
Storm System		
Storm System	Fair	Cast Iron and PVC piping
Storm Waste Piping	Fair	
Natural Gas System	Fair	
Plumbing Equipment		
Water Heater	Fair	<ul style="list-style-type: none"> • 2 heaters, 199,999 BTU/hr, 100 gal • 2 indirect heat storage tanks fed from HVAC boilers.
Circulator Pump	Fair	

Water softeners	Fair	<ul style="list-style-type: none"> • Hellenbrand H200M • Hellenbrand T-30-1 • Hellenbrand H125-64
Plumbing Fixtures		
Water Closets	Fair	
Urinals	Fair	
Lavatories	Fair	
Electric water coolers	Poor	2 of the original fixtures had started leaking
Classroom Sinks	Fair	
General Sinks	Fair	
Art Room Sinks	Fair	
Emergency Eyewash Stations	Fair	

Consider:

Provide entire drain and waste system with auguring and or jetting cleaning maintenance as required.

The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.

Replace fixtures in future renovated/remodeled areas.

Provide emergency fixtures in shop areas.

Replace original water coolers with new water coolers and bottle fillers.

Replace the existing gang showers with new.

Backflow preventers shall be maintained / repaired as required and tested once a year.

Plumbing System Review:

The following report is the result of a site visit by Alex Feudner and Ben Nerat of MSA Professional Services, Inc. that occurred on May 18, 2022. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in the 1968. The building has had several renovations/additions with known additions in 1970, 1999, 2013 and the most recent auditorium addition in 2020.

Domestic Water System

Observations

- A. Water Service(s) include(s) the following:
 - 1. Pool Water service of unknown size and material with water meter and bypass
 - 2. 3-4" Ductile Iron water service supplied by the local municipal water utility with a 3" water meter with bypass piping and valves.
 - 3. 6" water service supplied by local municipal water utility with a 3" water meter and bypass
- B. Piping system material is copper Piping.
- C. Domestic water distribution system appears to be in fair condition.
- D. Backflow preventers appear to be in fair condition.

Recommendations

- A. Backflow preventers shall be maintained / repaired as required and tested once a year.
- B. The original copper water distribution piping is reaching the end of its life expectancy. We recommend replacing main piping during any major renovations.

Fire Sprinkler System

Observations

- A. There is an automatic fire sprinkler system in the auditorium.
- B. The 1 zone riser with doubled check valve backflow preventer.

Sanitary Drain, Waste and Vent System

Observations

- A. Piping system material is Cast Iron PVC.
- B. Sanitary piping system appears to be in fair condition.
- C. Greasy waste piping system & grease interceptor were located in the building. Grease interceptor serves 3 compartment sink but not dish washer, and is in a difficult spot to service.
- D. The pool area has a sanitary ejector pump. The owner had no negative comments against these systems, so they are assumed to be in fair condition.
- E. Acid waste polypropylene piping appears to be in fair condition.
- F. Solid waste interceptors are present at the art room sinks.



- G. Acid waste neutralization basin is present. It appears to be in fair condition. Point of use neutralization basins are also used. They appear to be in fair condition.

Recommendations

- A. Provide entire drain and waste system with auguring and or jetting cleaning maintenance as required.
- B. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- C. All interceptors shall be maintained and pumped out as required.
- D. Provide a new grease interceptor for the dishwasher.
- E. Replace and relocate the existing grease interceptor that serves the three compartment sink.
- F. Point of use acid neutralization basins are not approved for use. If these sinks are relocated for remodeling, this system will need to be completely reconfigured.

Storm and Clear Water Drain, Waste and Vent System

Observations

- A. Piping system material is Cast Iron & PVC.
- B. Storm piping system appears to be in fair condition.
- C. Interior roof drain and conductor piping system discharges to storm building drain.

Recommendations

- A. The district should have the cast iron building drains televised to inspect the sanitary and storm piping to find any possible leaks or piping in need of repair/replacement. The inspection must include a report with recommendations for repair/replacement.
- B. Provide entire drain and waste system with auger and or jetting cleaning maintenance as required.

Other Plumbing Systems

Observations

- A. The natural gas piping appears to be in fair condition.
- B. Compressed air system in shop area appears to be in fair condition.
- C. Welding gas system consists piped distribution system and gas cylinders. This system appears to be in fair condition.

Plumbing Equipment

Observations

- A. Water Softener(s)
 - 1. 2qty.
 - a. Hellenbrand H200M



- b. Hellenbrand T-30-1
 - c. Hellenbrand H125-64
 - 2. They appear to be in fair condition.
- B. Gas Water Heater
 - 1. 2qty.
 - a. 199,999 BTU/hr, 100 gal
 - b. 199,999 BTU/hr 100 gal
 - 2. They appear to be in fair condition.
- C. Circulating Pump(s)
 - 1. 3qty.
 - 2. They appear to be fair condition.

Recommendations

- A. Provide regular maintenance on existing equipment.

Plumbing Fixtures

Observations

- A. Water Closets are mixture of floor mount with flush valve and wall mount with flush valve. Flush valves are manual lever and sensor battery operated.
 - 1. The fixtures appear to be in fair condition.
- B. Lavatories are mixture of wall mount. Faucets are manual lever, sensor hard wired and sensor battery operated.
 - 1. The fixtures appear to be in fair condition.
- C. Lavatory Wash Stations are wall mount. Faucets are sensor hard wired.
 - 1. The fixtures appear to be in fair condition.
- D. Urinals are floor mount with flush valve. Flush valves are sensor battery operated.
 - 1. The fixtures appear to be in fair condition.
- E. Showers are a mixture of private use and multiple use gang units.
 - 1. The private use fixtures appear to be in fair condition.
 - 2. Gang showers were reported to be broken and replacement parts are no longer available.
- F. Electrical Water Coolers are a mixture with and without bottle filling stations.
 - 1. The original fixtures appear to be in poor condition.
- G. Sinks – General
 - 1. The fixtures appear to be in fair condition.
- H. Sink – Classroom
 - 1. The fixtures appear to be in fair condition.
- I. Sinks – Art have point of use soild interceptors.
 - 1. The fixtures appear to be in fair condition.
- J. Sinks – Most science sinkshave centrally located acid neutralization basin.

1. The fixtures appear to be in fair condition.
- K. Sinks – Some science sinks have point of use acid neutralization basins.
1. The fixtures appear to be in fair condition.
- L. Emergency Fixture(s).
1. Eye wash and shower are in the science rooms.
 2. The fixtures appear to be in fair condition.

Recommendations

- A. Replace fixtures and piping in future renovated/remodeled areas.
- B. Provide emergency fixtures in shop areas.
- C. Replace original water coolers with new water coolers and bottle fillers.
- D. Replace the existing gang showers with new.
- E. Provide regular testing of all emergency fixtures.

Building Systems Summary Checklist

Completed by: Craig Nessman, Fredericksen Engineering

Date of Walk-through: May 18, 2022

MECHANICAL

Category:	Good/Fair/Poor:	Notes:
Heating		
Boiler Plant	Good	(3) HTP Boilers were installed in 2012 (850 MBH input each)
Pumps	Good	Pumps were installed in 2012. Controlled with VFD's.
Ventilation + A/C Systems		
Office AHU and Condensing Unit	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life. The 4-ton condensing unit is at the end of its expected 15 year service life.
Cafeteria AHU	Poor	AHU is suspended in the space and appears to be original to the building (1963). This unit has well exceeded its expected service life.
STREAM Room RTU	Poor	Packaged 3-ton RTU was installed in 2000 and has exceeded its expected 15 year service life.
Gymnasium RTU	Poor	Packaged 25-ton RTU was installed in 2000 and has exceeded its expected 15 year service life.
Computer Classroom Furnace	Poor	Furnace and associated 4-ton condensing unit were installed in 2000 and have exceeded their expected 10-15 year service life.
Classroom Unit Ventilator	Fair	Units are heating only and appear to be in fair condition.
Control Systems		
	Fair	All digital controls by Reliable Controls.

Consider:

The HVAC equipment appears to be well maintained, but many systems have exceeded their expected service life.

The Office, Gymnasium, Computer and STREAM Classrooms have air conditioning. No other areas are air conditioned.

The Cafeteria AHU has exceeded its expected service life. Plans should be made for replacement of this unit.

The packaged RTU's, condensing units, and furnace installed as a part of the 2000 renovations have exceeded their expected service life. Plans should be made for replacement of these units.

When cooling equipment is replaced, a central chilled water system should be considered.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Facilities Study Document | Kiel School District – Kiel Middle School

Building Systems Summary Checklist

Completed by: Craig Nessman, Fredericksen Engineering

Date of Walk-through: May 18, 2022

MECHANICAL

Category:	Good/Fair /Poor:	Notes:
Heating		
Boiler Plant	Poor	(4) Thermal Solutions Boilers (1,500 MBH input). Boilers were installed in 2000 and have reached the end of their expected 20 year service life.
Pumps	Poor	(2) sets of inline pumps serve the building. These pumps were installed in 2000 and have reached the end of their expected 20 year service life.
Ventilation + A/C Systems		
AHU-1 (Multipurpose) with condensing unit.	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life. The condensing unit is at the end of its expected 15 year service life.
AHU-2 (Science Classrooms) with condensing unit.	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life. The condensing unit is at the end of its expected 15 year service life.
AHU-3 (Center Classrooms) – Heating Only	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life.
AHU-4 Basement Classrooms – Heating Only	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life.
AHU-5 MS Office, Science Lab – Aeon RTU	Good	Roof mounted Aeon packaged RTU. Unit was recently replaced and is in like new condition.
AHU-6 Wood Shop	Poor	Unit is suspended in space and has exceeded its expected service life.
Gymnasium AHU	Poor/Fair	Gym was originally served by (2) indoor AHU's. One unit has been abandoned. The other unit has recently been refurbished and is in fair condition.
Athletics AHU	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life.
Band AHU	Fair	System was installed in 2000. The indoor AHU is in good condition, but is approaching the end of its expected 25 year service life.

Library RTU	Poor	Packaged 10-ton RTU was installed in 2000 and has exceeded its expected 15 year service life.
Classroom RTU	Poor	Packaged 4-ton RTU was installed in 2000 and has exceeded its expected 15 year service life.
District Offices	Poor	Furnaces (4 total) and associated condensing unit were installed in 2000 and have exceeded their expected 10-15 year service life.
Classroom Unit Ventilators	Fair	Units are heating only and appear to be in fair condition.
Control Systems	Poor	Some digital controls for AHU Systems. May areas have pneumatic controls.

Consider:

The HVAC equipment appears to be well maintained, but many systems have exceeded their expected service life.

The air distribution in classroom spaces is rather limited, with many rooms served by a single ceiling supply grille. Multiple diffusers would help with occupant comfort.

There are many temperature complaints throughout the building.

There have been significant leak in the piping systems, especially in the older parts of the building. Any substantial renovation should include all new piping.

The offices, Multipurpose Room, Library, and some classrooms have air conditioning. Many areas, including classrooms spaces are not air conditioned.

The packaged RTU's, condensing units, and furnace installed as a part of the 2000 renovations have exceeded their expected service life. Plans should be made for replacement of these units.

When cooling equipment is replaced, a central chilled water system should be considered.

The hot water boiler plant and associated pumping systems have exceeded their expected service life. Plans should be made for replacement of this system.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Facilities Study Document | Kiel School District, Kiel High School

Building Systems Summary Checklist

Completed by: Craig Nessman, Fredericksen Engineering

Date of Walk-through: May 18, 2022

MECHANICAL

Category:	Good/Fair /Poor:	Notes:
Heating		
Main Building Boiler Plant	Good	Boiler plant was installed in 2000: (3) Riello Boilers (1 @ 2,000 MBH input, 2 @ 4,000 MBH input) and Grundfos pumps.
Performing Arts Center Boiler Plant	Good	Boiler plant was installed in 2020: (3) Riello Boilers (3 @ 399 MBH input) and Grundfos pumps.
Ventilation + A/C Systems		
1968 Classrooms and Auditorium	Poor	Areas are served by hot water unit ventilators / indoor heating only air handling units (heating) and packaged roof top units (air conditioning). The air handling units are original and have exceeded their expected service life. The roof top units were installed in 2000 and have exceeded their expected 15 year service life.
1968 Original Heating Only AHU's, serving; Gymnasium, Art, Cafeteria/Commons, Kitchen, Locker Rooms.	Poor	Areas are served by indoor heating only air handling units. There is no air conditioning in these areas. The air handling units are original and have long exceeded their expected 25 year service life.
1970 Pool	Poor	Area is served by an indoor AHU with hot water heat and a glycol run around system. There is no air conditioning in this area. HVAC equipment is original to the building and have long exceeded its expected 25 year service life.
2000 Addition AHU's and Condensing Units: LMC, Science, Music	Fair/Poor	Areas are served by indoor air handling units and roof mounted condensing units. HVAC Equipment is approximately 20 years old. The indoor AHU's are in good condition, but are aging. The roof mounted condensing units are at the end of their expected 15 year service life.
Office	Poor	Area is served by a cooling only packaged RTU (2000) and hot water heat. The RTU has exceeded its expected 15 year service life.
Tech Ed / Face Lab	Fair	Areas are served by gas fired make-up air units and various exhaust fans. The Make-up air units

		serving Tech Ed are heating only. The unit serving FACE has both heating and cooling. HVAC equipment was replaced as a part of the 2014 renovations. Equipment is in good condition, but is approaching the mid-point of the expected service life.
AG Addition	Fair	Area is served by a packaged roof top units with gas heat. The roof top unit is in good condition, but is approaching the mid-point of the expected service life.
Performing Arts Center	Good	HVAC equipment was added as a part of the 2020 addition and are in good condition.
Control Systems		
	Good	All pneumatic controls have been removed. Entire building is served by Quality Controls.

Consider:

The air handling units that are original to the 1968 portions of the building have exceeded their expected service life. Plans should be made for replacement of these units.

Much of the building is air conditioned by packaged roof top units and condensing units that were installed in 2000. These units are all at the end of their expected service life. Plans should be made for replacement of these units.

When cooling equipment is replaced, a central chilled water system should be considered.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Facilities Study Document | Kiel Area School District, Zielanis Elementary School

Building Systems Summary Checklist

Completed by: Laura Gilbert & Zack Wagner, MSA Professional Services

Date of Walk-through: May 18, 2022

ELECTRICAL

Category:	Good/Fair /Poor:	Notes:
Electrical Service		
Utility Service	Fair	May need replacement if addition or air conditioning load. See notes below.
Service Panel	Fair	May need replacement if addition or air conditioning load. See notes below.
Panelboards	Fair	Approximately (8) panelboards are original to 1960s construction.
Light Fixtures + Controls		
Interior Lighting	Fair	Mostly fluorescent fixtures except for gym & cafeteria.
Corridor Lighting	Fair	Mostly fluorescent fixtures.
Exterior Lights	Good	Mostly upgraded to LED; but approximately (6) recessed fixtures have not been.
Wiring Devices	Fair	Lacking receptacles and circuits in 1960s classrooms.
Clock System	Poor	System no longer synchronizes, and manufacturer no longer exists.
Data System	Good	
Sound Systems	Good	

Consider:

Adding a distribution panel for any additional loads due to limited available breaker mounting space.

Replacement of utility transformers for additional loads. New utility transformers may be needed.

Replacement of service and service panel may be required depending on additional load of significant addition or air conditioning load.

Adding surge suppression on main service.

Replacement of approximately (8) panelboards original to 1960s construction.

Replacement of all existing interior fluorescent and incandescent lighting with LED fixtures.

Replacement of (6) recessed exterior fixtures.

Add additional receptacles and circuits in 1960s classrooms.

Replacement of clock system throughout entire building.

Consider removal of existing abandoned sound spheres in gym.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

LIFE SAFETY

Category:	Good/Fair /Poor:	Notes:
Emergency Generator	Fair	Electronics issues reported with transfer switch.
Emergency Lighting	Good	Some old-style exit lights.
Fire Alarm System	Poor	Older non-addressable type.
Intercom System	Fair	Newer headend, but original speakers and cabling.
Intrusion Alarm System	Fair	
Access Control System	Good	
Video Surveillance System	Good	

Consider:

Providing full diagnostic testing on transfer switches and generator as preventative maintenance to determine if other electronics need replacement.

Adding surge suppression to (2) generator panelboards.

Extend (2) emergency loads connected to optional standby branch panel in the building to the emergency branch.

Replacement of old-style exit lights with LED type.

Replacement of fire alarm system throughout entire building.

Replacement of intercom speakers and cabling throughout entire building.

Removal of intrusion alarm system at District's discretion. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Electrical System Review:

The following report is the result of a site visit by Laura Gilbert and Zack Wagner of MSA Professional Services, Inc. that occurred on May 18, 2022. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in the 1960s. The building has had additions and renovations in 1993 and 2000. Additional power distribution, receptacles, and data distribution were installed in 2000. The generator was upgraded in 2013.

Electrical Service

Observations

- A. The main electrical service panel, located in the lower level boiler room, was installed as part of the 2000 addition and renovations. The service is 120/208 volt, 3-phase 4-wire, 800 amp and is fed underground from pole mounted transformers.
- B. The electrical service panel does not have surge protection.
- C. The pole mounted utility transformer is located on the southwest side of the property along Adams Street and is serviced by Kiel Utilities.
- D. The C/T and meter are pole mounted.
- E. The peak demand provided by the utility is 234 amps. Enough service capacity is available for a small addition or small additional air conditioning load, however there is limited breaker mounting space available in the main service panel. Capacity is not available for a significant addition or air conditioning load.

Recommendations

- A. An additional distribution panel will be needed for any additional loads due to limited available breaker mounting space.
- B. Coordinate any new load with the serving utility to determine if utility transformers are large enough for additional load. New utility transformers may be needed.
- C. A new service and service panel / switchboard may be required depending on additional load of significant addition or air conditioning load.
- D. Provide surge suppression on main service panel.

Panelboards

Observations

- A. Several panelboards are original to the facility. These panelboards are Kinney type.
- B. Panelboards added in the 1993 and 2000 additions and renovations are in good condition. These panelboards are Square D type.
- C. Additional panelboards were added in 2013 during the generator upgrade and are in good condition. These panelboards are also Square D type.



Recommendations

- A. Approximately (8) panelboards which are original to the 1960s construction are beyond their life expectancy and should be replaced.

Emergency Generator

Observations

- A. The facility has an existing exterior natural gas Kohler 40kW 120/208V, 3-phase, 4-wire generator that was installed in 2013. Generator is located outside the office area.
- B. The generator feeds two automatic transfer switches which feed separate panelboards for emergency loads and optional standby loads. Code required emergency loads of egress lighting, exit lights, and fire alarm system are connected to the emergency branch. Boilers, circulation pumps, BAS air compressor, sump pump, data closets, and limited main office receptacles are connected to the optional standby branch.
- C. The generator panelboards do not have surge protection.
- D. School staff reported having electronic issues with automatic transfer switch in the boiler room. However, the generator has not failed when needed.

Recommendations

- A. Provide full diagnostic testing on existing generator and transfer switches. Make repairs/replacements as required.
- B. Add surge protection to the main emergency and optional standby panels.
- C. Extend (2) emergency loads connected to optional standby branch panel in the building to the emergency branch.

Interior and Exterior Lighting

Observations

- A. The majority of the interior light fixtures throughout the facility have are fluorescent type. Incandescent lighting is used in boiler and storage rooms.
- B. Most of the classrooms have standard toggle switches with occupancy sensors.
- C. Corridor lighting is controlled with switches and occupancy sensors.
- D. The gym and cafeteria have LED lighting that was installed approximately 5 years ago.
- E. Building mounted exterior wall pack fixtures and surface mounted canopy fixtures at main entrance have been upgraded to LED. Recessed light fixtures at remote entrances have not been upgraded to LED.
- F. Parking lots are lit from building mounted fixtures.

Recommendations

- A. Consider replacing all existing fluorescent and incandescent lighting with new LED fixture. Consider providing 0-10 volt dimmer switches in all normally occupied areas such as offices and classrooms.
- B. Replace approximately (6) exterior recessed lights fixtures with LED type.

Emergency Lighting

Observations

- A. Existing emergency lighting is provided by generator power to general light fixtures.
- B. Some exit lights were old style incandescent type.

Recommendations

- A. Replace old style exit lights.
- B. Ensure current code is met for emergency egress lighting levels as part of building wide LED lighting replacement recommendation.

Wiring Devices

Observations

- A. The receptacles and toggle switches are commercial grade 15- and 20-amp devices with plastic plates. They vary in age throughout the facility and for the most part show signs of general wear and can be replaced as they age.
- B. District indicated 1960s classrooms could use additional receptacles. This is typical in classrooms of that era.

Recommendations

- A. Replace all wiring devices and plates that are damaged.
- B. Add additional receptacles and circuits as required.

Fire Alarm System

Observations

- A. The fire alarm is an older style non-addressable Notifier SFP-10UD system. Exact age is not known, but it is older than the 2000 addition. As such, it has exceeded its life expectancy. District staff indicated it is beginning to fail.
- B. Open storage cubbies are installed in some corridors. As the building does not have a sprinkler system, current Code requires smoke detectors in these corridors; none were present.

Recommendations

- A. Provide new code-compliant addressable fire alarm system with voice annunciation for the entire facility. This shall include smoke detectors in corridors with open cubbies.

Clock System

Observations

- A. There are Franklin analog clocks throughout the building.
- B. While the clocks are all connected to the Franklin synchronized system located in the Main Office, they are not functioning properly and are not synchronized.
- C. Franklin clock systems are no longer manufactured.

Recommendations

- A. Replace all existing clocks with a GPS or Wi-Fi synchronized clock system.

Intercom System

Observations

- A. All speakers and cabling are original to the phase of construction.
- B. Intercom call-in devices were observed in some spaces.
- C. The Carehawk intercom headend, located in the Main Office, was installed within the last few years.

Recommendations

- A. Consider replacing all speakers and cabling to ensure proper operation and provide greater flexibility with zones, volume control, etc.

Data System

Observations

- A. The main data rack is located in a dedicated room on the first floor off the library.
- B. The district owned fiber optic cable service, which interconnects their 3 buildings, terminates in a storage room adjacent to PT/OT Room in the 2000 addition.
- C. The school has an additional data rack located in the first floor music storage room.
- D. The data cable is a combination of riser (non-plenum) rated and plenum rated CAT5 and CAT6 and is routed to patch panels in the data racks.
- E. The building has wireless access points.

Recommendations

- A. Additional CAT6 cable can be added to rooms as needed.
- B. A possible upgrade to the cabling is to provide all new CAT6 cable throughout the facility to increase the speed of the network.
- C. If HVAC renovations are completed and above ceiling space is changed to a return air plenum, all non-plenum rated cabling must be replaced with plenum rated cabling.

- D. If a building addition would require the data cable to have a total installed length of over 300 feet, then an additional remote data rack will be required.

Intrusion Alarm System

Observations

- A. There is an intrusion alarm system with door contacts and motion sensors installed in this building that at the time of walk thru was no longer in use due to false alarms. Per the system vendor, the false alarms are caused by old door contacts / wiring.
- B. An arm/disarm keypad is located at the main entrance.

Recommendations

- A. Remove intrusion alarm at District's discretion.
- B. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Access Control System

Observations

- A. There is a newer Paxton IP door access control system in this building.
- B. There are approximately 6 doors controlled by system.
- C. There is a Paxton audible / visual door intercom system which communicates between the door entry station located within the main vestibule and a door release/master station at the main office workstation and at the after-school care area in the gym.

Recommendations

- A. Extend or relocate existing system as required for any secure entry renovations.

Video Surveillance System

Observations

- A. There is an existing IP based video surveillance system in the facility that is serviced by Camera Corner.
- B. Quantity and locations of cameras are similar to other occupancies of this type.

Recommendations

- A. Extend existing system to any additions or renovations.

Sound Systems

Observations

- A. There is an existing sound system in the gym that meets the needs of the users. The sound spheres from the original sound system are still installed.
- B. There is not a permanent sound system in the cafeteria. District indicated a portable system is used and meets their current needs.

Recommendations

- A. Remove abandoned sound spheres from the gym.

Facilities Study Document | Kiel Area School District, Kiel Middle School

Building Systems Summary Checklist

Completed by: Laura Gilbert & Zack Wagner, MSA Professional Services

Date of Walk-through: May 18, 2022

ELECTRICAL

Category:	Good/Fair /Poor:	Notes:
Electrical Service		
Utility Service	Good	May need replacement if addition or air conditioning load. See notes below.
Switchboard	Good	May need replacement if addition or air conditioning load. See notes below.
Panelboards	Fair	Approximately (8) panelboards are original to pre-1993 additions and renovations.
Light Fixtures + Controls		
Interior Lighting	Fair	Mostly fluorescent type fixtures with LED lamps
Corridor Lighting	Fair	Mostly fluorescent type fixtures with LED lamps
Exterior Lights	Good	
Wiring Devices	Fair	Lacking receptacles and circuits in 1928, 1951, 1952, 1956, and 1957 classrooms.
Clock System	Poor	System no longer synchronizes, and one manufacturer of installed clocks no longer exists.
Data System	Fair	Limited space around floor racks, and multiple wall racks.
Sound Systems	Good	

Consider:

Adding a distribution section for any additional loads due to limited available breaker mounting space.

Replacement of utility transformer for additional loads. New utility transformer may be needed.

Replacement of service and service switchboard may be required depending on additional load of significant addition or air conditioning load.

Adding surge suppression on main service.

Replacement of approximately (8) panelboards original to pre-1993 construction.

Replacement of all existing interior fluorescent and incandescent lighting with LED fixtures.

Add additional receptacles and circuits in 1928, 1951, 1952, 1956, and 1957 classrooms.

Replacement of clock system throughout entire building.

Creating new dedicated rooms for new floor mounted data racks that meet the current space standards for data rooms.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

LIFE SAFETY

Category:	Good/Fair /Poor:	Notes:
Emergency Generator	Fair	Combined emergency & optional standby loads.
Emergency Lighting	Good	Some old-style exit lights.
Fire Alarm System	Good	Newer addressable type.
Intercom System	Poor	Older Dukane system.
Intrusion Alarm System	Fair	
Access Control System	Good	
Video Surveillance System	Good	

Consider:

Providing full diagnostic testing on transfer switches and generator as preventative maintenance to determine if other electronics need replacement.

Adding surge suppression to generator panelboard.

Providing separate transfer switches as required for Code-required emergency loads and optional standby loads. At the same time, consider replacing the generator with a larger capacity, exterior generator to provide additional optional standby loads on the generator, such as main office area, HVAC air handling equipment for select shelter-in-place locations, etc.

Replacement of old-style exit lights with LED type.

Replacement of intercom headend, speakers, and cabling throughout entire building. At a minimum the existing head end could be replaced with a Carehawk type of system like recently done at Zielanis Elementary School.

Removal of intrusion alarm system at District's discretion. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Electrical System Review:

The following report is the result of a site visit by Laura Gilbert and Zack Wagner of MSA Professional Services, Inc. that occurred on May 18, 2022. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in the 1928. The building has had additions and renovations in 1951, 1952, 1956, 1957, 1989, 1993, 2000 and 2013. Additional power distribution, receptacles and data distribution were installed in 2000.

Electrical Service

Observations

- A. The main electrical service switchboard, located in the sub-lower level electrical room, was installed as part of the 2000 addition and renovations. The service is 120/208 volt, 3-phase 4-wire, 1600 amp and is fed underground from a vault mounted transformer via a disconnect switch in the 1928 Lower Level Boiler Room.
- B. The electrical service switchboard does not have surge protection.
- C. The vault mounted utility transformer is located at the rear of the facility adjacent to the old boiler room and is serviced by Kiel Utilities.
- D. The C/T appears to be transformer mounted and the meter is mounted on the exterior wall of the transformer vault.
- E. The peak demand was not available from the utility in time for the writing of this report. Enough service capacity is anticipated to be available for a small addition or small additional air conditioning load, however there is limited breaker mounting space available in the main service switchboard. Capacity for a significant addition or air conditioning load may also be available but will need to be confirmed with the existing demand when available from the utility.

Recommendations

- A. An additional distribution panel will be needed for any additional loads due to limited available breaker mounting space.
- B. Coordinate any new load with the serving utility to determine if utility transformer is large enough for additional load. New utility transformer may be needed.
- C. A new service and service switchboard may be required depending on additional load of significant addition or air conditioning load.
- D. Provide surge suppression on main service switchboard.

Panelboards

Observations

- A. The facility contains varying types and ages of electrical panelboards. New panelboards were added to areas as part of additions and renovations.



- B. Panelboards added in 1993, 2000, and 2013 additions and renovations are in good condition. These panelboards are Square D type.

Recommendations

- A. The approximately (8) panelboards installed in additions and renovations prior to 1993 are beyond their life expectancy and should be replaced.

Emergency Generator

Observations

- A. The facility has an existing interior natural gas Kohler 30kW 120/208V, 3-phase, 4-wire generator that appears to be installed in 2004 based on date on nameplate. Generator is in the 1928 Lower Level Boiler Room.
- B. The generator appears to feed just one automatic transfer switch located in the sub-lower level electrical room. It feeds separate panelboards for emergency loads and optional standby loads. Code required emergency loads of egress lighting, exit lights, and fire alarm system and option stand by loads such as boilers, circulation pumps, BAS air compressor, and sump pump are all connected on the same branch which is not allowable per NEC.
- C. The generator panelboard does not have surge protection.
- D. School staff reported having component failure recently on the generator, but it was corrected.

Recommendations

- A. Provide full diagnostic testing on existing generator and transfer switches. Make repairs/replacements as required.
- B. Add surge protection to the main generator panel.
- C. Provide separate transfer switches as required for Code-required emergency loads and optional standby loads. At the same time, consider replacing the generator with a larger capacity, exterior generator to provide additional optional standby loads on the generator, such as main office area, HVAC air handling equipment for select shelter-in-place locations, etc.

Interior and Exterior Lighting

Observations

- A. Most of the interior light fixtures throughout the facility are fluorescent type fixtures with LED replacement lamps. Incandescent lighting is used in select utility spaces.
- B. Most of the classrooms have standard toggle switches with occupancy sensors.
- C. Corridor lighting is controlled with switches and occupancy sensors.
- D. The gym has LED lighting that was installed approximately 5 years ago.

- E. Building mounted exterior wall pack fixtures have been upgraded to LED.
- F. Parking lot lighting at the remote staff lot appears to be LED type pole mounted fixtures.

Recommendations

- A. Consider replacing all existing fluorescent and incandescent lighting with new LED fixture. Consider providing 0-10 volt dimmer switches in all normally occupied areas such as offices and classrooms.

Emergency Lighting

Observations

- A. Existing emergency lighting is provided by generator power to general light fixtures.
- B. Some exit lights were old style incandescent type.

Recommendations

- A. Replace old style exit lights.
- B. Ensure current code is met for emergency egress lighting levels as part of building wide LED lighting replacement recommendation.

Wiring Devices

Observations

- A. The receptacles and toggle switches are commercial grade 15- and 20-amp devices with plastic plates. They vary in age throughout the facility and for the most part show signs of general wear and can be replaced as they age.
- B. The 1928, 1951, 1952, 1956, and 1957 classrooms are assumed to be lacking receptacles as this is typical in classrooms of those eras.

Recommendations

- A. Replace all wiring devices and plates that are damaged.
- B. Add additional receptacles and circuits as required.

Fire Alarm System

Observations

- A. The fire alarm is a newer, addressable Notifier NFS2-640 system. It was installed in 2010.
- B. Fire alarm initiation and notification coverage appears to be adequate for current Code. Despite current Code requiring voice annunciated notification for new Educational facilities, existing building code allows renovations of less than 50% of existing building area to continue with tone annunciation. Any addition with greater than 100 occupants will require an upgrade to the existing control panel to support voice annunciation in the addition, while maintaining existing tone annunciation in the existing building.



Recommendations

- A. Maintain existing system and upgrade control panel only if an addition with greater than 100 occupants is added or more than 50% of existing building area will be renovated.

Clock System

Observations

- A. There are Simplex and Franklin analog clocks throughout the building.
- B. While the clocks appear to be connected to the Simplex synchronized system located in the Main Office, they are not functioning properly and are not synchronized.
- C. Franklin clock systems are no longer manufactured.

Recommendations

- A. Replace all existing clocks with a GPS or Wi-Fi synchronized clock system.

Intercom System

Observations

- A. The facility has a Dukane MCS350 intercom system. The head end is in the Main Office. It has exceeded its life expectancy.

Recommendations

- A. Consider providing a new hybrid IP intercom system, including replacement of all speakers and cabling. This would allow for greater flexibility with zones, volume, and allow system to annunciate off any IP platform (i.e. phone, security, etc.).
- B. At a minimum the existing head end could be replaced with a Carehawk type of system like recently done at Zielanis Elementary School.

Data System

Observations

- A. The main data rack is in a dedicated room on the first floor off a classroom on the east side of the original building.
- B. The district owned fiber optic cable service, which interconnects their 3 buildings, terminates in a storage room adjacent to the Science Room in the 2000 addition.
- C. The facility has an two additional data racks. One located in the first floor shop work room and one located in an office on the first floor of the district office.
- D. The data cable is a combination of riser (non-plenum) rated and plenum rated CAT5 and CAT6 and is routed to patch panels in the data racks.
- E. The building has wireless access points.

Recommendations

- A. Additional CAT6 cable can be added to rooms as needed.



- B. A possible upgrade to the cabling is to provide all new CAT6 cable throughout the facility to increase the speed of the network. When this is completed, it is recommended to create new dedicated rooms for new floor mounted data racks that meet the current space standards for data rooms.
- C. If HVAC renovations are completed and above ceiling space is changed to a return air plenum, all non-plenum rated cabling must be replaced with plenum rated cabling.
- D. If a building addition would require the data cable to have a total installed length of over 300 feet, then an additional remote data rack will be required.

Intrusion Alarm System

Observations

- A. There is an intrusion alarm system with door contacts and motion sensors installed in this building that at the time of walk thru was only in use for minimal overnight hours due to false alarms. Per the system vendor, the false alarms are caused by old door contacts / wiring.
- B. An arm/disarm keypad is located at the main entrance.

Recommendations

- A. Remove intrusion alarm at District's discretion.
- B. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Access Control System

Observations

- A. There is a newer Paxton IP door access control system in this building.
- B. There are several doors controlled by system.
- C. There is a Paxton audible / visual door intercom system which communicates between the door entry station located within the main vestibule and a door release/master station at the main office workstation.

Recommendations

- A. Extend or relocate existing system as required for any secure entry renovations.

Video Surveillance System

Observations

- A. There is an existing IP based video surveillance system in the facility that is serviced by Camera Corner.
- B. Quantity and locations of cameras are similar to other occupancies of this type.

Recommendations



- A. Extend existing system to any additions or renovations.

Sound Systems

Observations

- A. There is an existing sound system in the gym that meets the needs of the users.
- B. There is an existing sound system in the multi-purpose room that meets the needs of the users.

Recommendations

- A. None.

Facilities Study Document | Kiel Area School District, Kiel High School

Building Systems Summary Checklist

Completed by: Laura Gilbert & Zack Wagner, MSA Professional Services

Date of Walk-through: May 18, 2022

ELECTRICAL

Category:	Good/Fair /Poor:	Notes:
Electrical Service		
Utility Service #1	Fair	May need replacement if addition or air conditioning load. See notes below.
Switchboard #1	Fair	
Utility Service #2	Good	May need replacement if addition or air conditioning load. See notes below.
Service Panel #2	Good	
Panelboards	Fair	Approximately (15-20) panelboards are original to the 1968 and 1970 construction.
Light Fixtures + Controls		
Interior Lighting	Fair	Mostly fluorescent fixtures
Corridor Lighting	Fair	Mostly fluorescent fixtures
Exterior Lights	Good	
Wiring Devices	Good	
Clock System	Poor	System no longer synchronizes and mix of clock manufactures.
Data System	Fair	Multiple wall racks.
Sound Systems	Good	Gym, Little Theater, Auditorium are good. Pool is poor.

Consider:

Replacement of utility transformers for additional loads. New utility transformers may be needed.

Replacement of Electrical Service #1 switchboard due to age. At same time, replacement of service with larger be required depending on additional load of significant addition or air conditioning load.

Adding surge suppression on main service #1.

Replacement of approximately (15-20) panelboards original to 1968 and 1970 construction.

Replacement of all existing interior fluorescent and incandescent lighting with LED fixtures.

Replacement of clock system throughout entire building.

Creating new dedicated rooms for new floor mounted data racks that meet the current space standards for data rooms.

Replacement of Pool Sound System.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

LIFE SAFETY

Category:	Good/Fair /Poor:	Notes:
Emergency Generator	Good	
Emergency Lighting	Good	Some old-style exit lights.
Fire Alarm System	Poor	Older non-addressable and 120-volt type; scheduled for replacement Summer 2022 at which time this category will move to Good.
Intercom System	Poor	Older Rauland system.
Intrusion Alarm System	Fair	
Access Control System	Good	
Video Surveillance System	Good	

Consider:

Adding surge suppression to (2) generator panelboards.

Replacement of old-style exit lights with LED type.

Replacement of fire alarm system throughout entire building as already scheduled for summer 2022.

Replacement of intercom headend, speakers, and cabling throughout entire building. At a minimum the existing head end could be replaced with a Carehawk type of system like recently done at Zielanis Elementary School.

Removal of intrusion alarm system at District's discretion. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Assessment Guidelines:

Good Condition: No visible damage, wear or need for repair; no replacement needed.

Fair Condition: Some visible damage, wear or need for repair; future replacement needed.

Poor Condition: Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Electrical System Review:

The following report is the result of a site visit by Laura Gilbert and Zack Wagner of MSA Professional Services, Inc. that occurred on May 18, 2022. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in the 1968. The building has had several renovations and additions in 1970, 2000, 2013 and 2020. Additional power distribution, receptacles and data distribution were installed in 2000.

Electrical Service

Observations

- A. This facility has two existing electrical services.
- B. The Electrical Service #1 switchboard, located in the lower level electrical room, is original to the 1968 construction of the building. The service is 277/480 volt, 3-phase 4-wire, 1600 amp and is fed underground from a 500 kVA pad mounted transformer. This service serves the entire portion of the building prior to the 2020 auditorium addition.
- C. The Electrical Service #1 switchboard does not have surge protection.
- D. The pad mounted utility transformer for Electrical Service #1 is located outside the northwest corner of the gym and is serviced by Kiel Utilities.
- E. The transformer for Electrical Service #1 appears feed pad mounted switching equipment located outside the norther wall of the gym. This equipment may contain the C/T.
- F. The meter is mounted on the exterior north wall, just west of the switching equipment.
- G. The peak demand was not available from the utility in time for the writing of this report. Enough service capacity is anticipated to be available for a small addition or small additional air conditioning load, however there is limited breaker mounting space available in the main service switchboard. Capacity for a significant addition or air conditioning load may also be available but will need to be confirmed with the existing demand when available from the utility.
- H. The Electrical Service #2 panelboard was installed during the 2020 auditorium addition. The service is 120/208 volt, 3-phase 4-wire, 1200 amp and is fed underground from a pad mounted transformer. This service serves only the auditorium addition.
- I. The Electrical Service #2 panelboard has surge protection.
- J. The pad mounted utility transformer for Electrical Service #2 is located outside the southeast corner of the auditorium addition and is serviced by Kiel Utilities. The C/T is integral to the transformer and the meter is mounted to the transformer.
- K. The peak demand was not available from the utility in time for the writing of this report. Enough service capacity is anticipated to be available for a small addition or small additional air conditioning load. Capacity for a significant addition or air



conditioning load may also be available but will need to be confirmed with the existing demand when available from the utility.

Recommendations

- A. The switchboard for Electrical Service #1 is beyond its life expectancy and should be replaced. It may need to increase size and a new service may be required depending on additional load of significant addition or air conditioning load.
- B. Coordinate any new load with the serving utility to determine if utility transformers are large enough for additional load. New utility transformers may be needed.
- C. Provide surge suppression on the switchboard for Electrical Service #1.

Panelboards

Observations

- A. The facility contains varying types and ages of electrical panelboards. New panelboards were added to areas as part of additions and renovations.
- B. Panelboards added in 2000, 2013 and 2020 additions and renovations are in good condition. These panelboards are Square D type.

Recommendations

- A. Approximately 15-20 panelboards which are original to the 1968 and 1970 construction are beyond their life expectancy and should be replaced.

Emergency Generator

Observations

- A. The facility has an existing exterior natural gas Kohler 100kW 277/480V, 3-phase, 4-wire generator that was installed in 2013. Generator is located outside the north wall of the gym.
- B. The generator feeds two automatic transfer switches which feed separate panelboards for emergency loads and optional standby loads. Code required emergency loads of egress lighting, exit lights, and fire alarm system are connected to the emergency branch. Boilers, circulation pumps, BAS air compressor, sump pump, pool pump, main data rack, and elevator are connected to the optional standby branch.
- C. The generator panelboards do not have surge protection.

Recommendations

- A. Add surge protection to the main emergency and optional standby panels.

Interior and Exterior Lighting

Observations

- A. Most of the interior light fixtures throughout the facility are fluorescent type. Incandescent lighting is used in other spaces.



- B. Most of the classrooms have standard toggle switches with occupancy sensors.
- C. Corridor lighting is controlled with switches and occupancy sensors.
- D. The gym has LED lighting that was installed approximately 5 years ago. Lighting in the Phy. Ed Locker Rooms has also been upgraded to LED.
- E. Building mounted exterior wall pack fixtures have been upgraded to LED.
- F. Parking lot lighting appears to be LED type pole mounted fixtures.
- G. Pool niche lights need replacement per maintenance staff.

Recommendations

- A. Consider replacing all existing fluorescent and incandescent lighting with new LED fixture. Consider providing 0-10 volt dimmer switches in all normally occupied areas such as offices and classrooms.
- B. Replace pool niche lights with LED type.

Emergency Lighting

Observations

- A. Existing emergency lighting is provided by generator power to general light fixtures.
- B. Some exit lights were old style incandescent type.

Recommendations

- A. Replace old style exit lights.
- B. Ensure current code is met for emergency egress lighting levels as part of building wide LED lighting replacement recommendation.

Wiring Devices

Observations

- A. The receptacles and toggle switches are commercial grade 15- and 20-amp devices with plastic plates. They vary in age throughout the facility and for the most part show signs of general wear and can be replaced as they age.

Recommendations

- A. Replace all wiring devices and plates that are damaged.

Fire Alarm System

Observations

- A. There is an older non-addressable Notifier type of system, along with an even older 120-volt system in the portions of the building constructed prior to the 2020 auditorium addition. A complete replacement with an addressable, voice annunciated system is scheduled to be installed this summer.

Recommendations

- A. None.

Clock System

Observations

- A. There are Rauland, Simplex, and American Time & Signal analog clocks throughout the building.
- B. While the clocks appear to be connected to the Simplex synchronized system located in the Main office, they are not functioning properly and are not synchronized.

Recommendations

- A. Replace all existing clocks with a GPS or Wi-Fi synchronized clock system.

Intercom System

Observations

- A. The facility has a Rauland type intercom system. The head end is in the main data room near the Library / Tech. Center. It has exceeded its life expectancy.

Recommendations

- A. Consider providing a new hybrid IP intercom system, including replacement of all speakers and cabling. This would allow for greater flexibility with zones, volume, and allow system to announce off any IP platform (i.e. phone, security, etc.).
- B. At a minimum the existing head end could be replaced with a Carehawk type of system like recently done at Zielanis Elementary School.

Data System

Observations

- A. The main data rack is in a dedicated room on the first floor off of the Library / Tech Center.
- B. The district owned fiber optic cable service, which interconnects their 3 buildings, terminates the main data room.
- C. The facility has an four additional data racks. They are located in the following room: (wall rack) Boiler Room on Lower Level; (wall rack) Work Room in Main Office; (floor) Custodian Room in the first floor east classroom wing; (wall rack) Office at entrance to Tech. Ed Wing.
- D. There is also fiber optic cable connecting the Pressbox to the main building network.
- E. The data cable is a combination of riser (non-plenum) rated and plenum rated CAT5 and CAT6 and is routed to patch panels in the data racks.
- F. The building has wireless access points.

Recommendations

- A. Additional CAT6 cable can be added to rooms as needed.
- B. A possible upgrade to the cabling is to provide all new CAT6 cable throughout the facility to increase the speed of the network. When this is completed, it is recommended to create new dedicated rooms for new floor mounted data racks that meet the current space standards for data rooms.
- C. If HVAC renovations are completed and above ceiling space is changed to a return air plenum, all non-plenum rated cabling must be replaced with plenum rated cabling.
- D. If a building addition would require the data cable to have a total installed length of over 300 feet, then an additional remote data rack will be required.

Intrusion Alarm System

Observations

- A. There is an intrusion alarm system with door contacts and motion sensors installed in this building that at the time of walk thru was only in use for minimal overnight hours due to false alarms. Per the system vendor, the false alarms are caused by old door contacts / wiring.
- B. An arm/disarm keypad is located at the main entrance.

Recommendations

- A. Remove intrusion alarm at District's discretion.
- B. If a functioning intrusion alarm system is desired, consider disconnecting all existing door contacts and adding additional motion detectors as a minimum. If a full system is desired, provide all new door contacts and wiring, in addition to motion sensors.

Access Control System

Observations

- A. There is a newer Paxton IP door access control system in this building.
- B. There are several doors controlled by system.
- C. There is a Paxton audible / visual door intercom system which communicates between the door entry station located within the main vestibule and a door release/master station at the main office workstation.

Recommendations

- A. Extend or relocate existing system as required for any secure entry renovations.

Video Surveillance System

Observations

- A. There is an existing IP based video surveillance system in the facility serviced by Camera Corner.



- B. Quantity and locations of cameras are similar to other occupancies of this type.

Recommendations

- A. Extend existing system to any additions or renovations.

Sound Systems

Observations

- A. There is an existing sound system in the gym that meets the needs of the users. It was installed within the last 2-3 years.
- B. There is an existing sound system in the Auditorium that meets the needs of the users at this time.
- C. There is a small, existing sound system in the Cafeteria that meets the needs of the users at this time.
- D. There is an existing sound system in the Pool that per District staff should be replaced.
- E. There is an existing sound system in the Auditorium that is original to the 2020 construction and meets the needs of the users at this time.

Recommendations

- A. Replace the Pool sound system.

Zielanis Elementary School Existing Facilities Conditions
1010 Adams St
Kiel, WI 53042

Prepared By:
Kapur & Associates, Inc.
7711 North Port Washington Road
Milwaukee, WI 53217

June 2022





Figure 1: Aerial photo of facilities at the Zielanis Elementary School Campus. Numbers refer to location of figures below.

(Please note that aerial imagery used is the most recent image available and may not reflect current aerial view of the campus)





Existing Conditions:

The hard surfaces at the Zielanis Elementary school Campus consist of two parking lots (South and West), multiple sidewalks, driveways, and a student play yard on the north and east sides of the existing building. The soft surfaces include a ball field and gravel playground area. Below is the breakdown of individual facilities conditions on the Zielanis Elementary School Campus.

West Parking Lot Condition:

The West Parking Lot consists of two asphalt driveways, an asphalt parking lot and concrete sidewalk. The asphalt is in poor condition. Both asphalt driveway aprons have edge cracking on all edges (*Figure 2*), as well as cracking in the concrete gutter. The north end of the parking lot has an area that is settling causing alligator and block cracking (*Figure 3*). The pavement has longitudinal and transverse cracking in several areas and some edge cracking. The surface has large areas covered in crack sealant, and many of the sealed cracks are expanding (*Figure 4*). The sidewalk is severely cracked and uneven in multiple areas and is in poor condition (*Figure 5*). The concrete curb and gutter throughout the lot is extremely worn and many pieces of concrete are breaking off (*Figure 6*). It is in poor condition. The pavement markings are also in poor condition and are chipped and fading.



Figure 2: NW Driveway apron in fair condition.





Figure 3: Cracked pavement on the North portion of West parking lot.



Figure 4: Transverse crack in West parking lot.





Figure 5: Severe cracking in sidewalk by north doors on west side of school.





Figure 6: Deteriorated curb near south-west driveway apron





South Parking Lot Condition:

The South Parking Lot consists of an asphalt parking lot and drive loop, and sidewalk on the north, east and west sides. The asphalt driveway aprons at entry and exit, and the concrete driveway gutters are in poor condition (*Figure 7*). There are several areas of severe alligator cracking throughout the lot (*Figure 8*). There appears to be settlement in many areas causing additional cracking such as longitudinal, transverse and block (*Figure 9*). The sidewalks appear very worn but are in fair condition with some areas of cracking concrete (*Figure 10*). The concrete curb is in poor condition throughout due to gaps between sections and pieces of concrete broken off (*Figure 11*). The trash enclosure gate on the north-east portion of the south parking lot is uneven (*Figure 12*).



Figure 7: South driveway apron





Figure 8: Alligator cracking in east driveway in south parking lot





Figure 9: South parking lot cracking



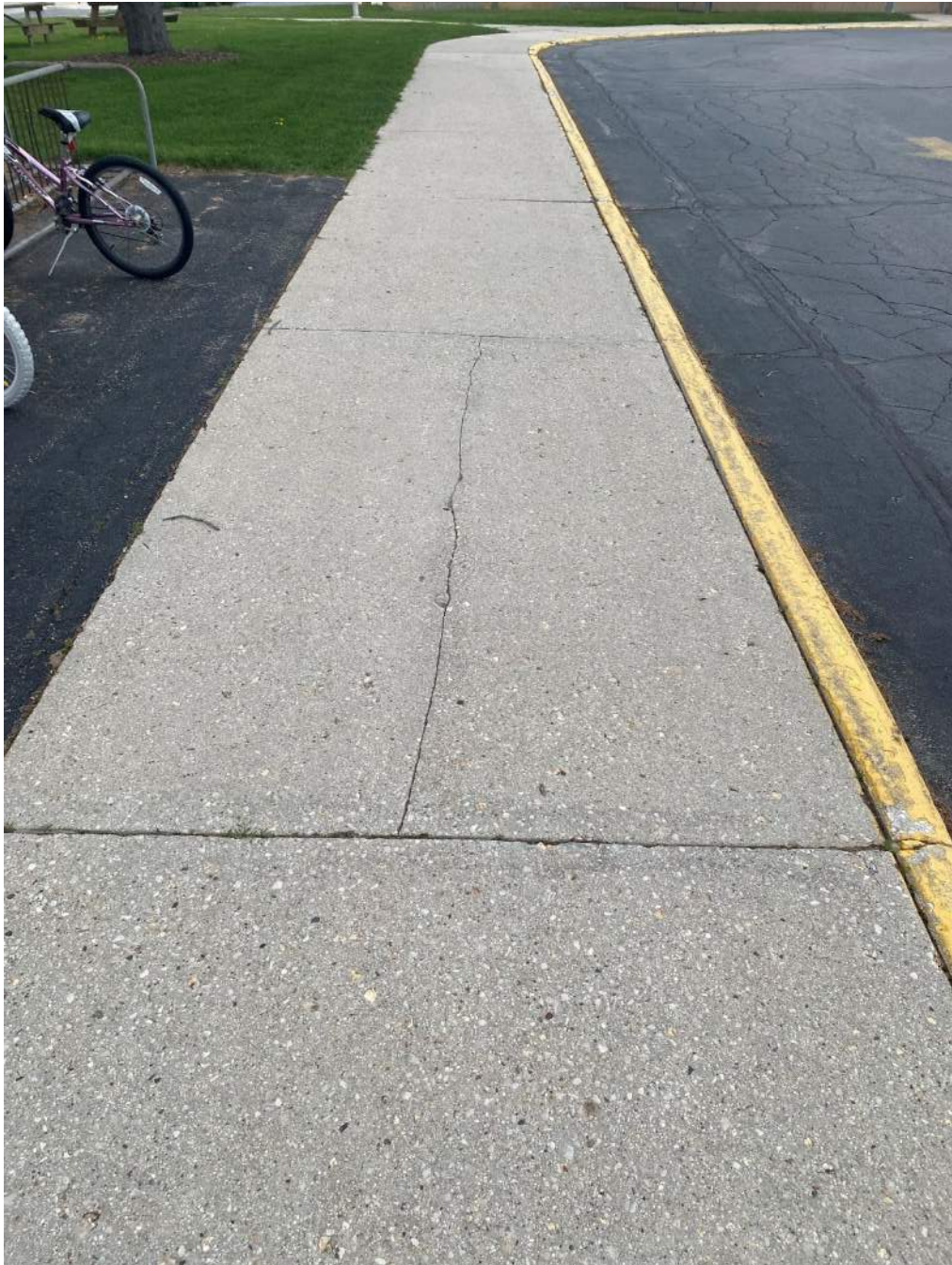


Figure 10: Crack in west sidewalk





Figure 11: Cracked and deteriorating curb in north-west corner of south parking lot





Figure 12: Trash enclosure near north-east corner of south parking lot





North Play Yard:

The North Play Yard consists of an asphalt play area, ball field with fencing and a covered picnic table pad. The concrete seating area extending off the north-west corner of the building has some chipped edges (*Figure 13*). The ball field is poorly maintained and covered with weeds (*Figure 14*). The ball field fencing needs to be repaired/replaced due to a wire hanging off the bottom (*Figure 15*). The existing asphalt swale on the north-east portion of the yard is deteriorated and in very poor condition (*Figure 16*). The picnic table pad is in good condition with no cracking present (*Figure 17*). The north portion of the asphalt play yard is in poor condition with longitudinal cracking and settling towards the middle (*Figure 18*). The pavement markings are fading in the asphalt play yard (*Figure 19*). The concrete ramps on the north portion of the building are in very poor condition with severe cracking (*Figure 20*). The metal railings on the ramp are rusting and becoming completely separated from the concrete ramp. This is causing sharp edges to be exposed near the base (*Figure 21*).



Figure 13: Concrete seating area





Figure 14: Existing ball field in poor condition





Figure 15: Broken fence with loose wire next to ball field





Figure 16: Swale near NE portion of play yard in poor condition





Figure 17: Concrete picnic table pad in good condition





Figure 18: Longitudinal cracking and settling in the north play area



Figure 19: Fading play area markings





Figure 20: Severe cracking in several areas on the north ramps for existing building doors



Figure 21: Rusted railing with exposed sharp base on ramps





East Play Yard:

The East Play Yard consists of a playground area with a gravel base, an asphalt play yard, fencing and a gazebo. The gravel play area on the east side of the play yard is in good condition (*Figure 22*). The plastic edging and equipment are also in good condition. The fencing along the southeast portion is in fair condition but has several broken links (*Figure 23*). The east play area is in fair to poor condition with several cracks and settling in the pavement (*Figure 24*). Many of the cracks that are sealed are opening again. The pavement markings are also fading and in poor condition.



Figure 22: Gravel play area in good condition





Figure 23: Broken links in the fencing that must be repaired/replaced



Figure 24: Cracks in play area surface



Kiel Middle School Existing Facilities Conditions
502 Paine Street
Kiel, WI 53042

Prepared By:
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July 2022



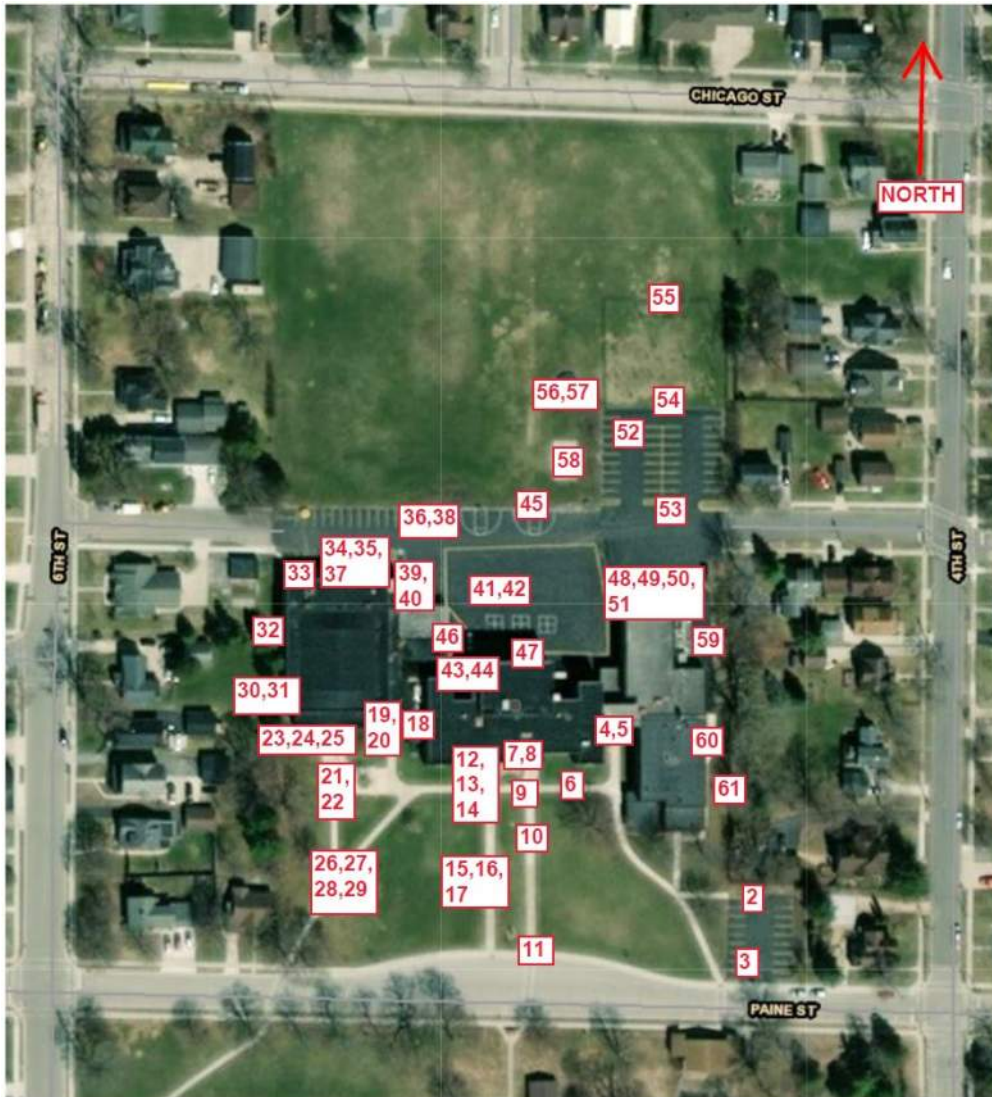


Figure 1: Aerial photo of Kiel Middle School. Numbers refer to location of figures below.
(Please note that the aerial imagery used is most recent available and may not represent current aerial view of campus)

Existing Conditions:

The Kiel Middle School Campus consists of three asphalt parking lots on the northeast, northwest and southeast of the school building. The front of the school includes multiple concrete sidewalks leading to Paine Street, as well as multiple concrete stairs, a metal stair and concrete ramp. The back of the school building includes an asphalt play yard, concrete ramp, concrete stairs, and a grass play yard with playground equipment. There is also a fenced in climbing area. The east side of the building has concrete sidewalk that turns into asphalt towards the north. There is also a metal fence along the property line and metal fencing around mechanical equipment against the building. The west side of the school is all grass between the school and neighbors' property, and there is a wooden fence on the property line. Below is the breakdown of individual facilities conditions on the Kiel Middle School Campus.





South Side of Site

Southeast Parking Lot:

The southeast parking lot includes 17 regular stalls and 1 ADA stall. The stalls are all marked with pavement markings and the accessible stall also has a sign denoting it. There are transverse and longitudinal cracks in the parking lot. While many have been sealed some of the sealed cracks are expanding. There are also areas of block cracking that have not been sealed (Figure 2). These could turn into alligator cracking or potholes if left untreated. There is some settling occurring throughout the lot too, as there are discolored circles which indicate sitting water (Figure 3). The pavement markings are beginning to rub off in certain areas but are still visible. Overall, the condition of the southeast parking lot is fair to poor.



Figure 2: Block, transverse, and longitudinal cracks in southeast parking lot.





Figure 3: Pavement settling occurring in southeast parking lot.

Front East Sidewalks and Staircase:

The concrete sidewalk from the bottom of the staircase to Paine Street appears to be in good condition with few cracks. Many of the slabs appear new. The concrete staircase and landing are extremely worn and in poor condition (Figure 4). There is a lot of chipped concrete, and the railings are rusted (Figure 5). The grass in this area has areas of exposed soil where no grass is growing.





Figure 4: Front east stairs in poor condition.



Figure 5: Concrete deterioration at railing post on Front East Stairs.





Front East to West Sidewalk:

The front east to west sidewalk is in fair to poor condition. There are some areas of settling and cracking occurring, but most of the sidewalk just has common signs of aging such as chipped edges (Figure 6).



Figure 6: Cracking in east to west sidewalk.

Front Center East Sidewalks and Staircase:

The center east concrete staircase is in poor condition. There are many cracks on the concrete slab, as well as cracking and missing concrete on the stair's foundation (Figures 7&8). The bottom of the railings are rusting. The large slab at the base of the center east stairway also has a large vertical crack running through it (Figure 9). The center east sidewalk from the school to Paine Street is in fair to poor condition. Two slabs on the north end have large horizontal cracks all the way through them (Figure 10). The farthest south slab near the city sidewalk has a large corner completely cracked off (Figure 11). Overall, the concrete sidewalk is in fair condition, except for the four cracked slabs which are in poor condition.





Figure 9: Top of center east concrete stairs in poor condition.



Figure 8: Side of center east concrete stairs.





Figure 9: Vertical crack in concrete slab at bottom of front center east stairs.



Figure 10: Horizontal cracking in front center east Sidewalk.





Figure 11: Corner of concrete sidewalk slab cracked off at south slab of center east sidewalk.

Front Center West Sidewalks and Stairs:

The center west sidewalk concrete staircase is in poor condition (Figure 12). There are many cracks on the concrete slab (Figure 14), as well as cracking and missing concrete on the stair's foundation (Figure 13). The bottoms of the railings are rusting. The concrete sidewalk that connects the stairs to Paine Street has some slabs that have large cracks in it. There is one slab towards the north end that has a large horizontal crack all the way across it (Figure 15). The same slab also has an angled crack further north (Figure 16). This area of concrete appears older than the concrete on the south half of the sidewalk. There are two slabs in the newer portion that have the corners completely broken off from the slab (Figure 17). All these cracked slabs could be replaced while keeping the other slabs that have no cracking.





Figure 12: Front center west stairs.



Figure 13: Foundation deterioration of front center west concrete stair.





Figure 14: Top of front center west stair in poor condition.





Figure 15: Horizontal crack in front center west sidewalk.





Figure 16: Diagonal crack in front center west sidewalk.





Figure 17: Corners cracked off front center west concrete sidewalk.





Front Metal Stair:

The metal stairway is in good condition and there is no visible rusting (Figure 18). The concrete pad it sits on is also in good condition with no visible cracks.



Figure 18: Front metal stair in good condition.





Front Concrete Ramp:

The front concrete ramp is in good to fair condition. The metal railing is in good condition with no rusting (Figure 19). The concrete ramp is in good condition, except for where the railing is attached to the concrete (Figure 20). There is cracked concrete around most of the metal posts, but the cracking is localized to the area around each railing post.



Figure 19: Front concrete ramp in good to fair condition.





Figure 20: Cracking concrete at railing poles on front concrete ramp.

West Front Concrete Stair and Plaza:

The concrete plaza area on the front of the school is in very good condition. The concrete appears to be very new. There are no major cracks in this area. The benches are also in very good condition. The metal bike racks are in fair to poor condition. There are sharp metal pieces hanging off the bottoms of the racks, which could be dangerous (Figure 21&22). The concrete stairway is in fair condition. The foundation has a large vertical crack in nearly the same area on each side (Figure 23&24). The concrete stairs are in good condition besides a thin crack going right up the middle (Figure 25). The metal railing is in good condition with no rusting.





Figure 21: Sharp edges exposed on metal bike rack.



Figure 22: Metal bike racks in fair to poor condition.





Figure 23: Crack in foundation of front west stairway.



Figure 24: Another foundation crack on front west stairs.





Figure 25: Crack on stairs of front west stairway.

Front West Sidewalk:

The front west sidewalk connects the west side of the school to Paine Street. The two legs of the west sidewalk are in poor condition, with exception to the few slabs that appear newer. Majority of this sidewalk appears old and worn with cracks throughout (Figure 29). Some slabs are broken into multiple pieces (Figure 26,27&28).





Figure 26: Severe cracking in front west sidewalk.



Figure 27: Additional cracking in front west sidewalk.





Figure 28: Cracking in front west sidewalk.

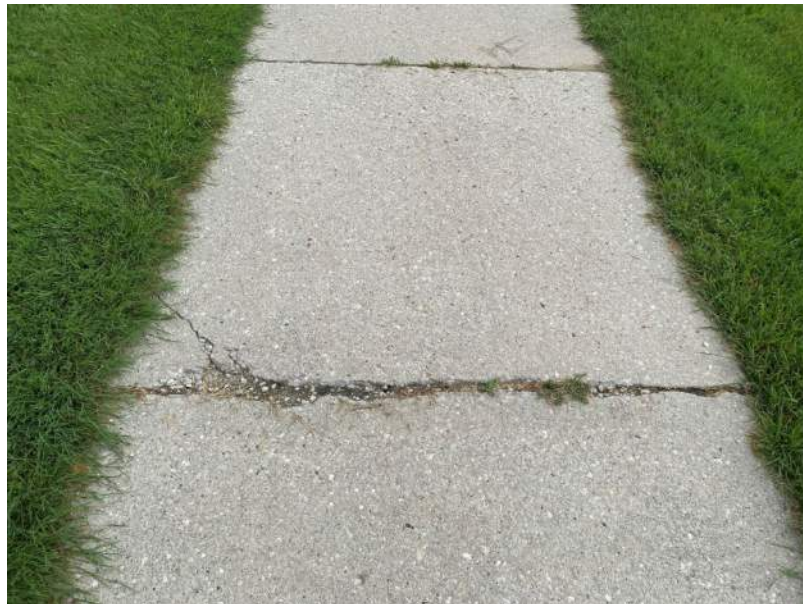


Figure 29: Deteriorating concrete on front west sidewalk.





West Side of Site

West Door:

The door on the west side of the school has a large concrete landing that is in fair condition. The landing appears worn and one corner has corner broken off it (Figure 30). The surrounding grass is not growing well, and soil is exposed (Figure 31).



Figure 30: Corner cracked off concrete slab at door on west side of school.



Figure 31: Concrete slab and surrounding grass in good to fair condition on west side of school.





West Fence:

The wooden fence on the property line on the west side of the school is in poor condition. Many of the pieces are missing and the wood appears rotted and tipsy (Figure 32).



Figure 32: Wood fence on west side of school in poor condition.

North Side of Site

Northwest Parking Lot and Sidewalk:

The sidewalk along the back of the building on the west side is in good condition, except for one slab with a large crack through it (Figure 33). The northwest parking lot is in fair to poor condition. There are significant longitudinal and transverse cracks throughout (Figure 34). The worst cracking is in the two bays of parking stalls (Figure 35,36, &37). There also appears to be some settling near the catch basins. The drive lane between the two bays of parking stalls appears to be in fair condition with less cracking (Figure 38). The pavement markings are beginning to wear off.





Figure 33: Cracked concrete slab at west door on back side of school.



Figure 34: Longitudinal cracking in parking stalls in northwest parking lot.





Figure 75: Longitudinal cracking in northwest parking lot.





Figure 86: Longitudinal and transverse cracking in parking stalls in northwest parking lot.





Figure 37: Cracking and settling in northwest parking lot.





Figure 38: Newer pavement in drive lane of northwest parking lot in fair condition.





Back Concrete Ramp:

Overall, the back concrete ramp is in fair condition. The brick base has minimal cracking (Figure 39). There are two cracks in the concrete pavement, but majority of the concrete is not cracked or chipped (Figure 40). The railing is rusted especially at the base.



Figure 39: Back concrete ramp in fair condition.





Figure 40: Cracked slab at landing of back concrete ramp.

Back Play Yard:

The asphalt in the back of the school used for a play yard and loading area is in very poor condition. Majority of the pavement has alligator cracking, as well as longitudinal, transverse and block cracks (Figure 41&42). The concrete stoop near the shed and the shed are in poor condition (Figure 43&44). The concrete stoop is chipped away on one corner and the shed is rotting at the bottom. The pavement markings in the play yard are worn and faded. The basketball hoop backboards and metal netting are rusting and are in poor condition (Figure 45). The poles are in fair condition.





Figure 41: Severe alligator cracking in back play yard.



Figure 42: Alligator cracking throughout back play yard.





Figure 43: Deteriorating concrete stoop in back play yard.



Figure 44: Deteriorating shed in back play yard.





Figure 45: Basketball hoops in poor condition in back play yard.

Back Concrete Stairway:

The back concrete stairway is in poor condition. The cinderblock base is disintegrating in areas and the concrete steps are cracking and chipping (Figure 46). The metal railing is very rusted and deteriorated as well.



Figure 46: Concrete stair in back play yard in poor condition.





Back Mechanical Fence:

The metal fence enclosing the mechanical equipment on the back side of the school is in fair condition. There appears to be damage to the top portion of fencing (Figure 47). There is also rusting beginning.



Figure 47: Damaged fencing surrounding mechanical equipment on back side of school.





Back ADA Parking Area:

The back ADA asphalt parking area is in poor condition. Majority of the pavement is covered in alligator cracking (Figure 48,49&50). The pavement marking is also wearing off. The concrete sidewalk south of the ADA stalls is in fair condition. The pavement appears old and chipped, but there is minimal cracking (Figure 51). There is some newer pavement north of the accessible stalls that is part of the drive lane that is in fair condition. There are longitudinal cracks in that pavement, but there is no alligator cracking.



Figure 48: ADA parking area in poor condition due to alligator cracking.





Figure 49: Alligator cracking in ADA stalls on east side of back of school.



Figure 50: Alligator cracking and worn pavement markings in back east ADA stalls.





Figure 51: Concrete sidewalk near back east ADA parking stalls in fair condition.





Northeast Parking Lot:

The northeast asphalt parking lot is in very poor condition. The pavement is covered in alligator and block cracks and has grass growing through the cracks (Figure 52&53). The pavement markings are also chipping and fading. There is also settling causing standing water on the pavement in certain spots.



Figure 52: Northeast parking lot covered in alligator cracking.





Figure 53: Alligator cracking near entrance to back northeast parking lot.





Climbing Area Fencing:

The fencing surrounding the climbing area is in fair condition. It is tipping over in some areas and the bottom is coming unraveled causing sharp wires to stick out (Figure 54&55).



Figure 54: Fence surrounding climbing area falling over.



Figure 55: Exposed wire on bottom of fence surrounding climbing equipment.





Playground Equipment:

The wooden octagon is in good to fair condition. There was water sitting on the rubber pads inside the enclosure. Some of the gravel base is missing under the concrete pad (Figure 56). There are also some cracks radiating out of the concrete pad (Figure 57). The climbing net is in good condition and looks very new. The swing set is in fair to poor condition due to some of the swings breaking apart (Figure 58).



Figure 56: Missing gravel base under wooden octagon play area.





Figure 57: Cracks in concrete base for wooden octagon.



Figure 58: Broken swing seats on back swing set.





East Side of Site

East Side of School:

The asphalt on the east side of the school is in poor condition. There are many longitudinal and transverse cracks with weeds growing up through them (Figure 59). The older concrete sidewalk near the fenced in mechanical equipment is in poor condition. There are cracks in the pavement and some settlement causing standing water (Figure 60). There is also newer concrete sidewalk to the south of the mechanical equipment that is in good condition with minimal cracking. The grass on the east side of the school is patchy and having trouble growing in the shade. The metal fencing enclosing the mechanical equipment is in good condition. The metal fence on the property line is in poor condition (Figure 61). It is overgrown with trees and tipping over in areas.



Figure 59: Longitudinal, transverse and block cracking in asphalt on east side of school.





Figure 60: Cracking and settling in concrete slab on east side of school causing water to pool.



Figure 61: Metal fence on east property line falling over and overgrown with trees.



Kiel High School Existing Facilities Conditions
210 Raider Heights Road
Kiel, WI 53042

Prepared By:
Kapur & Associates, Inc.
7711 North Port Washington Road
Milwaukee, WI 53217

July 2022





Figure 1: Aerial photo of facilities at Kiel High School. Numbers refer to location of figures below.

(Please note that the aerial imagery used is most recent available and may not represent current aerial view of campus)

Existing Conditions:

The hard surfaces at Kiel High School consist of the Performing Arts Center (PAC) Parking Lot (built in 2020) on the south, the Student Parking Lot on the west, the Bus/Visitor Parking Lot on the south, a garbage dumpster area with a few parking stalls, multiple sidewalks, four driveways off Raider Heights Road, Fifrick Field – track and football stadium (built in 2019), two asphalt basketball courts and a service road that connects Raider Heights Road to the Student Parking Lot. There is also an interior courtyard inside the school. The soft surfaces include a gravel parking lot off 6th Street, two practice baseball fields, a varsity baseball field, a varsity soccer field, and a practice football field. Below is the breakdown of individual facilities conditions on the Kiel High School Campus.





Bus/Visit Parking Lot:

The Bus/Visitor Parking Lot is a one way only paved asphalt loop with separate entrance and exit driveways. The one-way only entrance drive lane diverges into a bus drop off lane and a lane to access the 14 visitor parking stalls. The bus drop off and visitor parking lanes are separated by a concrete island, but then converge to form an exit drive lane which also provides access, via a driveway, to a paved lot with a fenced garbage dumpster and additional parking stalls. A sidewalk follows the north side of the drive loop from the entrance to exit driveway to provide pedestrian access from Raider Heights Road to the school building front entrances. There is curb and gutter along the entire north and south sides of the loop, as well as around the center island. Overall, the asphalt pavement condition is in poor condition. There were many large areas of block and alligator cracking (Figure 2). There did not appear to be pieces of asphalt breaking out of the slab, but without action potholes will start forming. Pavement markings are in poor condition. Most markings have significant fading and missing paint making some wording illegible (Figure 3). Most of concrete curb and gutter is in fair condition and shows typical wear, but along the east side of the exit lane there is a large area with the curb head completely broken off (Figure 4). The curb and gutter is also in very poor condition along Raider Heights Road at both the entrance and exit driveways (Figure 5). The gutter is broken into pieces in these locations and some concrete is missing. The sidewalk around the loop is in good to fair condition. Despite some general wear and tear causing chips to break off the joint edges and settling causing separation from the curb and gutter, there are few areas of significant cracking across entire slabs. The sidewalk traversing the driveway into the dumpster parking area does have significant cracking and is in poor condition due to vehicles driving over it (Figures 6). Similarly, the concrete parking island is in poor condition due to a large amount of cracking.



Figure 2: Alligator and block cracking in asphalt pavement in Bus/Visitor Parking Loop.





Figure 3: Faded pavement markings in Bus/Visitor Parking Loop.





Figure 4: Curb head broken off in Bus/Visitor Parking Loop.



Figure 5: Cracked curb and gutter at exit driveway in Bus/Visitor Parking Loop.





Figure 6: Cracked concrete sidewalk driveway apron into garbage dumpster area along Bus/Visitor Parking Loop.





Garbage Dumpster Parking Lot:

The Garbage Dumpster Parking Lot is a small asphalt lot that has one driveway that is used as both the entrance and exit. The driveway is located off the exit drive lane for the Bus/Visitor Parking Lot. The lot includes a fenced in dumpster enclosure, four accessible stalls and ten regular stalls. The asphalt pavement is in poor to very poor condition. The main drive areas are significantly cracked with block and alligator cracking. The south edge of the lot had pieces of asphalt breaking off into the grass (Figure 7). There is also rutting in the pavement in front of the dumpsters. The pavement markings are in poor condition with lots of fading and chipping (Figure 8). Many of the signs are on posts that are leaning to the side or bent (Figure 7 & 8). Overall, the fencing around the garbage dumpsters appears to be in good condition, but the gate is staked into the pavement in an open position which allows open access to humans and animals (Figure 9).



Figure 7: Significant edge cracking in Garbage Dumpster Parking Lot.





Figure 8: Pavement markings and signposts in poor condition in the Garbage Dumpster Parking Lot.





Figure 9: Dumpster enclosure fencing in good condition.

PAC Parking Lot:

The PAC Parking Lot and sidewalks appear to have been added during the PAC addition in 2020. This area includes a large asphalt parking lot with no curb and gutter, concrete sidewalk along the north side of the lot with walkways leading to the various school doors. As well as a concrete sidewalk that connects the parking lot, south, to Raider Heights Road. The asphalt paving and concrete sidewalk are in excellent condition, which is to be expected for the young age. The driveway apron, pavement markings and signage are also in excellent condition. There appears to be some erosion along the south edge of the parking lot due to no curb and gutter in that area (Figure 10).





Figure 10: Erosion and dead grass on south end of PAC Parking

Access Drive:

The Access Drive connects Raider Heights Road with the Student Parking Lot. It is an asphalt two lane drive with one driveway off Raider Highs Road. There is an asphalt connection to the PAC Parking Lot and two concrete sidewalks that connect the road with the west side of the PAC Addition. The only curb and gutter is located on the west side of the roadway and begins near the southwest corner or the school





building and extends north. The condition of the asphalt drive is fair from the southwest corner of the school building to the south (Figure 11). The portion of the roadway that borders the west side of the school is in poor condition due to block and alligator cracking (Figure 12). There are many longitudinal and transverse cracks throughout the entire drive (Figure 13). There are multiple patches on the roadway, but some of the patches are cracking. There is edge cracking along the edges of the drive where there is no curb and gutter. The concrete driveway is in good to fair condition. It shows signs of typical wear and tear, but few cracks in the concrete except for the curb and gutter portion and flares. Pavement markings are in good to fair condition with some fading beginning. The curb and gutter near the north portion of the roadway is in excellent condition, as it was recently installed.



Figure 11: South portion of Access Drive in fair condition.





Figure 12: Alligator Cracking on north portion of Access Drive.



Figure 13: Longitudinal and Transverse Cracking on north portion of Access Drive.





Student Parking Lot:

The Student Parking Lot consists of asphalt pavement and concrete sidewalk and curb and gutter. The asphalt pavement in the south drive lane and accessible stalls appears to have been replaced during the 2020 school addition and is in excellent condition. The bus parking stalls along the west side of the lot appear newer and are in good to fair condition. The remainder of the asphalt pavement in the lot is older and in poor condition. There is alligator and block cracking occurring in throughout the whole parking lot (Figure 14). There are also longitudinal and transverse cracks. The pavement around the shed is in fair condition (Figure 15). The concrete sidewalk and curb and gutter that was added in 2020 along the north and west sides of the PAC addition is in excellent condition. The concrete sidewalk and curb along the stadium are also in excellent condition. The older concrete sidewalks along the parking lot are in good to fair condition (Figure 16). There is minimal cracking, but there is some settlement and separation in slabs causing some slabs to be higher than others. However, the concrete sidewalk and curb around the greenhouse is in poor condition due to cracking, chipping, and settling in slabs (Figure 17). The pavement markings are in fair to poor condition due to fading and chipping paint.



Figure 14: Alligator cracking in Student Parking Lot





Figure 15: Pavement cracking near shed in northwest corner of Student Parking Lot



Figure 16: Sidewalk in Student Parking Lot





Figure 17: Cracked and uneven sidewalk around greenhouse

North Side of School:

The north side of the school consists of a fenced in goat play area, two small sheds and concrete sidewalk connecting the doors. The goat fence is in good to fair condition. There is a section of extra fencing lattice that is attached to a portion of the fence and extends up over the top of the fence that is anchored into the ground (Figure 18). The small shed touching the school building is surrounded by planting beds with weeds and overgrown brick pavers (Figure 19). The concrete sidewalk is in fair condition, due to wear and tear and settlement of slabs (Figure 20).





Figure 18: Extra fence lattice extending above top of fence for goat pen on north side of school



Figure 19: Overgrown pavers in front of small shed near goat pen on north side of school





Figure 20: Worn sidewalk and stoop height higher than surrounding pavement on north side of school

East Side of School:

The east side of the school consists of two doors with concrete pads, as well as a concrete pad with mechanical equipment on it. There is one-foot-high concrete wall attached to the school between the two doors. It is unknown what purpose this serves. The concrete pads all in good to fair condition, due to some chipping. The door pads are also not even with the ground surface and require a step down (Figure 21).





Figure 21: Door landings on east side of building





Running Track with Artificial Turf Football Field:

The running track, football field, adjoining fencing, bleachers and concrete sidewalk areas are in excellent condition due to being built in 2019 (Figure 23 & 24). The truncated dome near the entrance is rusted (Figure 22).



Figure 22: Rusted truncated dome in entrance to running track.





Figure 23: Running track in excellent condition.



Figure 24: Artificial turf football field in excellent condition.





Outdoor Basketball Court:

The two asphalt basketball courts are in fair condition. The pavement has large transverse and longitudinal cracking. Some of those cracks have been filled with crack sealant. The whole court is seal coated, but there are areas where the sealant is missing and cracking (Figure 25). The base of all basketball hoop posts shows some cracking. The shed area is newer and in good condition. The pavement markings are in fair condition and have some flakes of paint missing. However, the paint that is there is not very faded (Figure 25).



Figure 25: Basketball court with alligator and transverse cracking





Practice Baseball Fields:

The two practice baseball fields consist of fields, fencing, dugouts and standalone metal bleachers. The fields are in good condition and appear well groomed (Figure 26). The dugouts appear to be newer, and the concrete pads are in good condition. There is a water fountain between the two fields that is in poor condition, due to it being anchored to a tilted board (Figure 27). The fencing requires some maintenance due to rusting posts, unravelling at the bottom, and tilting (Figure 28).



Figure 26: Practice baseball field in good condition.





Figure 27: Water fountain in between practice baseball fields in poor condition



Figure 28: Fencing unraveling at bottom and unattached from posts.





Gravel Parking Lot Off 6th Street:

The gravel parking lot, sidewalks off 6th street and driveway apron are in good condition. There does not appear to be any rutting or depressions in the gravel lot (Figure 30). However, there is some green growth creeping into the lot. The concrete driveway and sidewalk are in good condition with some small pieces chipped off on the surface (Figure 29). There are no cracks.



Figure 29: Driveway apron in good condition.





Figure 30: Gravel parking lot on South in good condition despite green growth.

Varsity Baseball Field:

The Varsity Baseball Field consists of the field, dugouts, concession stand, bleachers, and fencing. The field is in good condition (Figure 31). Some areas outside of the fenced in field have no grass growing (Figure 34). The new concession stand, and pad are in good condition as well. One of the dugouts has concrete floors that are covered in rubber. The rubber is peeling away and ripping, and the condition of the concrete underneath was unknown due to being covered in rubber (Figure 32). The wood benches in the dugouts were old and have paint worn off them (Figure 33). The other dugout had no rubber on the floor, and the condition of the concrete pad was fair due to some large cracks. The wood benches were also old and worn. The metal bleachers are on gravel pads and were in good condition. The fencing around the field is in good condition.





Figure 31: Varsity baseball field



Figure 32: Dugout Area 1



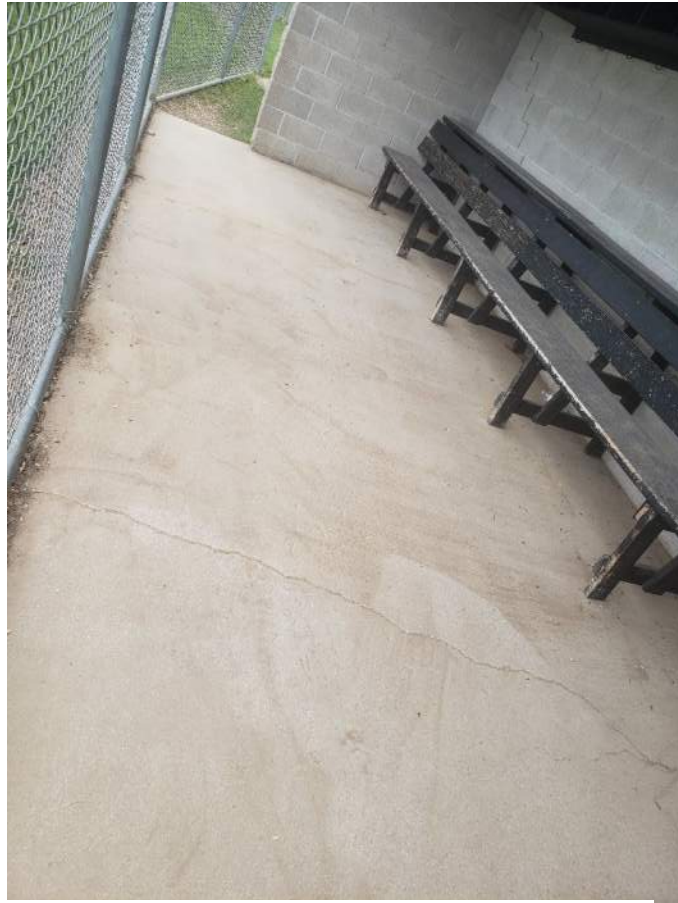


Figure 33: Dugout Area 2



Figure 34: Dead and rutted grass northeast of Varsity Baseball Field





Grass Football Practice Field:

The grass football field is in excellent condition. The grass is well maintained and there were no dead areas (Figure 35). The field appeared flat with no bumps or ruts. The goal posts looked older and had some paint missing, but there was maintenance work being completed on them the day of the site visit.



Figure 35: Practice Football Field in good condition





Soccer Field:

The Soccer Field consists of the field, three covered bleacher areas for players and a bleacher area for spectators. The field was in good to fair condition due to some dead patches of grass (Figure 36). The field appeared flat with no uneven areas. The bleachers were in good condition.



Figure 36: Dead grass in soccer field

Outdoor Climbing Area:

The Outdoor Climbing Area consists of a fenced in area with climbing walls and posts. The fence was in fair condition due to some unraveling at the bottom. There was some trees and brush growing into the west fence line (Figure 37). The grass area between the road and the north fence had a lot of patches of dead grass (Figure 38).





Figure 37: Trees and brush growing into fence on west side of climbing area



Figure 38: Dead grass on north side of climbing area





Interior Courtyard:

The interior courtyard consists of multiple concrete sidewalks, concrete benches, a concrete retaining wall and movable picnic tables. There are also some wooden planters. The concrete sidewalk throughout the courtyard is in poor condition and many slabs have cracked. The pavement looks very old and has weeds growing through the cracks (Figure 39). Many of the concrete slabs have settled causing uneven surfaces (Figure 43). Some of the edges have been ground down to reduce tripping hazards. The retaining walls have vertical cracks along them and are in fair condition (Figure 40 &41). The standalone concrete benches have some chipped edges and are in fair condition. The large center rounded seating bench has vertical cracks throughout it and is in fair to poor condition (Figure 42). The wooden planters have some rotting wood pieces. The picnic tables are in good condition.



Figure 39: Cracking and settling concrete in courtyard.





Figure 40: Cracking in concrete retaining wall in courtyard.





Figure 41: Cracking in sidewalk and deteriorating concrete retaining wall in courtyard.





Figure 42: Cracking in circular concrete bench in center of courtyard.





Figure 43: Accumulation of soil due to settling pavement in courtyard.



appendix

PAST REPORTS

The following pages include the water entry investigation performed in January 2002.



Water Entry Investigation

Property: Kiel Middle School
502 Paine Street
Kiel, WI 53042

Date: January 4, 2022

Project #: 6047.WT-21

Report to: Mr. Andrew Zinger
Head Custodian/Maintenance
Kiel Middle School
502 Paine Street
Kiel, WI 53042

Copy to: File

Overview

At the request of Andrew Zinger, Head Custodian/Maintenance for Kiel Middle School, Interstate Roof Systems Consultants, Inc. (IRSC) performed a water test of the exterior walls and lightwells at select areas of the Kiel Middle School. Justin Moore and Santana Fox of IRSC conducted the testing of the exterior walls, including the window light wells, exposed areas of the foundation walls and areas of exterior masonry walls. Preliminary repairs consisting of sealant were applied at suspect water entry sources to assist in the water testing. The testing was performed on November 16 and 17, 2021.

The water testing at the Kiel Middle School was performed in response to recurring water entry along the exterior walls and interior floor of the Home Economic and Art classrooms, in addition to peeling paint and moisture concerns in the 301 classroom. Two spray rigs and localized spray nozzles were utilized to perform the testing over the two day period. Please find the following as a summary of our findings and recommendations in this matter. One photo report for the water testing of Home Economic and Art classrooms is provided along with a separate photo report of the water testing and investigation of the 301 classroom issues.

Summary of Findings

Background Information

The Middle School building was reported to have been constructed in 1928 and is of masonry construction. Recurring water entry into the below grade classrooms has been a recurring issue over the past several years and was reported to be from rainwater coming up through the floors. Water entry in the recent past has resulted in damage to the flooring as well as the interior walls, resulting in organic growth and requiring extensive wall repairs. The primary areas affected are along the south elevation of the building. Prior repair work to the water entry issues have included the installation of drain tile along interior face of the exterior walls as well as additional sump pits.

Deterioration was also reported along ceiling of the second floor classrooms, with the primary area of concern in room 302. Plaster is reported to be flaking off the walls above the ceiling and the paint is peeling from the ceiling. Water entry into the ceiling area was not observed by the school staff, however, evidence of moisture was reported in these locations.

Findings: Water Testing of Home Economics and Art Classrooms.

Water testing to determine the source of the water entry into these classrooms was performed with a spray rig and a spray nozzle. As outlined in the attached photo report, the grates covering the exterior lightwells were removed in select locations to access the lightwell areas and to examine the existing conditions. Cracks and spalled areas were observed in the foundation walls along the lightwell area where the foundation wall was exposed.



The spray rig was then placed in the lightwell to apply water into the lightwell area only at the Home Economics classroom, with no water applied to the window unit. Shortly after water began to accumulate in the lightwell (35 minutes), water was observed entering the interior of the room along the floor molding. The location of the water entry into the room aligns with the location of a crack in the foundation wall. Additional water testing was performed at other cracks/defects in the foundation wall, resulting in water entry into building along the floor line.

As a follow up to the testing, sealant was applied to a foundation crack that was previously found to be a water entry source. The sealant application did prevent water entry at this location when retested, confirming the results of the water testing.

It was also noted during the testing that the water in the bottom of the lightwell did not exit from the lightwell area. During the testing and investigation, no drains were observed to allow water to drain out of or exit this area.

Findings: Water Testing of 302 Classroom.

Above the drop ceiling in this classroom, peeling paint and plaster deterioration was observed. Water testing of this classroom area consisted of water application to the roof area, wall flashing and coping, as well as the exterior masonry wall. No water entry was observed at the ceiling or exterior walls.

During the water testing, the ceiling conditions were observed in classrooms 301, 306, 307, 309, 311 and 313A. Varying degrees of paint peeling were noted; however this was a common condition in these classrooms. Based on these findings, it is suspected that the peeling paint and deteriorating plaster is a result of limited conditioning of the second floor classrooms during the summer months. The large masonry walls create retained heating and cooling, resulting in moisture accumulation from condensation on the ceiling surfaces.

Conclusion and Recommendations

Water testing of Home Economics and Art Classrooms

The water testing confirmed the source of the water entry into these classrooms as the cracks in the foundation in the areas of the lightwells. This issue is accentuated by the lack of drainage within the lightwell, creating pooling of water against the foundation, allowing water entry into cracks and wall deficiencies.

In order to correct the water entry issue at these locations, it is recommended that the cracks in the foundation be repaired, new waterproofing applied to the foundation, with new drain tile and regrading of the site. This will require excavation of the soil to the footing of the building to expose the foundation wall in order for the required foundation repairs to be made. This would encompass the south elevation on both sides of the main entrance.

Consideration should also be given to the inclusion of the foundation walls of the lower level mechanical equipment area. Although this area does not affect the learning environment, it may be beneficial and more cost effective to disrupt the school property / building at one time and have the water entry into this part of the building be addressed.

IRSC is able to provide project direction and design for the waterproofing and drain tile solution. A structural engineer will need to be part of the team to design the required foundation crack repairs. A preliminary design would be prepared with initial budget estimates prior to the project being released. Options of phasing can also be discussed.



Interstate Roof Systems Consultants, Inc.

Water testing of 302 Classroom

The water testing of this classroom found no water entry from the roof or exterior wall at this location. As noted in the findings portion of this report, it is suspected that the peeling paint and plaster deterioration is being caused by limited conditioning of these classrooms during the summer season. It is recommended that a heating, ventilating and air conditioning expert be contacted to review options and requirements to further condition these classrooms to control temperature and humidity levels. Once the environmental controls are in place, the ceiling and wall finishes can be addressed.

Remarks

We appreciate the opportunity to be of service to you and the Kiel School District. If you should have any questions regarding this report, or if we can be of further assistance, please call me at your convenience.

Sincerely,
INTERSTATE ROOF SYSTEMS CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "D. C. Velcheck". The signature is fluid and cursive.

David C. Velcheck, CCS, RRC
President
dvelcheck@irscinc.com



INTERSTATE ROOF SYSTEMS CONSULTANTS, INC

IL Office: 847-695-1460

WI Office: 262-336-8270

CO Office: 719-345-6460

Website: irscinc.com

Photo Report

12/28/2021

General Information:

Project Name:	Kiel Middle School Water Test	IRSC Project #:	6047
Project Location	502 Paine Street	Report Writer:	Justin Moore
	Kiel WI 53042		

Observations:

Report Photos

Image	Photo Description:
	<p>1. The home economics room was the first to be tested. It's located on the south side of the building. It was reported that water pools on the floor during rain falls.</p>



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Photo Report

12/28/2021

Image	Photo Description:
 A photograph of the exterior wall of a brick building. The wall is made of red bricks and has several windows. A red rectangular box is drawn on the ground in front of the building, highlighting a specific area.	<p>2. This is the exterior wall of the home economics classroom. The picture shows how half of the home economics room is underground.</p>
 A close-up photograph of the foundation of a brick building. The foundation is made of concrete and shows a significant crack. A red rectangular box is drawn around the crack to highlight it. There are some leaves and debris in the foreground.	<p>3. A crack observed in the foundation underneath the window. This was located on the south side of the building.</p>



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Photo Report

12/28/2021

Image	Photo Description:
 A photograph showing a cross-section of a foundation. The top part is a dark, possibly concrete or masonry surface. Below it is a lighter, textured layer, likely insulation or a different material. A vertical crack is visible in the lighter layer, highlighted by a red rectangular box. The bottom part of the image shows a dark, possibly excavated area with some debris and a wooden post.	<p>4. Another crack discovered in the foundation under a different home economic window. This is located on the south side of the building. We later target this crack getting it to leak within ten minutes.</p>



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Photo Report

12/28/2021

Image	Photo Description:
A photograph showing an exterior view of a building's light-well area. A concrete curb runs along the edge of the roof, with a metal grate in the foreground. A yellow caution tape is stretched across the grassy area in front of the curb. The background shows a brick wall and a window.	<p>5. Overview of light-well water test. The rain simulator was placed over two light-wells. One of the light-wells possessed a significant cracks.</p>



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Photo Report

12/28/2021

Image	Photo Description:
A photograph showing a cross-section of a concrete wall. A wooden beam is placed horizontally across the top of the wall. A white bucket is positioned on the beam, with water being poured into a narrow channel or well cut into the concrete. The water is seen flowing down the side of the wall. The background shows some greenery and a gravel area.	<p>6. Initial test of light-well wall. The water test was placed in the wells with the significant cracks of the home economic's south side wall.</p>



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Photo Report

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Image	Photo Description:
 A photograph showing a close-up view of a light-well or drainage area. The surface is dark and appears to be made of concrete or a similar material. There is a significant amount of water accumulated in the well, with ripples visible on the surface. The lighting is somewhat dim, and the overall appearance is one of a neglected or poorly maintained drainage system.	<p>7. Water accumulation in the light-well. There was spacing between the building and the boxed concrete foundation. This lets the water weep between all light-wells. Every well started to fill up with water.</p>



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Photo Report

12/28/2021

Image	Photo Description:
A photograph showing the interior of a room, likely a home economics room, with a focus on a window area. The room is dimly lit, with light coming from the window. A red rectangular box highlights a crack in the wall or ceiling under the window. The floor is dark, and there are some light-colored lines or patterns on it.	<p>8. The rain simulator was moved over to target the far south east light-wells of the home economics room. It was placed there for the crack under the window shown here.</p>



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Image	Photo Description:
	<p>9. Water was observed inside running down the wall and coming out of the trim. The water running down the wall from the inside matches up very well with the crack on the corner of the window sill outside. This took roughly 35 minutes to begin leaking.</p>
	<p>10. The second home economics room has two exterior walls. The southern wall has no windows. It's a completely bricked side. The east side wall has the windows shown here.</p>



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Photo Report

12/28/2021

Image	Photo Description:
 A photograph showing a close-up of a roof surface. A dark, irregular hole is visible in the roof material, highlighted by a red square. The hole appears to be a vent opening. The surrounding roof surface is dark and textured, possibly asphalt or a similar material. There are some yellow leaves and debris scattered around the hole. A window frame is visible on the right side of the image.	<p>11. A hole was discovered by the window that has the vent coming out of it. See photo 10.</p>



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Photo Report

12/28/2021

Image	Photo Description:
 A photograph showing a close-up of a roof edge or gutter area. A bright yellow-green hose is positioned to spray water onto a dark, possibly damaged, surface. A red square highlights a specific area where the water is being applied. The surrounding area shows some debris and structural elements of the roof.	<p>12. Following the information from the first test we were able to single out what were the problematic areas. Once those defects were detected we took a more direct approach on our testing. As shown here we simulated the rain directly on the defect. Leak shows up after twenty minutes.</p>



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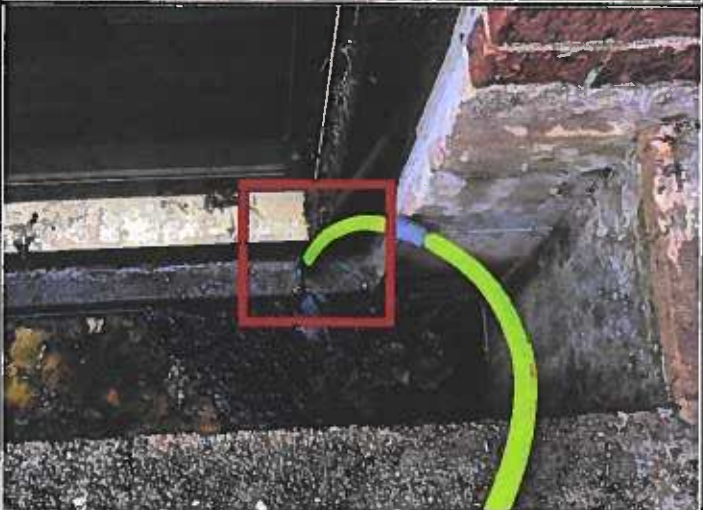
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Photo Report

12/28/2021

Image	Photo Description:
	<p>13. This defect is in the most northern light-well on the east wall.</p>
	<p>14. We took a direct approach with this defect also. The leak shows up inside the building in under five minutes.</p>



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Photo Report

12/28/2021

Image	Photo Description:
A photograph showing a close-up view of a leak under a vented window. The leak is visible as a bright, wet spot on a light-colored, textured surface, likely a wall or ceiling. A dark, flexible vent pipe is visible in the background, extending from the window area. The surrounding area appears to be a utility or maintenance space with green walls and a dark floor.	<p>15. The defect under the vented window leaks and shows up here underneath the stove on the south side of the east wall.</p>



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12/28/2021

Image	Photo Description:
	<p>18. We filled up the light-wells to simulate rain.</p>
	<p>19. This is a defect we observed. It's such a significant crack that we decided to do a direct simulator on it.</p>



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Photo Report

12/28/2021

Image	Photo Description:
	<p>16. This picture shows where both defects leak. The most northern pooling is from the defect in picture 15. The southern pooling is from picture 12.</p>
	<p>17. This is an overview of the exterior wall for the art room. It was reported that water pools on the floor when it rains.</p>



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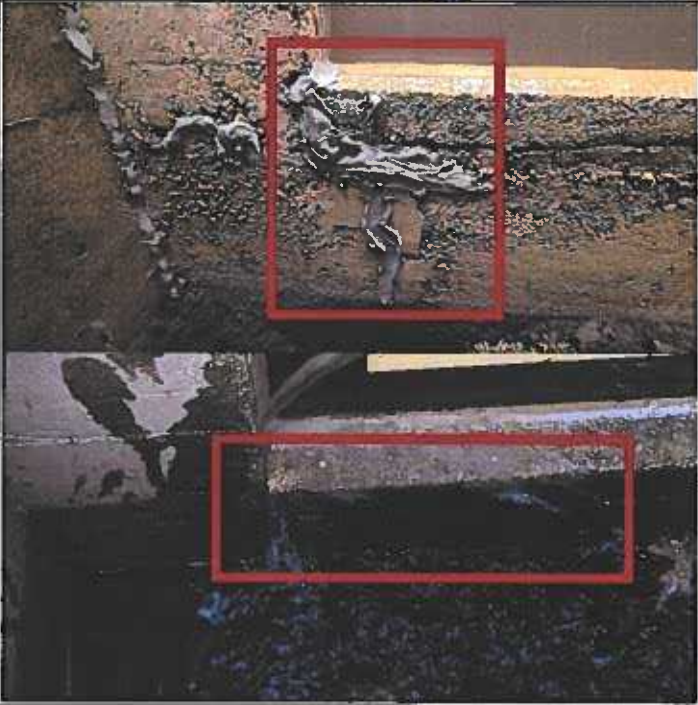
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CO Office: 719-345-6460

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Photo Report

12/28/2021

Image	Photo Description:
	<p>20. This picture shows how we directly flooded the defect. This leak was present inside within a minute.</p>
	<p>21. The next day after we tested the art and home economics rooms we decided to try another test. We picked a defect we were able to test temporarily repair and retest. Most of the cracks found run deep into the soil. We chose one that didn't run underground. We caulked the defect and ran another simulation. We were able to stop that from leaking inside. Giving us further proof that those defects around the windows foundations are the source to the recurring water entry.</p>

Summary:

Based off of the simulations we were able to determine that the foundation cracks cause the leaks. We were given further proof when we caulked one of the defects getting it to stop from leaking inside. Each crack carries the same characteristics. They are all located on the bottom concrete sills under the windows.



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Photo Report


12/28/2021

General Information:

Project Name:	Kiel Middle School Water Test	IRSC Project #:	6047.WT-21
Project Location	502 Paine Street	Report Writer:	Justin Moore
	Kiel WI 53042		

Observations:

Report Photos

Image	Photo Description:
	<p>1. Room 302 shows signs of moisture between the tiles and ceiling. The room is located on the north side of the building. It was reported that water hasn't accumulated. The custodian stated he had been there for five years and never witnessed it leaking.</p>



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Image	Photo Description:
 A close-up photograph of a ceiling surface. The paint is severely peeling and chipped away, revealing a dark, textured substrate underneath. The peeling is concentrated in the upper right portion of the frame.	<p>2. The paint is peeling from the ceiling above the ceiling tiles in room 302.</p>
 A wide-angle photograph of a flat roof system. The roof is dark and appears to be made of asphalt or a similar material. There are several white markers or stakes placed on the roof surface. A red bucket and some equipment are visible in the foreground. In the background, there are residential houses and trees under a clear sky.	<p>3. This is the roof system above room 302. It should be noted that three outside walls are present. Two of these walls do not have windows.</p>



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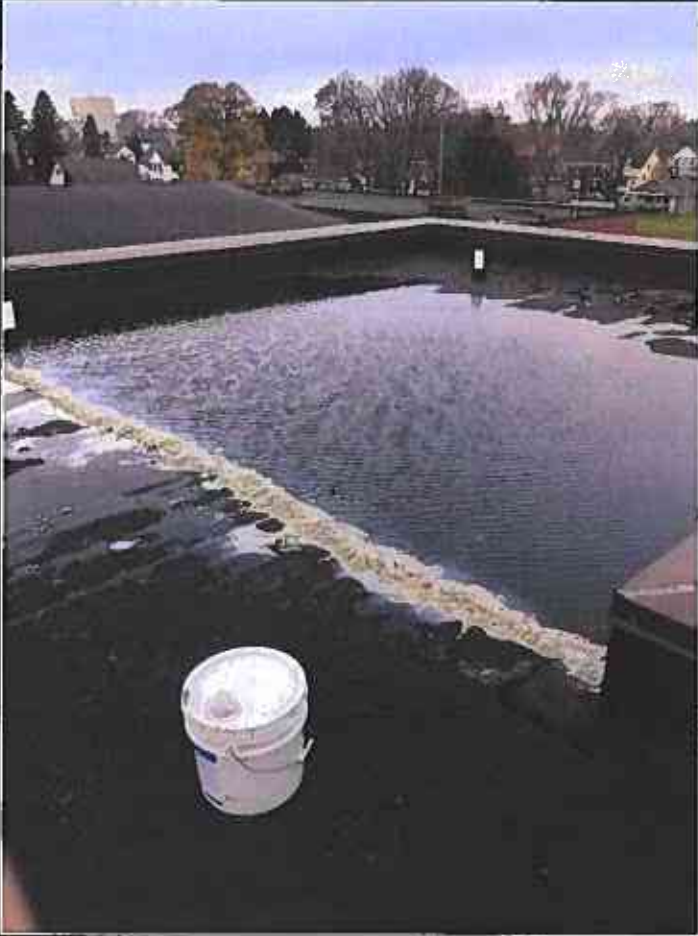
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Photo Report

12/28/2021

Image	Photo Description:
	<p>4. The first simulated test was to flood the roof area above room 302. Using leak stop we were able to build a dam to keep the water over room 302. The hose was moved five feet every twenty minutes for water to be passed on the entire system.</p>



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Image	Photo Description:
 A photograph taken from a high angle looking down at a roof edge. A blue metal rain simulator rig is mounted along the edge of the roof. The rig consists of several horizontal bars and a hose. In the background, a residential neighborhood with houses and trees is visible under a clear sky.	<p>5. The next step was to water test the walls and metal coping cap. The rain simulator was targeted on the two walls with no windows. The interior ceiling damage/peeling paint was worse there. Every 40 minutes we would move the simulator five feet down.</p>



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Image	Photo Description:
A photograph showing the corner of a brick building. On the flat roof, there is a blue and white simulator setup. A black hose or cable runs along the edge of the roof. The sky is overcast with some light clouds. In the background, there are trees and a utility pole.	<p>6. Another picture of how we used the simulator around the walls and metal panels. No moisture was ever seen inside room 302 in the hours we tested the area.</p>



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Photo Report

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Image	Photo Description:
 A photograph of a white rectangular sign mounted on a wall. The sign has the number '301' in large black digits and the name 'Mrs. Lichtenwald' in smaller black text below it. The background is a light-colored wall.	<p>7. Room 301 was looked into to see if it too experienced the same situation as room 302. The bottom picture shows paint peeling.</p>
 A photograph showing a white rectangular sign with the number '306' in black. Below the sign, there is a close-up view of a wall where the paint is severely peeling and chipping away, revealing a lighter surface underneath. A white cup is visible in the foreground, partially filled with the peeling paint.	<p>8. This is room 306. Almost as severe peeling as room 302. It's on the east side of the building while 302 is on the west. It also appears that room 306 had walls exposed to the outside at one time. An addition to the school building is suspected to be built on from room 306 at sometime.</p>



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12/28/2021

Image	Photo Description:
 A photograph showing a white rectangular sign with the number '307' and the name 'Mrs. Manz' in black text. The sign is mounted on a wall. Below the sign, the ceiling is visible, showing some discoloration and peeling paint.	<p>9. Room 307 is located on the south side. Limited peeling paint was observed at this location.</p>
 A photograph showing a white rectangular sign with the number '309' in black text. The sign is mounted on a wall. Below the sign, the ceiling is severely damaged, with large sections of white paint peeling away, revealing a dark, textured surface underneath.	<p>10. Room 309 is located in the middle south side of the building. The ceiling shows signs of peeling paint.</p>



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Image	Photo Description:
	<p>11. Room 311 is located on the south side of the building. It shows peeling throughout the ceiling.</p>
	<p>12. Room 313A is located across from room 306. It is suspected that the school was added on to at room 306 and 313A. That room 306 and 313A had exposed outside walls at one point. The deck of the building changes to metal right after these rooms.</p>

Summary:



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Seven hours were spent water testing the roof system and exterior walls of room 302. The roof membrane was water tested, including the metal coping. The exterior walls were also water tested, no moisture was ever observed in room 302.

To further understand the classroom ceiling conditions, we observed the ceiling in room 301. Finding slight traces of paint peeling prompted us to look into every second floor room available to us. Almost all the ceilings of the second floor's rooms were investigated. Each room shows different levels of paint peeling. Room 302 on the northwest side has severe paint peeling. Rooms 306 and 313A are located on the east side of the building, 313A is on the south side, 306 is on the north. These two areas had the same severity as room 302.

The second floor has limited air conditioning. Room 302 has outside exposure on three walls. Two of those walls do not have windows. This condition can create significant thermal gain and loss. Room 302 is also next to the gym. About 20' separate the two buildings causing an alley for weather to pass through. Rooms 306 and 313A are believed to be outside walls at one time based on the structural change in the building. The rest of the east side building has a metal roof deck and looks to be newer material.

In summation, room 302 has a black roof system above it, two exterior walls, and an alley to let air hit it more directly. These constructions create conditions that are likely to result in high humidity and condensation, resulting in paint peeling from the fixed ceiling. In addition, our water testing of the exterior walls did not result in water entry into the building.