

IEA, INC.

2023 - 2024 Ventilation Assessment



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Saint Paul Public Schools Maxfield Elementary School

Assessment Date:
Tuesday, April 4, 2023

Project Description

IEA conducted a ventilation inspection in Maxfield Elementary School by IEA representative, Jack Skluzacek , with the intent of gathering visual observations and overall ventilation information which will assist the District in making informed and proactive decisions to improve and maintain acceptable air quality in the building. This inspection is based upon the Environmental Protection Agency's (EPA's) Tools for Schools IAQ guidelines and the recommended Minnesota Department of Education (MDE) portion of a school district's IAQ management plan. Ventilation verification is also recommended by American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

Some observations gathered during the inspection may identify issues which may require additional testing, evaluation, further investigation, or maintenance on the ventilation systems.

The findings, conclusions and recommendations presented herein are believed to be accurate and representative of the building on the date and time of the inspection.

GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from Saint Paul Public Schools at the indicated locations. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without further assessment.

The report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted indoor air quality practices. Other than as provided in the preceding sentence, no warranties are extended or made.

Building Information

General information regarding the building was collected by IEA during an interview with building maintenance staff. The information gathered during this process is a vital component, as it is helpful in determining how these items may play a role in possible IAQ related issues.

Below is a summary of the information gathered during the interview:

- Automation controls are managed internally.
- A Building Automation System is present. The automation control software program is Tridium and controls can not be accessed remotely.
- Schedules:

Ventilation operation:

Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	6:00 AM	9:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

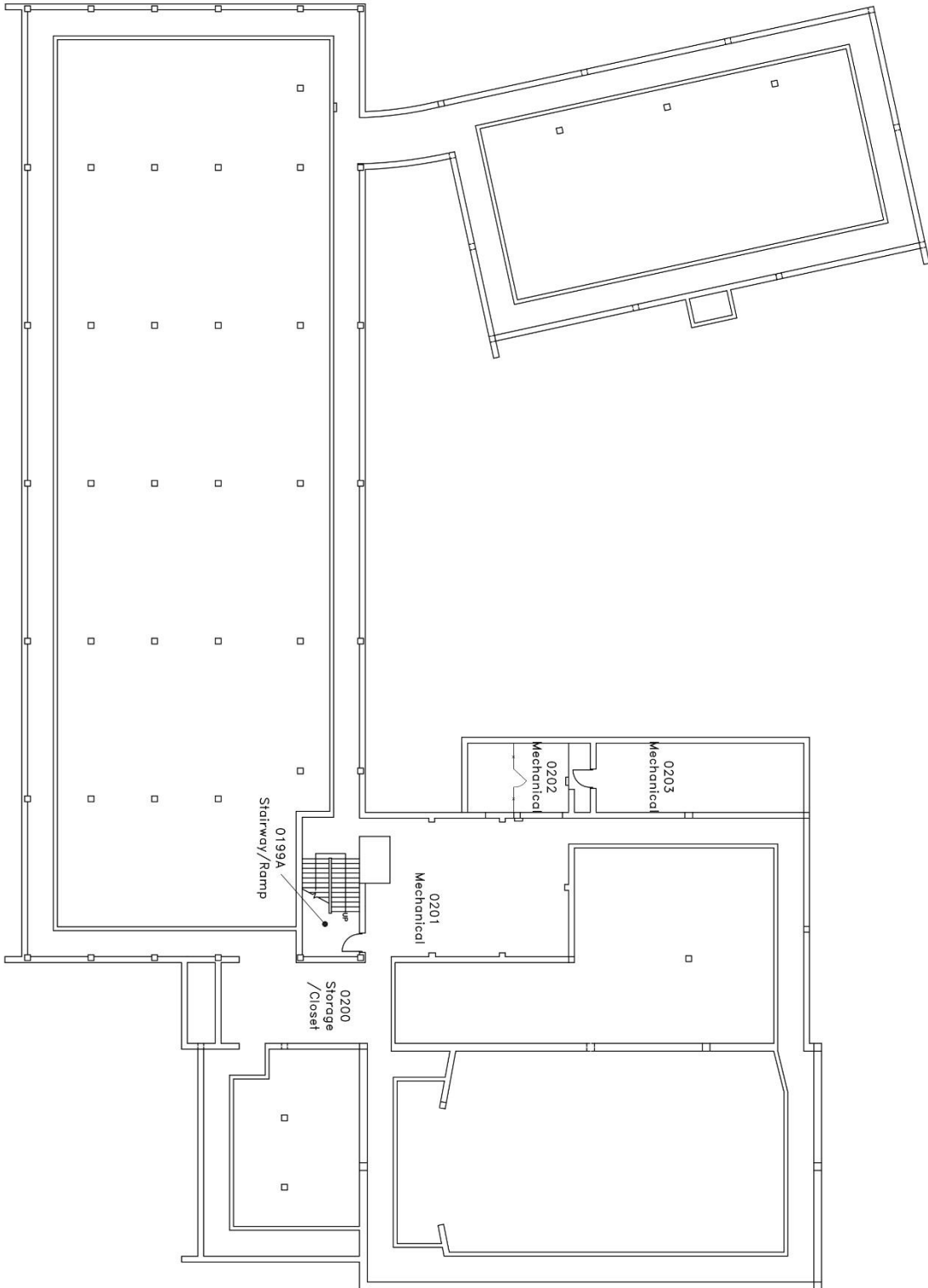
Typical occupancy:

Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	7:00 AM	5:00 PM
Saturday	No		
Sunday	No		
Holiday	No		
Notes: Basketball is present later than regular occupation on Tuesday and Thursday			

- CO2 sensors are not associated with the ventilation system.
- VAVs are not present.
- Building has variable frequency drives (VFD).
- The heating system is a hot water boiler.
- A cooling system is not present.
- Filters used are:

Filter Type	MERV Rating
Pleated	MERV 11
Pleated	MERV 13
- Filters are changed quarterly.
- Energy Recovery Units are not present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are WinixTrue/Tower XQ.
 - Location: Custodial office.
- It is not known whether or not the building was commissioned during the original construction.

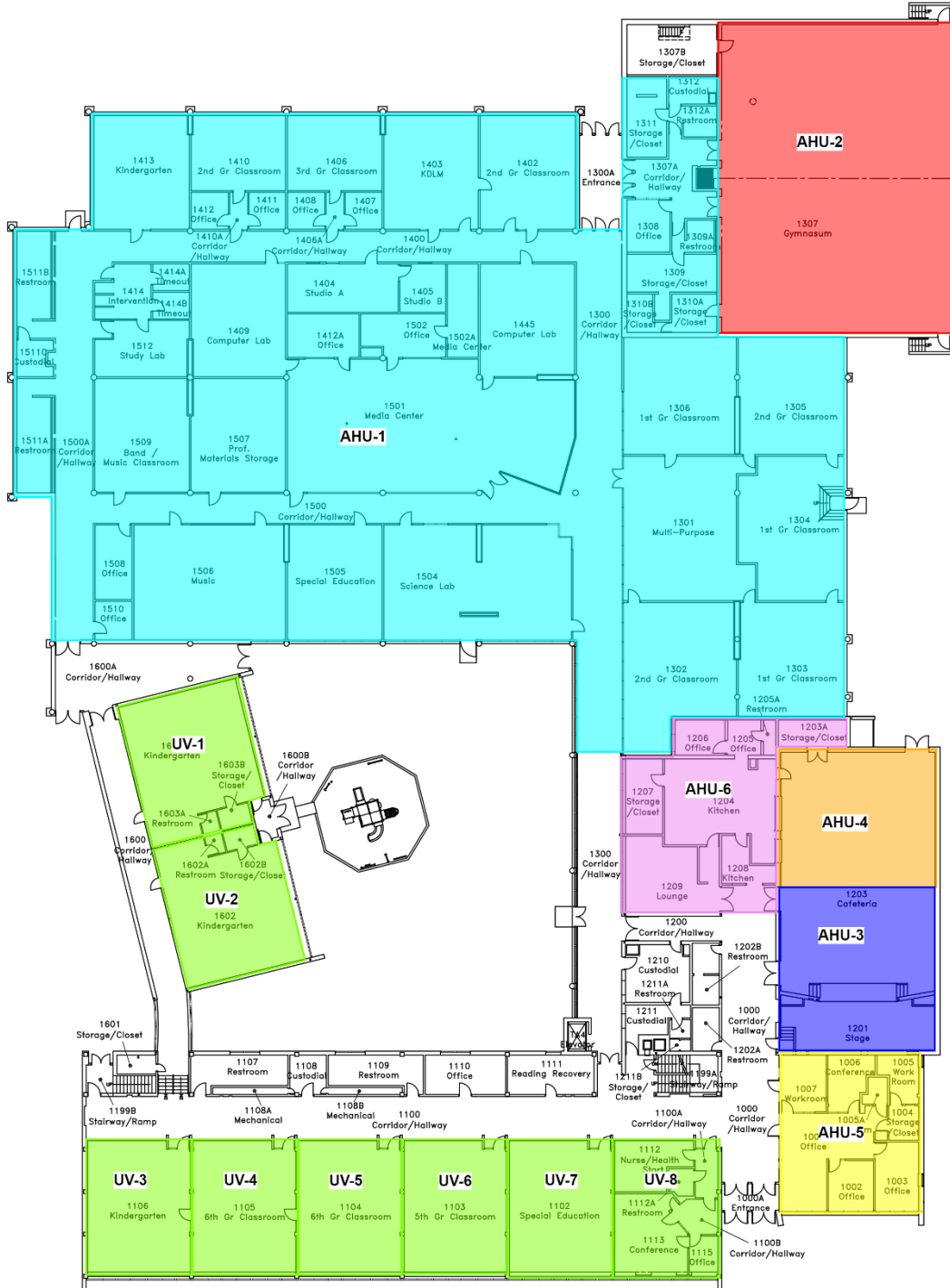
Air Handling Unit Designations & Service Zones: Basement



Maxfield Elementary
Basement Floor Plan



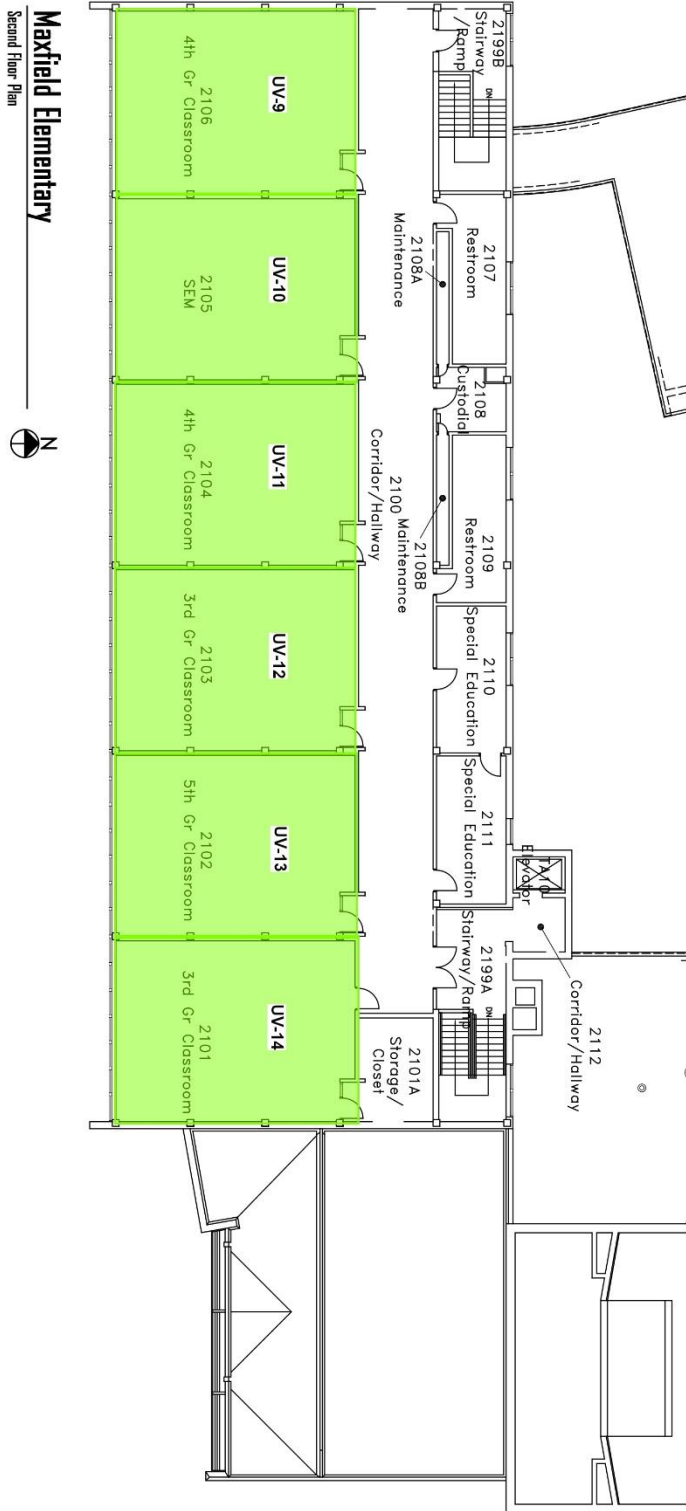
Air Handling Unit Designations & Service Zones: 1st Floor



Maxfield Elementary
First Floor Plan



Air Handling Unit Designations & Service Zones: 2nd Floor



Assessment

Ventilation System

The following information was gathered by IEA on Tuesday, April 4, 2023 with support from the district building representative during the on-site interview. The type of heating, ventilating and air-conditioning (HVAC) system and its assessment is included for each unit below:

Unit Designation:	AHU_01	
Location of Unit:	Mechanical room	
Areas Served:	East Classrooms See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - Constant Volume Heating - None Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 	<p>Outdoor air intake is inaccessible</p> <p>Outdoor air intake is located in an unknown location.</p> <p>It is not known if there are nearby pollution sources.</p> <p>Outdoor air intake is in good condition.</p>	<p>Outdoor air filters are not present.</p> <p>Return air filters are not present.</p> <p>Mixed air pre-filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed correctly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p> <p>Heat wheels are not present.</p> <p>Exterior ducting is visible. Exterior ducting insulation is in good condition.</p> <p>Interior ducting is visible. Interior ducting insulation is in good condition. Interior ducting is clean.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is open, and its condition is good.</p> <p>Return damper is open, and its condition is good.</p> <p>The general condition of the unit is good.</p>

Unit Designation:	AHU_02	
Location of Unit:	Mechanical room	
Areas Served:	Gym See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None 	Outdoor air intake is inaccessible Outdoor air intake is located on an exterior wall. It is not known if there are nearby pollution sources.	Outdoor air filters are not present. Return air filters are not present. Mixed air pre-filters are not present. Mixed air main filters are somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 	Outdoor air intake is in good condition.	Heating coils are clean. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is in good condition. Interior ducting is visible. Interior ducting insulation is in good condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is open, and its condition is good. Return damper is open, and its condition is good. The general condition of the unit is good.

Unit Designation: AHU_03 DID NOT ASSESS PER CLIENT REQUEST

Unit Designation: AHU_04 DID NOT ASSESS PER CLIENT REQUEST

Unit Designation:	AHU_05	
Location of Unit:	Mechanical room 1201	
Areas Served:	Administration See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> • Supply System - Constant Volume • Heating - Hot Water • Cooling - None • Energy Recovery Unit (ERU) - None 	<p>Outdoor air intake is inaccessible</p> <p>Outdoor air intake is located in an unknown location.</p> <p>It is not known if there are nearby pollution sources.</p>	<p>Outdoor air filters are not present.</p> <p>Return air filters are not present.</p> <p>Mixed air pre-filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed correctly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p>
Filter Type - Mixed <ul style="list-style-type: none"> • Pre-filter: None • Main filter: Pleated, MERV 13 	<p>Outdoor air intake is in good condition.</p>	<p>Heating coils are clean.</p> <p>Heat wheels are not present.</p> <p>Exterior ducting is visible. Exterior ducting insulation is in good condition.</p> <p>Interior ducting is visible. Interior ducting insulation is in good condition. Interior ducting is clean.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is open, and its condition is good.</p> <p>Return damper is open, and its condition is good.</p> <p>The general condition of the unit is good.</p>

Unit Designation:	AHU-6 (100% OA)	
Location of Unit:	Mechanical room	
Areas Served:	Kitchen See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> • Supply System - Constant Volume • Heating - Hot Water • Cooling - None • Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on an exterior wall. No nearby pollution sources were found.	Outdoor air pre-filters are not present. Outdoor air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Outdoor air main filters are installed correctly. Return air filters are not present. Drain pans are not applicable or not present. Drain pan condition is not known. Heating coils are clean.
Filter Type - Outdoor <ul style="list-style-type: none"> • Pre-filter: None • Main filter: Pleated, MERV 13 	Outdoor air intake is in good condition.	Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is in good condition. Interior ducting is visible. Interior ducting insulation is not present. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is open, and its condition is good. Return damper is not present. The general condition of the unit is good.

Unit Designation:	UNIT VENTILATOR	
Location of Unit:	Classroom 1603	
Areas Served:	Room 1603	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> • Supply System - Constant Volume • Heating - Hot Water • Cooling - None • Energy Recovery Unit (ERU) - None 	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on an exterior wall.</p> <p>Outdoor air intake has a nearby pollution source:</p>	<p>Outdoor air pre-filters are not present. Outdoor air main filters are not present.</p> <p>Return air filters are not present.</p> <p>Mixed air pre-filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed correctly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p>
Filter Type - Mixed <ul style="list-style-type: none"> • Pre-filter: None • Main filter: Pleated, MERV 11 	<p>Outdoor air intake is in good condition.</p>	<p>Heating coils are clean.</p> <p>Heat wheels are not present.</p> <p>Exterior ducting is not visible. Exterior ducting insulation is in an unknown condition.</p> <p>Interior ducting is not visible. Interior ducting insulation is not present. Interior ducting is of unknown cleanliness.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is unknown, and its condition is good.</p> <p>Return damper is unknown, and its condition is good.</p> <p>The general condition of the unit is good.</p>

Recommendations

Appendix A

Photo Documentation



AHU_02
Mixed Main Filter Cleanliness



UNIT VENTILATOR
Outdoor Main Filter Cleanliness