

### 2023 - 2024 Ventilation Assessment



#### **Contact Us:**

#### **BROOKLYN PARK OFFICE**

9201 W. BROADWAY, #600 BROOKLYN PARK, MN 55445 763-315-7900

#### MANKATO OFFICE

610 N. RIVERFRONT DRIVE MANKATO, MN 56001 507-345-8818

#### ROCHESTER OFFICE

210 WOOD LAKE DRIVE SE ROCHESTER, MN 55904 507-281-6664

#### BRAINERD OFFICE

601 NW 5TH STREET SUITE #4 BRAINERD, MN 56401 218-454-0703

#### MARSHALL OFFICE

1420 EAST COLLEGE DRIVE MARSHALL, MN 56258 507-476-3599

#### **VIRGINIA OFFICE**

5525 EMERALD AVENUE MOUNTAIN IRON, MN 55768 218-410-9521

www.ieasafety.com

info@ieasafety.com

800-233-9513

# Saint Paul Public Schools St. Anthony Park Elementary School

Assessment Date: Tuesday, April 18, 2023

## **Project Description**

IEA conducted a ventilation inspection in St. Anthony Park Elementary School by IEA representative, Sashya Wandmaker, 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	10:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

Typical occupancy:

Day:	Occupied?	Start Time:	End Time:
Monday- Friday	Yes	7:00 AM	4:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

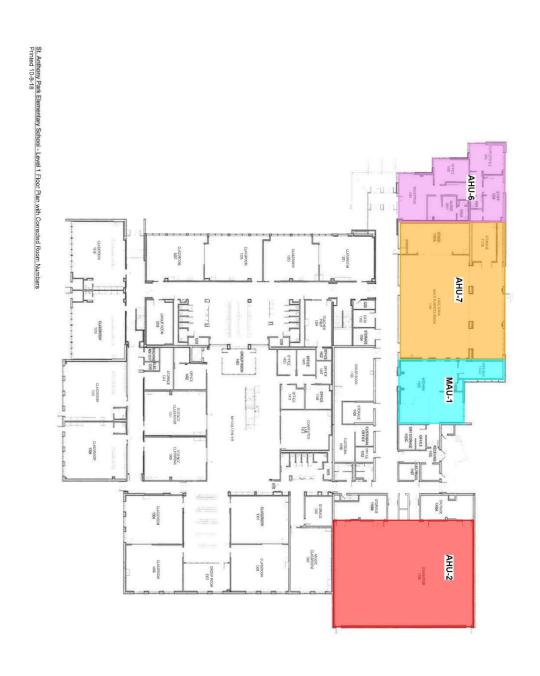
**Notes:** After school activities unsure of end times,

- CO2 sensors are associated with the ventilation system. They are located within duct work. The highest CO2 setpoint is unknown.
- VAVs are present. They are not fan powered.
- Building has variable frequency drives (VFD).
- The heating system is a hot water boiler.
- A cooling system is present and is a Dx type system.
- Filters used are:

Filter Type	MERV Rating
Metal Mesh	N/A
Pleated	MERV 11
Pleated	MERV 13
Pleated	MERV 8

- Filters are changed quarterly.
- Energy Recovery Units are present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are 3M/Filtrete.
  - Location: All classrooms
- It is not known whether or not the building was commissioned during the original construction.

## Air Handling Unit Designations & Service Zones: 1st Floor



## Air Handling Unit Designations & Service Zones: 2nd Floor



### **Assessment**

#### **Ventilation System**

The following information was gathered by IEA on Tuesday, April 18, 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 D	esignation:	AHU1		
Location	on of Unit:	Mechanical room 1113		
		East Wing Classrooms See attached map		
Systen	n Enhancements:	None		
S	Supply System	Outdoor Air	Cleanliness and Observations	
Type  •  •	Supply System - VAV Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - Fixed Plate  Type - Mixed Pre-filter: None Main filter: Pleated, MERV 13	Outdoor air intake is accessible  Outdoor air intake is located on the roof.  No nearby pollution sources were found.	Outdoor air filters are not present.  Return air filters are not present.  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.  Drain pans are not applicable or not present. Drain pan condition is not known.  Heating coils are clean.  Heat wheels are clean.  Exterior ducting is visible. Exterior ducting insulation is in good condition.  Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.  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.	

Unit Designation:	AHU2		
Location of Unit:	Mechanical room 1113		
Areas Served:	Gymnasium 1109		
	See attached map		
System Enhancements:	None		
Supply System	Outdoor Air	Cleanliness and Observations	
• Supply System - Constant Volume • Heating - Hot Water • Cooling - None • Energy Recovery Unit (ERU) - Fixed Plate  Filter Type - Mixed • Pre-filter: None • Main filter: Pleated, MERV 11	is accessible  Outdoor air intake is located on the roof.  No nearby pollution sources were found.	Outdoor air filters are not present.  Return air filters are not present.  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.  Drain pans are not applicable or not present. Drain pan condition is not known.  Heating coils are clean.  Heat wheels are inaccessible.  Exterior ducting is visible. Exterior ducting insulation is in good condition.  Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.  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.	

West Wing Classrooms 2nd Flr		
eanliness and Observations		
are not present.  re not present.  rs are not present. Mixed air main filters in need of replacement (scoring 2 out of xed air main filters are installed correctly.  t applicable or not present. Drain pannown.  clean.  lean.  visible. Exterior ducting insulation is in inition. Interior ducting is of unknown  is free of trash/chemicals.  s open, and its condition is good.  open, and its condition is good.		

Unit Designation:	AHU4		
Location of Unit:	n of Unit: Mechanical room 2407		
Areas Served:	Center Classrooms 2nd Flr		
	See attached map		
System Enhancements:	None		
Supply System	Outdoor Air	Cleanliness and Observations	
Type  Supply System  Type  Supply System - VAV  Heating - Hot Water  Cooling - None Energy Recovery Unit (ERU) - Fixed Plate  Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 13	Outdoor air intake is accessible  Outdoor air intake is located on the roof.	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.  Heating coils are clean.  Exterior ducting is visible. Exterior ducting insulation is in good condition.  Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.  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 D	esignation:	AHU5		
Locatio	on of Unit:	Mechanical room 1101 C		
Areas S	Served:	West Wing Classro	ooms 1st Flr	
		See attached map		
System	Enhancements:	None		
Sı	upply System	Outdoor Air	Cleanliness and Observations	
Type  •  •	Supply System - VAV Heating - Hot Water	Outdoor air intake is accessible Outdoor air intake is located on the roof.	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.  Heating coils are clean.  Exterior ducting is visible. Exterior ducting insulation is in good condition.  Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.  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.	

<b>Unit De</b>	signation:	AHU6		
Locatio	n of Unit:	Mechanical room 1101 C		
Areas S	erved:	Admin Offices		
		See attached map		
System Enhancements:		None		
Su	pply System	Outdoor Air	Cleanliness and Observations	
Type		Outdoor air intake	Outdoor air filters are not present.	
•	Supply System -	is accessible		
	VAV		Return air filters are not present.	
•	U	Outdoor air intake		
			Mixed air pre-filters are not present. Mixed air main filters	
•	J	roof.	are clean and not in need of replacement (scoring 2 out of 5)	
•	Energy		and fit well. Mixed air main filters are installed correctly.	
	•	No nearby		
	(ERU) - None		Drain pans are not plugged. Drain pan condition is good.	
Files T	una Baissad	were found.	Hooking soils are close and cooling soils are close	
_	/pe - Mixed	Outdoor oir intoko	Heating coils are clean and cooling coils are clean.	
		Outdoor air intake	Heat wheels are not present	
•		is in good condition.	Heat wheels are not present.	
	13	condition.	Exterior ducting is visible. Exterior ducting insulation is in	
	13		good condition.	
			Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	
			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 D	esignation:	AHU7		
Location of Unit: Mechanical room 1101 C		Mechanical room	1101 C	
Areas	Served:	Cafeteria		
		See attached map		
System Enhancements:				
Si	upply System	Outdoor Air	Cleanliness and Observations	
<u>Type</u>		Outdoor air	Outdoor air filters are not present.	
•	, ,	intake is accessible	Return air filters are not present.	
•	Heating - Hot	Outdoor air	Mixed air pre-filters are not present. Mixed air main filters are	
		intake is located	somewhat dirty and on the border of needing replacement	
•	Ü	on the roof.	(scoring 3 out of 5) and fit well. Mixed air main filters are	
•	Energy Recovery	No noarby	installed correctly.	
	Unit (ERU) - Fixed Plate	No nearby	Drain pans are not applicable or not present. Drain pan	
	Tixed Flate	were found.	condition is not known.	
Filter 1	Гуре - Mixed			
•		Outdoor air	Heating coils are clean.	
•	Main filter:	intake is in good		
	Pleated, MERV	condition.	Heat wheels are clean.	
	13			
			Exterior ducting is visible. Exterior ducting insulation is in good condition.	
			Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	
			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 De	esignation:	AHU8		
Locatio	on of Unit:	Mechanical room 2316 (S. Roof)		
Areas S	Served:	South Science Clas See attached map		
System	Enhancements:	None		
Su	ıpply System	Outdoor Air	Cleanliness and Observations	
<u>Type</u> •	VAV Heating - Hot	Outdoor air intake is accessible	Outdoor air filters are not present.  Return air filters are not present.	
•	Cooling - None Energy Recovery Unit (ERU) -		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.	
Filter T	ype - Mixed Pre-filter: None		Drain pans are not applicable or not present. Drain pan condition is not known.	
•	Main filter: Pleated, MERV 13	Outdoor air intake is in good condition.	Heating coils are clean.  Heat wheels are inaccessible.	
			Exterior ducting is visible. Exterior ducting insulation is in good condition.	
			Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	
			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 De	esignation:	MAU1 (100% OA)		
Locatio	on of Unit:	Mechanical room	Roof, access from 1113	
Areas S	Served:	Kitchen		
		See attached map		
System	Enhancements:	None		
Su	pply System	Outdoor Air	Cleanliness and Observations	
Type		Outdoor air	Outdoor air pre-filters are not present. Outdoor air main filters	
•	Supply System	intake is	are somewhat dirty and on the border of needing replacement	
	- Constant	accessible	(scoring 3 out of 5) and fit well. Outdoor air main filters are	
	Volume		installed correctly.	
•	Heating - None			
•	_	intake is located	Return air filters are not present.	
•	Energy	on the roof.		
	Recovery Unit		Drain pans are not applicable or not present. Drain pan	
	(ERU) - None	No nearby	condition is not known.	
Files T		pollution sources	Heat wheels are not proceed	
	<b>ype - Outdoor</b> Pre-filter: None	were found.	Heat wheels are not present.	
•		Outdoor air	Exterior ducting is not visible. Exterior ducting insulation is in	
•	Metal Mesh,	intake is in good	an unknown condition.	
	N/A	condition.	an unknown condition.	
	N/A	condition.	Interior ducting is not visible. Interior ducting insulation is in an	
			unknown condition. Interior ducting is of unknown cleanliness.	
			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:		BCU 1 (100% OA)		
Location of Unit:		Mechanical room 1103 A - Ceiling		
Areas Served:		Dishwashing 1103A		
		See attached map		
System Enhancements:		None		
Sı	upply System	Outdoor Air	Cleanliness and Observations	
Type	Cumply Cyctom		Outdoor air pre-filters are not present. Outdoor air main	
•	Supply System - Constant	is accessible	filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Outdoor air main filters are installed	
	Volume	Outdoor air intake	·	
	Heating - Hot	is located on the	correctly.	
	-	roof.	Return air filters are not present.	
•	Cooling - None	1001.	necam an meets are not present.	
•	_	No nearby	Drain pans are not applicable or not present. Drain pan	
	0,	•	condition is not known.	
	(ERU) - None	were found.		
			Heating coils are inaccessible.	
Filter Type - Outdoor		Outdoor air intake		
•	Pre-filter: None	•	Heat wheels are not present.	
•	Main filter:	condition.		
	Pleated, MERV 8		Exterior ducting is visible. Exterior ducting insulation is not present.	
			Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	
			Air handling room is free of trash/chemicals.	
			Outside damper is inaccessible, and its condition is not known.	
			Return damper is not present.	
			The general condition of the unit is good.	

Unit Designation:	BCU 2 (100% OA)				
Location of Unit:	Mechanical room 1103 - Ceiling				
Areas Served:	Kitchen				
	See attached map				
System Enhancements: None					
Supply System	Outdoor Air	Cleanliness and Observations			
Туре	Outdoor air intake	Outdoor air pre-filters are not present. Outdoor air main			
<ul> <li>Supply System -</li> </ul>	is accessible	filters are clean and not in need of replacement (scoring 1 out			
Constant		of 5) and fit well. Outdoor air main filters are installed			
Volume	Outdoor air intake	correctly.			
<ul> <li>Heating - Hot</li> </ul>	is located on the				
	roof.	Return air filters are not present.			
<ul> <li>Cooling - None</li> </ul>					
	No nearby	Drain pans are not applicable or not present. Drain pan			
·	l'	condition is not known.			
(ERU) - None	were found.				
		Heating coils are inaccessible.			
	Outdoor air intake	Hard for the control of the control			
Pre-filter: None	_	Heat wheels are not present.			
Main filter:      Name of MERV	condition.	Exterior ducting is visible. Exterior ducting insulation is not			
Pleated, MERV 8		Exterior ducting is visible. Exterior ducting insulation is not present.			
		Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.			
		Air handling room is free of trash/chemicals.			
		Outside damper is inaccessible, and its condition is not known.			
		Return damper is not present.			
		The general condition of the unit is good.			

## Recommendations

## **Appendix A**

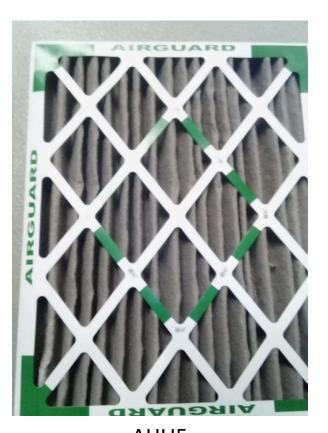
**Photo Documentation** 



AHU4
Mixed Main Filter Cleanliness



AHU7
Mixed Main Filter Cleanliness



AHU5
Mixed Main Filter Cleanliness



AHU8
Mixed Main Filter Cleanliness



MAU1 (100% OA)
Outdoor Main Filter Cleanliness