

IEA, INC.

## 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](http://www.ieasafety.com)

[info@ieasafety.com](mailto:info@ieasafety.com)

800-233-9513

## Saint Paul Public Schools Crossroads Montessori

Assessment Date:  
Friday, April 7, 2023

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## Project Description

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IEA conducted a ventilation inspection in Crossroads Montessori 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	5:30 AM	9:30 PM
Saturday	No		
Sunday	No		
Holiday	No		

Typical occupancy:

Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	7:30 AM	2:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

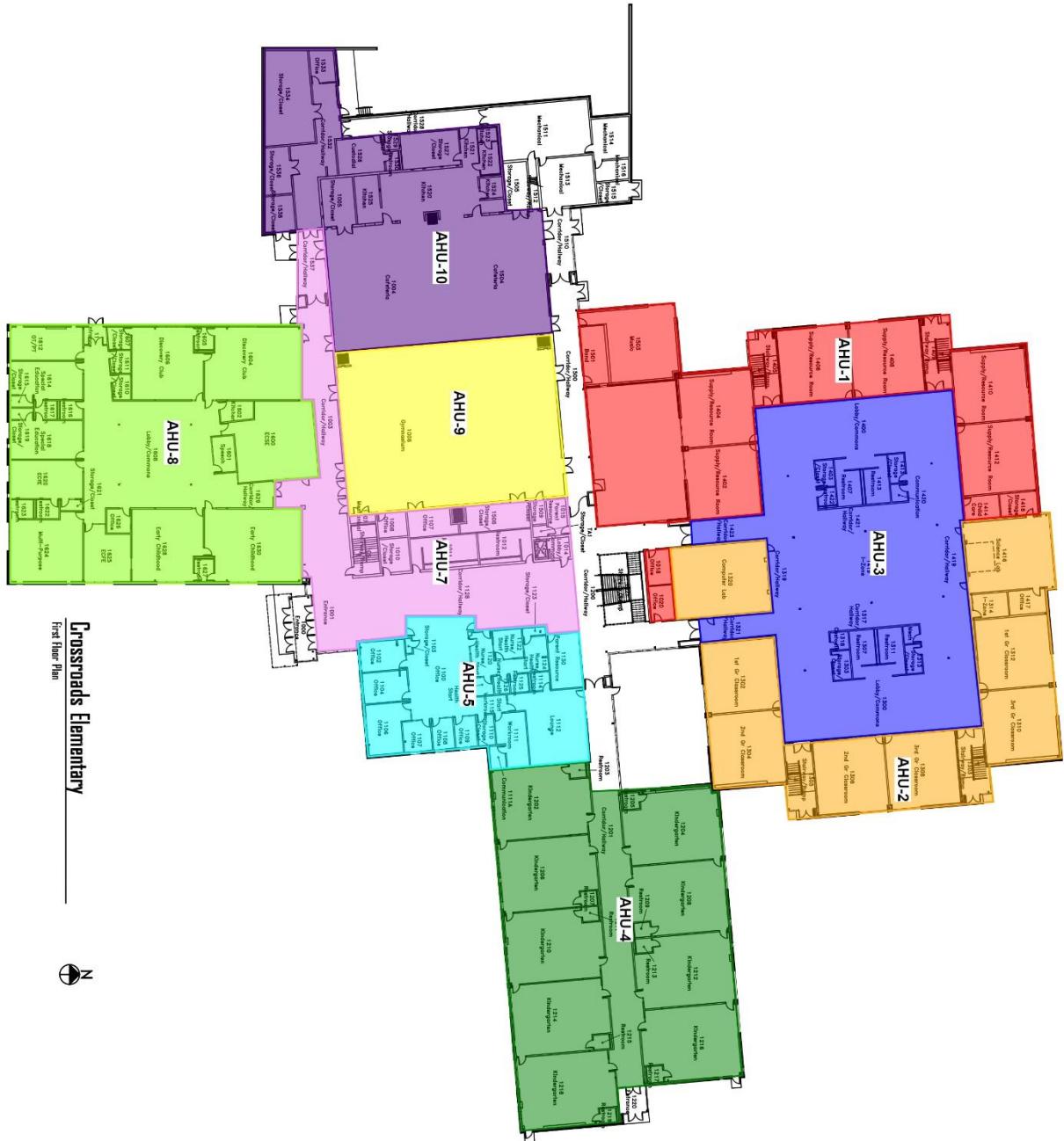
**Notes:** School is open year round

- 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 fan powered with a Unknown filter.
- Building has variable frequency drives (VFD).
- The heating system is a hot water boiler.
- A cooling system is present and is a chilled water (cooling tower) type system.
- Filters used are:

Filter Type	MERV Rating
Inaccessible	
Pleated	MERV 11

- Filters are changed every 3-4 months.
- Energy Recovery Units are present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are 3M/filtrete.
  - Location: about 80% of the rooms
- 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 Friday, April 7, 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:

<b>Unit Designation:</b>	AHU-1	
<b>Location of Unit:</b>	3002	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - VAV</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are clean.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	Heat wheel cleanliness is not known.  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 Designation:</b>	AHU-2	
<b>Location of Unit:</b>	3002	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - VAV</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 incorrectly.  Drain pans are not plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are dirty.  Heat wheel cleanliness is not known.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	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 Designation:</b>	AHU-3	
<b>Location of Unit:</b>	3002	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - VAV</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are clean.  Heat wheel cleanliness is not known.  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>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	

<b>Unit Designation:</b>	AHU-4	
<b>Location of Unit:</b>	3002	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - VAV</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are dirty.  Heat wheel cleanliness is not known.  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>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	

<b>Unit Designation:</b>	AHU-5	
<b>Location of Unit:</b>	2006	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - VAV</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are clean.  Heat wheel cleanliness is not known.  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>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	

<b>Unit Designation:</b>	AHU-6	
<b>Location of Unit:</b>	2006	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - Constant Volume</li> <li>• Heating - Hot Water</li> <li>• Cooling - Chilled Water</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on the roof.</p> <p>No nearby pollution sources were found.</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 somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Mixed air main filters are installed correctly.</p> <p>Drain pans are not plugged. Drain pan condition is good.</p> <p>Heating coils are clean and cooling coils are dirty.</p>
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	<p>Outdoor air intake is in good condition.</p>	<p>Heat wheel cleanliness is not known.</p> <p>Exterior ducting is visible. Exterior ducting insulation is in good condition.</p> <p>Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.</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>

<b>Unit Designation:</b>	AHU-7	
<b>Location of Unit:</b>	2006	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Constant Volume</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - Wheel</li> </ul> <b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is accessible Outdoor air intake is located on an exterior wall. No nearby pollution sources were found. Outdoor air intake is in good condition.	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 plugged. Drain pan condition is good. Heating coils are clean and cooling coils are dirty. Heat wheel cleanliness is not known. 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 Designation:</b>	AHU-8	
<b>Location of Unit:</b>	3004	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - VAV</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are dirty.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	Heat wheel cleanliness is not known.  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 Designation:</b>	AHU-9	
<b>Location of Unit:</b>	3004	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Constant Volume</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - None</li> </ul>	Outdoor air intake is accessible	Outdoor air filters are not present. Return air filters are not present.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	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 plugged. Drain pan condition is good. Heating coils are dirty and cooling coils are clean. Heat wheels are not present. 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 Designation:</b>	AHU-10	
<b>Location of Unit:</b>	3004	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - VAV</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - Wheel</li> </ul>	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 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 plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are clean.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	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 inaccessible, and its condition is good.  Return damper is open, and its condition is good.  The general condition of the unit is good.

<b>Unit Designation:</b>	AHU-11 (100% OA)	
<b>Location of Unit:</b>	3004	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Constant Volume</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - None</li> </ul>	Outdoor air intake is accessible Outdoor air intake is located on the roof. 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 1 out of 5) and fit well. Outdoor air main filters are installed correctly. Return air filters are not present. Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	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 not present. The general condition of the unit is good.

<b>Unit Designation:</b>	AHU-12	
<b>Location of Unit:</b>	2006	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Constant Volume</li> <li>Heating - Hot Water</li> <li>Cooling - Chilled Water</li> <li>Energy Recovery Unit (ERU) - None</li> </ul>	Outdoor air intake is accessible  Outdoor air intake is located on an exterior wall.  No nearby pollution sources were found.  Outdoor air intake is in good condition.	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 incorrectly.  Drain pans are not plugged. Drain pan condition is good.  Heating coils are clean and cooling coils are clean.  Heat wheels are not present.  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 inaccessible, and its condition is not known.  Return damper is inaccessible, and its condition is not known.  The general condition of the unit is good.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>		

<b>Unit Designation:</b>	ERU-1	
<b>Location of Unit:</b>	Mechanical room 3002; on roof	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Unknown</li> <li>Heating - None</li> <li>Cooling - None</li> <li>Energy Recovery Unit (ERU) - Wheel</li> </ul>	Outdoor air intake is accessible  Outdoor air intake is located on the roof.  No nearby pollution sources were found.	Outdoor air pre-filters are not present. Outdoor air main filters are somewhat dirty and on the border of needing replacement (scoring 4 out of 5) and fit well. Outdoor air main filters are installed correctly.  Return air pre-filters are not present. Return air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Return air main filters are installed correctly.  Drain pans are not applicable or not present. Drain pan condition is not known.  Heat wheels are clean.  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 open, and its condition is good.  Return damper is open, and its condition is good.  The general condition of the unit is good.
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	Outdoor air intake is in good condition.	
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>		

<b>Unit Designation:</b>	ERU-2	
<b>Location of Unit:</b>	2006	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>Supply System - Unknown</li> <li>Heating - None</li> <li>Cooling - None</li> <li>Energy Recovery Unit (ERU) - Wheel</li> </ul>	Outdoor air intake is accessible	Outdoor air filters are of unknown cleanliness and fit is unknown. Outdoor air filters are installed but it is unknown whether they are installed correctly.
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>Pre-filter: Inaccessible</li> <li>Main filter: Inaccessible</li> </ul>	Outdoor air intake is located on the roof.	Return air pre-filters are not present. Return air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Return air main filters are installed correctly.
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>	No nearby pollution sources were found.	Drain pans are not applicable or not present. Drain pan condition is not known.
	Outdoor air intake is in good condition.	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.
		The general condition of the unit is good.

<b>Unit Designation:</b>	ERU-3	
<b>Location of Unit:</b>	3004	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - Unknown</li> <li>• Heating - None</li> <li>• Cooling - None</li> <li>• Energy Recovery Unit (ERU) - Wheel</li> </ul>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on the roof.</p> <p>No nearby pollution sources were found.</p> <p>Outdoor air intake is in good condition.</p>	<p>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.</p> <p>Return air pre-filters are not present. Return air main filters are somewhat dirty and on the border of needing replacement (scoring 4 out of 5) and fit well. Return 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 clean.</p> <p>Exterior ducting is visible. Exterior ducting insulation is not present.</p> <p>Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.</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>
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>		
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>		

<b>Unit Designation:</b>	UV-1409	
<b>Location of Unit:</b>	in 1409 stairwell next to door 7	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - Constant Volume</li> <li>• Heating - Hot Water</li> <li>• Cooling - None</li> <li>• Energy Recovery Unit (ERU) - None</li> </ul>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on an exterior wall.</p> <p>It is not known if there are nearby pollution sources.</p>	<p>Outdoor air filters are not present.</p> <p>Return air pre-filters are not present. Return air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Return air main filters are installed incorrectly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p> <p>Heating coils are clean.</p>
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	<p>Outdoor air intake is in good condition.</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 in an unknown condition. Interior ducting is of unknown cleanliness.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is not present.</p> <p>Return damper is open, and its condition is good.</p> <p>The general condition of the unit is good.</p>

<b>Unit Designation:</b>	UV-1405	
<b>Location of Unit:</b>	in stairwell 1405, next to door 8	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - Constant Volume</li> <li>• Heating - Hot Water</li> <li>• Cooling - None</li> <li>• Energy Recovery Unit (ERU) - None</li> </ul>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on an exterior wall.</p> <p>It is not known if there are nearby pollution sources.</p>	<p>Outdoor air filters are not present.</p> <p>Return air pre-filters are not present. Return air main filters are clean and not in need of replacement (scoring 1 out of 5) and fit well. Return air main filters are installed incorrectly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p> <p>Heating coils are clean.</p>
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	<p>Outdoor air intake is in good condition.</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 in an unknown condition. Interior ducting is of unknown cleanliness.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is not present.</p> <p>Return damper is open, and its condition is good.</p> <p>The general condition of the unit is good.</p>

<b>Unit Designation:</b>	UV-1305	
<b>Location of Unit:</b>	1305 stairwell by door 5	
<b>Areas Served:</b>	See attached map.	
<b>System Enhancements:</b>	None	
<b>Supply System</b>	<b>Outdoor Air</b>	<b>Cleanliness and Observations</b>
<b>Type</b> <ul style="list-style-type: none"> <li>• Supply System - Constant Volume</li> <li>• Heating - Hot Water</li> <li>• Cooling - None</li> <li>• Energy Recovery Unit (ERU) - None</li> </ul>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on an exterior wall.</p> <p>It is not known if there are nearby pollution sources.</p>	<p>Outdoor air filters are not present.</p> <p>Return air pre-filters are not present. Return air main filters are somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Return air main filters are installed correctly.</p> <p>Drain pans are not applicable or not present. Drain pan condition is not known.</p> <p>Heating coils are clean.</p>
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	<p>Outdoor air intake is in good condition.</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 in an unknown condition. Interior ducting is of unknown cleanliness.</p> <p>Air handling room is free of trash/chemicals.</p> <p>Outside damper is not present.</p> <p>Return damper is open, and its condition is good.</p> <p>The general condition of the unit is good.</p>

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## Recommendations

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Dirty Coils were observed on units AHU-2, AHU-4, AHU-6, AHU-7, AHU-8 and AHU-9 during the ventilation inspection.

**Recommendation:** Impacted/dirty coils can result in poor ventilation air supply as well as be a source for mold and bacterial growth on the coils. Coils should be cleaned annually, or as needed, as identified in the operations and maintenance program.

Dirty or poorly fitting filters were observed in units AHU-12, AHU-2, UV-1405 and UV-1409 during the ventilation inspection.

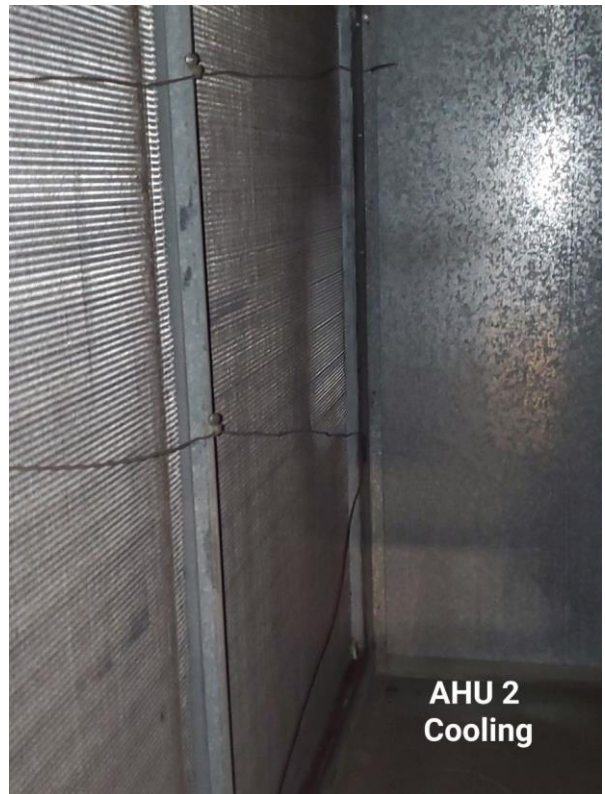
**Recommendation:** The operations and maintenance program for filter changes should be reviewed and revised to ensure proper filter changes to optimize filtration capacity.

# **Appendix A**

## Photo Documentation



AHU-2  
Mixed Main Filter Installation



AHU-2  
Cooling Coils



AHU-4  
Cooling Coils



AHU-6  
Mixed Main Filter Cleanliness



AHU 6  
Cooling

AHU-6  
Cooling Coils



AHU 7  
Cooling

AHU-7  
Cooling Coils



AHU-8  
Mixed Main Filter Cleanliness



AHU 8  
COOLING

AHU-8  
Cooling Coils



AHU-9  
Mixed Main Filter Cleanliness



AHU-9  
Heating Coils



AHU-10  
Mixed Main Filter Cleanliness



AHU-11 (100% OA)  
Drain Pans



AHU-12

Mixed Main Filter Installation



ERU-1

Outdoor Main Filter Cleanliness



ERU-3

Outdoor Main Filter Cleanliness



ERU-3

Return Main Filter Cleanliness



UV-1409  
Return Main Filter Installation



UV-1405  
Return Main Filter Installation



UV-1305  
Return Main Filter Cleanliness