

IEA, INC.

## 2023 - 2024 Ventilation Assessment



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## Saint Paul Public Schools Global Arts Plus Upper

Assessment Date:  
Wednesday, April 19, 2023

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## Project Description

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IEA conducted a ventilation inspection in Global Arts Plus Upper 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	8:00 PM
Monday-Friday	Yes	6:00 AM	4:00 PM

Typical occupancy:

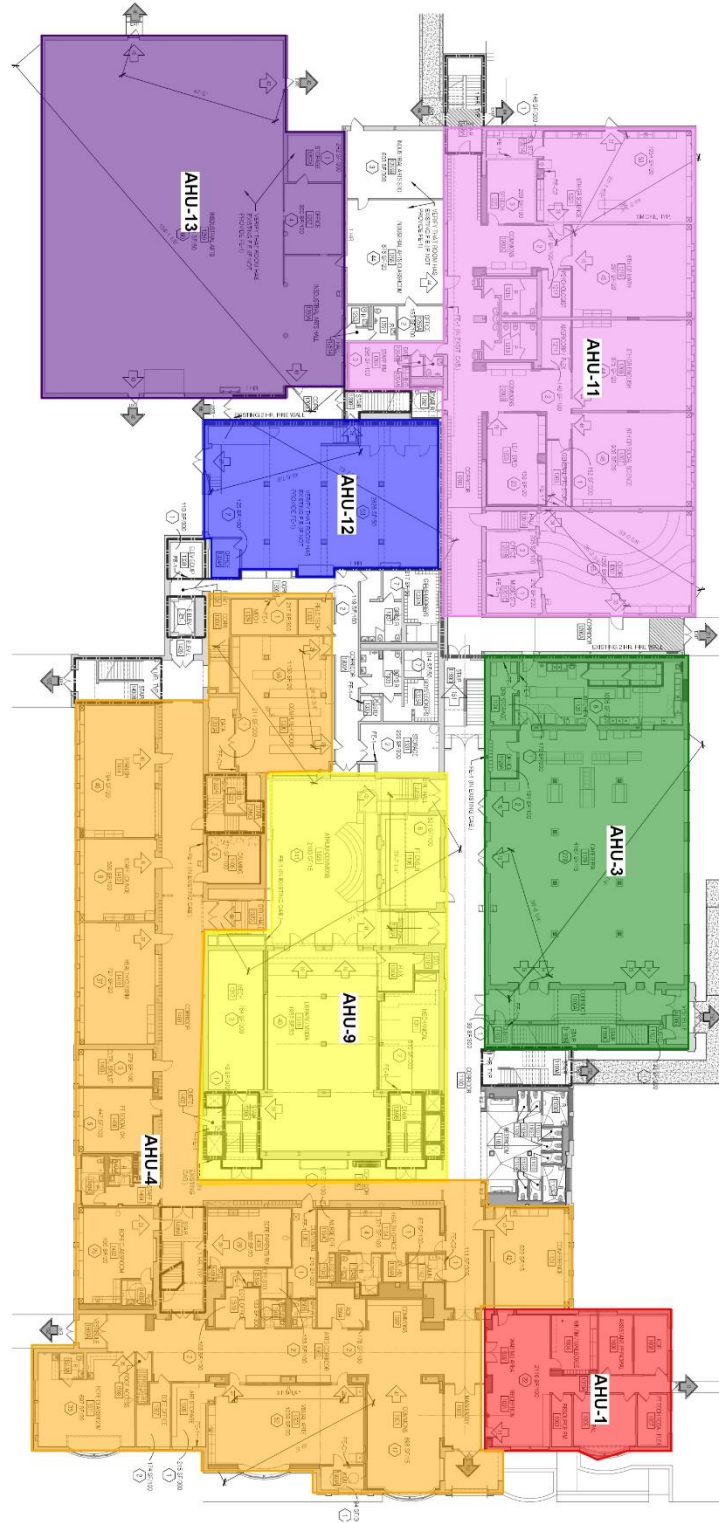
Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	7:00 AM	6:00 PM
Saturday	No		
Sunday	No		
Holiday	No		
<b>Notes:</b> Summer community Ed, 6 pm to 9pm Mon through Thursday			

- CO2 sensors are not associated with the ventilation system.
- VAVs are present. They are fan powered with a None 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 (air cooled) type system.
- Filters used are:

Filter Type	MERV Rating
Pleated	MERV 11
Pleated	MERV 13
Pleated	MERV 8

- Filters are changed 3-4 times a year.
- Energy Recovery Units are present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are 3m, winix /Filtrete, area wave 2.0.
  - Location: 3rd floor 5 th grade classrooms, main office, 1211, health Office
- It is not known whether or not the building was commissioned during the original construction.

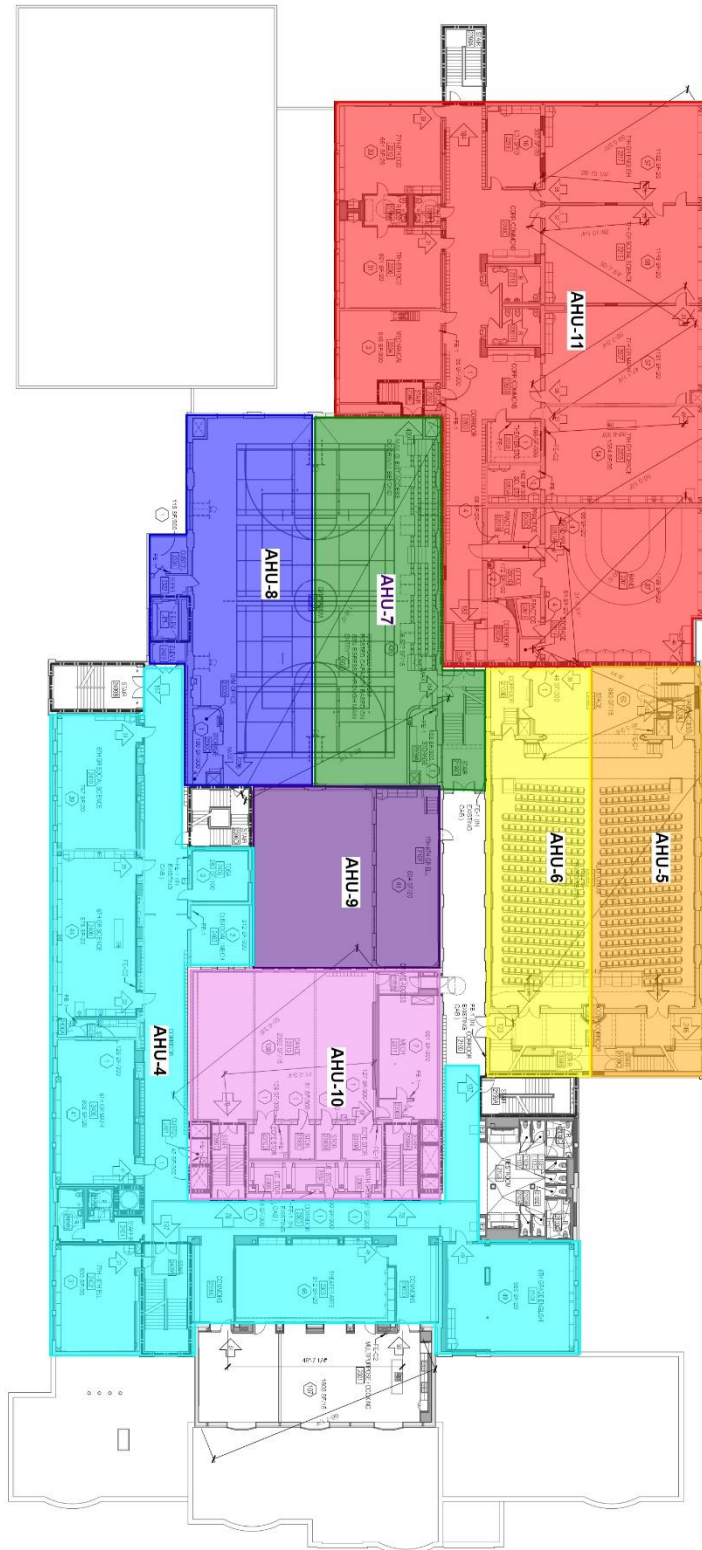
# Air Handling Unit Designations & Service Zones: 1st Floor



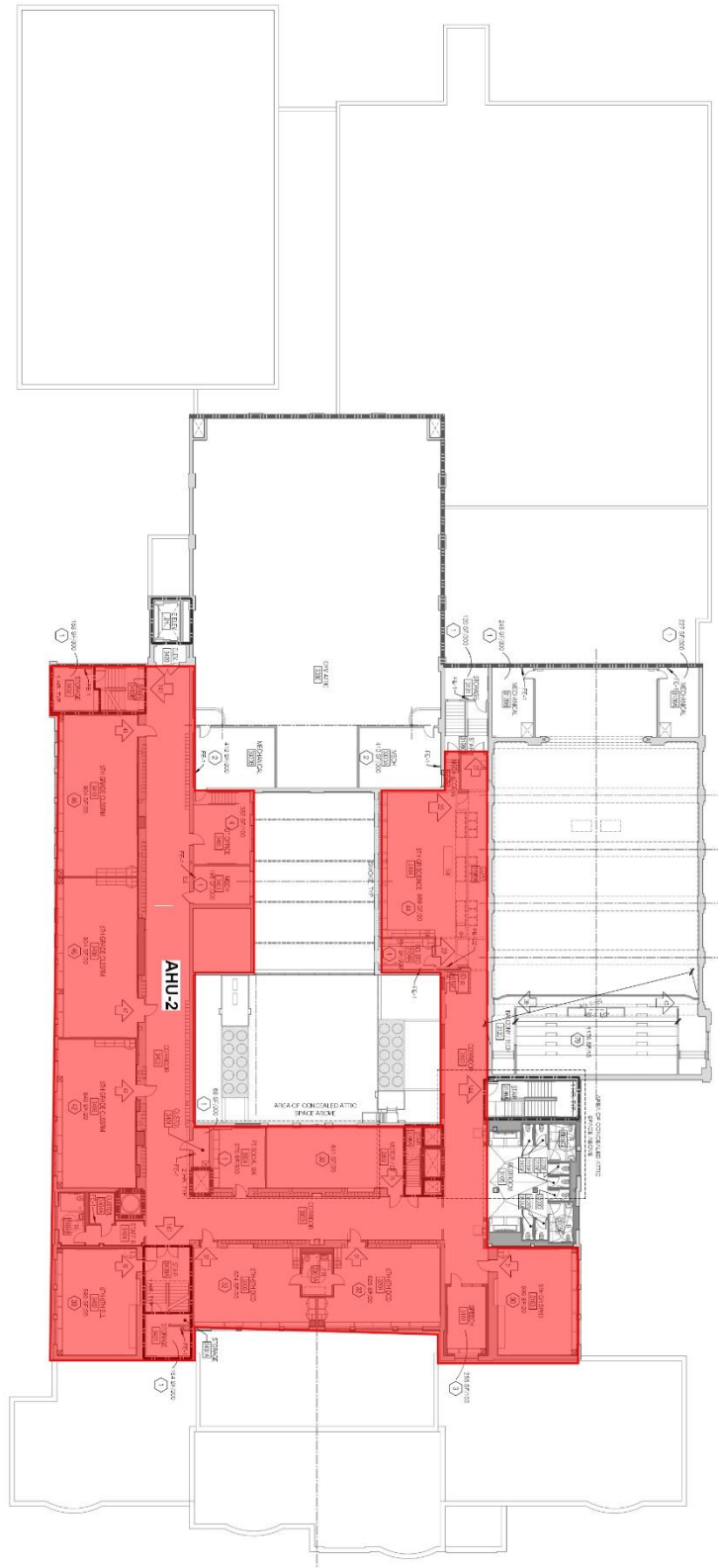
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## Air Handling Unit Designations & Service Zones: 2nd Floor

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# Air Handling Unit Designations & Service Zones: 3rd Floor



# Assessment

## Ventilation System

The following information was gathered by IEA on Wednesday, April 19, 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>	AHU1	
<b>Location of Unit:</b>	Mechanical room Basement,	
<b>Areas Served:</b>	Office Admin 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) - None</li> </ul> <b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: Pleated, MERV 8</li> <li>• Main filter: Pleated, MERV 13</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 filters are not present.</p> <p>Return air filters are not present.</p> <p>Mixed air filters are clean and not in need of replacement (scoring 1 out of 5) and fit well. Mixed air 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 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 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>	AHU2	
<b>Location of Unit:</b>	Mechanical room Basement	
<b>Areas Served:</b>	3rd Floor N. Classrooms 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>	Outdoor air intake is accessible  Outdoor air intake is located on the roof.  No nearby pollution sources were found.  Outdoor air intake is in good condition.	Outdoor air filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Outdoor air filters are installed correctly.  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 correctly.  Drain pans are not plugged. Drain pan condition is good.  Heating coils are clean and cooling 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.  The general condition of the unit is good.
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>Pre-filter: Pleated, MERV 8</li> <li>Main filter: Pleated, MERV 13</li> </ul>		
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 8</li> </ul>		



<b>Unit Designation:</b>	AHU3	
<b>Location of Unit:</b>	Mechanical room NW-1311	
<b>Areas Served:</b>	Cafeteria 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) - 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 filters are not present.  Return air filters are not present.  Mixed air pre-filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air pre-filters are installed correctly. Mixed air main filters are clean and not in need of replacement (scoring 1 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 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>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: Pleated, MERV 8</li> <li>• Main filter: Pleated, MERV 13</li> </ul>	Outdoor air intake is in good condition.	

<b>Unit Designation:</b>	AHU4	
<b>Location of Unit:</b>	Mechanical room NE- 1312	
<b>Areas Served:</b>	1st/2nd Floor N. Classrooms 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 an exterior wall.  No nearby pollution sources were found.	Outdoor air filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Outdoor air filters are installed correctly.  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 poorly. Return air main filters are installed correctly.  Drain pans are not plugged. Drain pan condition is good.
<b>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>Pre-filter: Pleated, MERV 8</li> <li>Main filter: Pleated, MERV 13</li> </ul>	Outdoor air intake is in good condition.	Heating coils are clean and cooling 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.
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>Pre-filter: None</li> <li>Main filter: Pleated, MERV 11</li> </ul>		Air handling room is free of trash/chemicals.  Outside damper is closed, 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>	AHU5	
<b>Location of Unit:</b>	Mechanical room Auditorium	
<b>Areas Served:</b>	Auditorium - West 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 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 inaccessible.
<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 not present.  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 closed, 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>	AHU6	
<b>Location of Unit:</b>	Mechanical room Auditorium	
<b>Areas Served:</b>	Auditorium - East 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> <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 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 plugged. Drain pan condition is good.</p> <p>Heating coils are clean and cooling coils are inaccessible.</p> <p>Heat wheels are not present.</p> <p>Exterior ducting is not 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 inaccessible, and its condition is not known.</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>	AHU7	
<b>Location of Unit:</b>	Mechanical room 3330 - C	
<b>Areas Served:</b>	Gym - West 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>	Outdoor air intake is inaccessible  Outdoor air intake is located in an unknown location.  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 clean and not in need of replacement (scoring 1 out of 5) and fit well. Mixed air main filters are installed correctly.  Drain pans are not plugged. Drain pan condition is poor.
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 8</li> </ul>	Outdoor air intake is in good condition.	Heating coils are clean.  Heat wheels are not present.  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>Unit Designation:</b>	AHU8	
<b>Location of Unit:</b>	Mechanical room 3405/3330-B	
<b>Areas Served:</b>	Gym - East 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 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 1 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>
<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>Heating coils are clean.</p> <p>Heat wheels are not present.</p> <p>Exterior ducting is visible. Exterior ducting insulation is not present.</p> <p>Interior ducting is 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>	AHU9	
<b>Location of Unit:</b>	Mechanical room 2311	
<b>Areas Served:</b>	Atrium/Media Center 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) - None</li> </ul>	<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 filters are clean and not in need of replacement (scoring 1 out of 5) and fit well. Mixed air filters are installed correctly.</p> <p>Drain pans are not plugged. Drain pan condition is good.</p>
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: Pleated, MERV 8</li> <li>Main filter: Pleated, MERV 13</li> </ul>	<p>Outdoor air intake is in good condition.</p>	<p>Heating coils are clean and cooling 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 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>	AHU10	
<b>Location of Unit:</b>	Mechanical room 2311	
<b>Areas Served:</b>	Atrium/Media Center 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>	<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 filters are clean and not in need of replacement (scoring 1 out of 5) and fit well. Mixed air filters are installed correctly.</p> <p>Drain pans are not plugged. Drain pan condition is good.</p>
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>Pre-filter: Pleated, MERV 8</li> <li>Main filter: Pleated, MERV 13</li> </ul>	<p>Outdoor air intake is in good condition.</p>	<p>Heating coils are clean and cooling 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 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>	AHU11	
<b>Location of Unit:</b>	Mechanical room 2204	
<b>Areas Served:</b>	South Wing Classrooms 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>	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on an exterior wall.</p> <p>No nearby pollution sources were found.</p>	<p>Outdoor air pre-filters are somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Outdoor air pre-filters are installed correctly. 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 clean and not in need of replacement (scoring 1 out of 5) and fit well. Return 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 clean.</p> <p>Heat wheels are clean.</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>Filter Type - Outdoor</b> <ul style="list-style-type: none"> <li>• Pre-filter: Pleated, MERV 11</li> <li>• Main filter: Pleated, MERV 13</li> </ul>	<p>Outdoor air intake is in good condition.</p>	
<b>Filter Type - Return</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 8</li> </ul>		

<b>Unit Designation:</b>	AHU12	
<b>Location of Unit:</b>	Mechanical room 1339	
<b>Areas Served:</b>	Wood Shop 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> <b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: Pleated, MERV 11</li> <li>• Main filter: Pleated, MERV 11</li> </ul>	<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 clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air pre-filters are installed correctly. Mixed air main filters are clean and not in need of replacement (scoring 1 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>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 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>	AHU13	
<b>Location of Unit:</b>	Mechanical room 1255/1257-A	
<b>Areas Served:</b>	Auto Shop 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 inaccessible</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 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>
<b>Filter Type - Mixed</b> <ul style="list-style-type: none"> <li>• Pre-filter: None</li> <li>• Main filter: Pleated, MERV 8</li> </ul>	<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 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 inaccessible, and its condition is not known.</p> <p>Return damper is inaccessible, and its condition is not known.</p> <p>The general condition of the unit is good.</p>

<b>Unit Designation:</b>	MUA-01	
<b>Location of Unit:</b>	Woodshop 1334	
<b>Areas Served:</b>	Woodshop	
<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>	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 1 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.
<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.	Heat wheels are not present. 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 closed, and its condition is good. Return damper is not present. The general condition of the unit is good.

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## Recommendations

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The drain pan for unit AHU7 was plugged or damaged at the time of the site inspection.

**Recommendation:** Damage to the drain pan should be repaired, or the drain pan should be inspected more frequently to ensure that it does not become plugged.

Dirty or poorly fitting filters were observed in unit AHU4 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



AHU4

Return Main Filter Fit



AHU7

Drain Pans



AHU11

Outdoor Pre-Filter Cleanliness