

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

info@ieasafety.com

800-233-9513

Saint Paul Public Schools Chelsea Heights Elementary School

Assessment Date:
Thursday, April 20, 2023

Project Description

IEA conducted a ventilation inspection in Chelsea Heights 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	5:00 AM	10:00 PM
Monday-Friday	Yes	7:00 AM	9:00 PM

Typical occupancy:

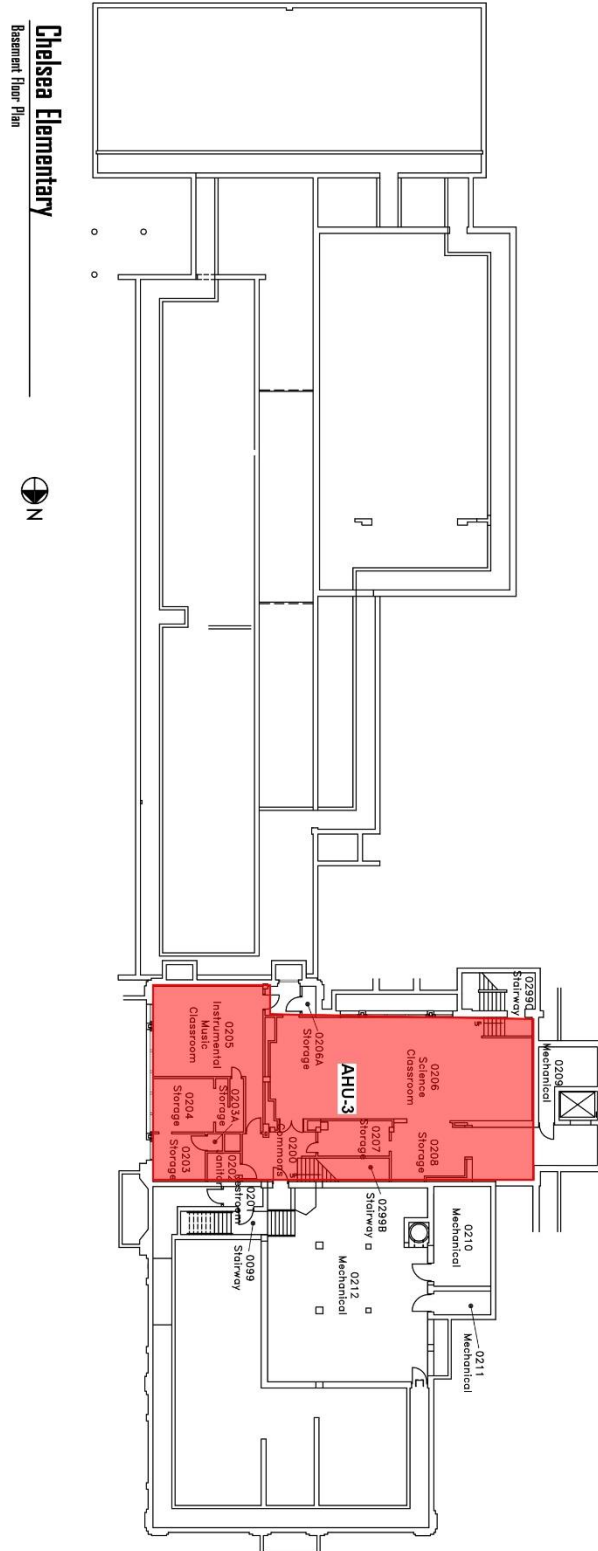
Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	7:30 AM	2:00 PM
Saturday	No		
Sunday	No		
Holiday	No		
Notes: Rec center open until 8pm			

- 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:

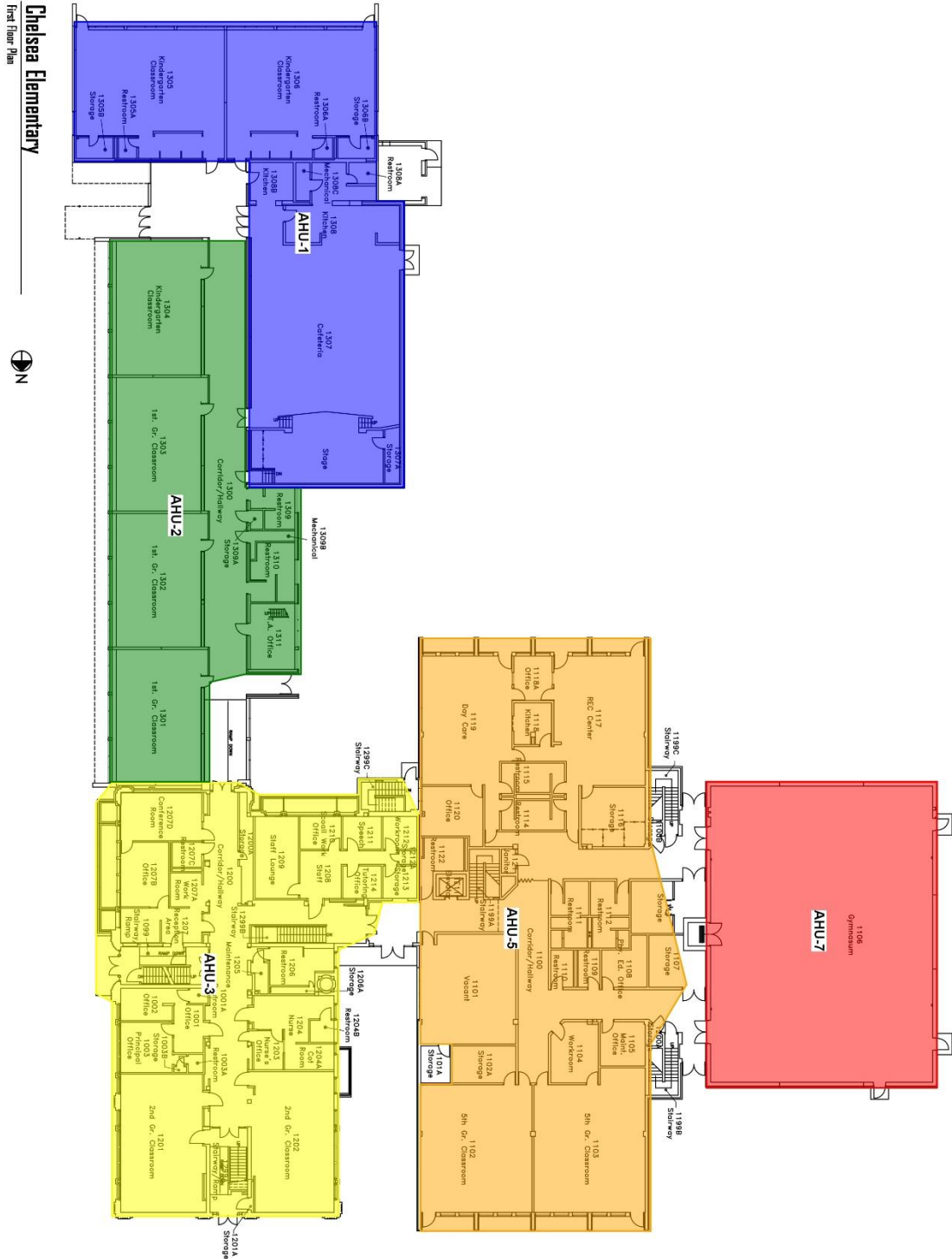
Filter Type	MERV Rating
Metal Mesh	N/A
Pleated	MERV 11

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

Air Handling Unit Designations & Service Zones: Basement

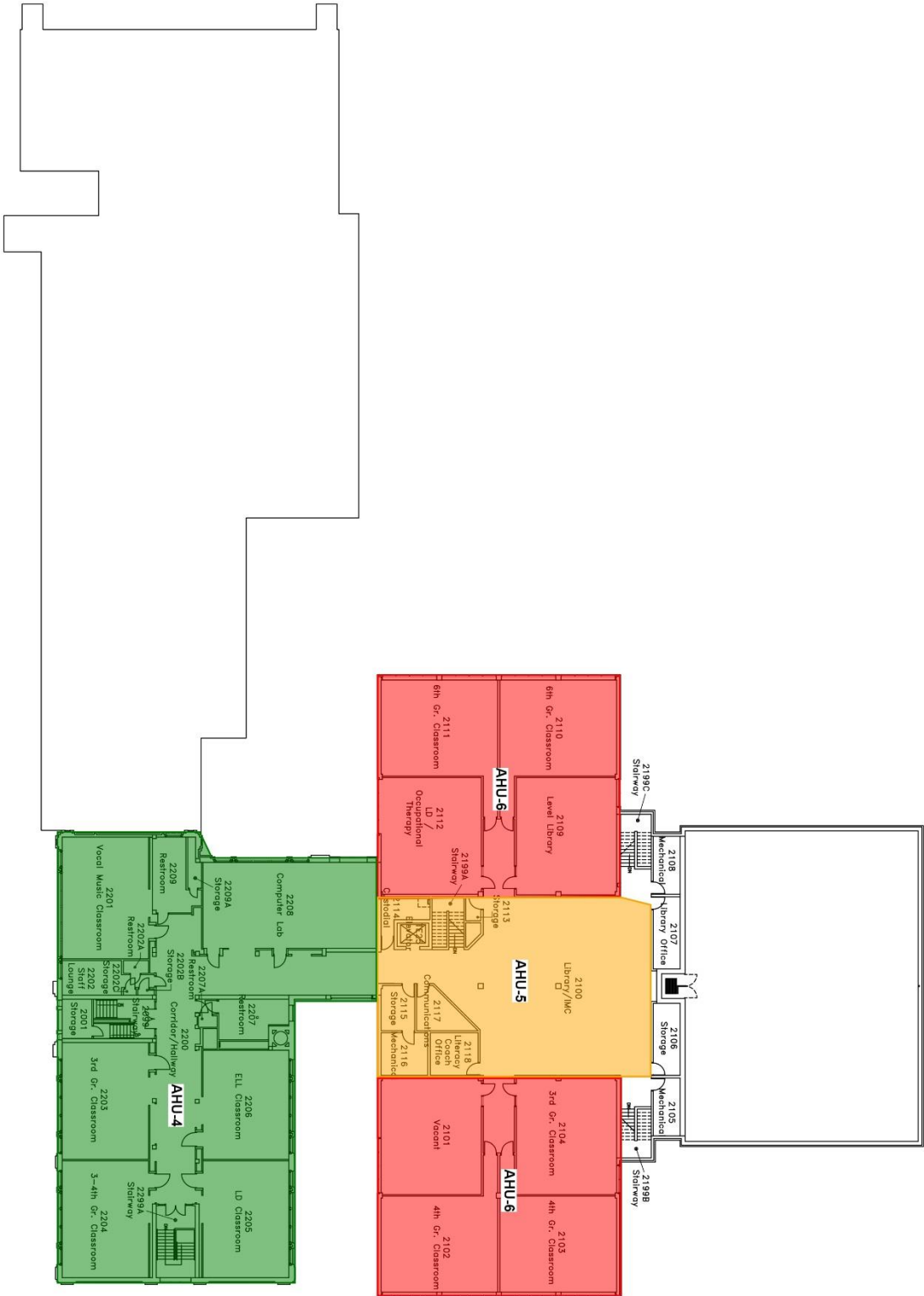


Air Handling Unit Designations & Service Zones: 1st Floor



Air Handling Unit Designations & Service Zones: 2nd Floor

Chelsea Elementary
Second Floor Plan



Assessment

Ventilation System

The following information was gathered by IEA on Thursday, April 20, 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:	RTU-02	
Location of Unit:	lower roof 1954	
Areas Served:	See attached map Kitchen, Cafeteria, Kindergarten, Stage	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - VAV Heating - Hot Water Cooling - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Unit Designation:	RTU-01	
Location of Unit:	lower roof 1954	
Areas Served:	See attached map 1st Floor South	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - VAV Heating - Hot Water Cooling - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Unit Designation:	RTU-03	
Location of Unit:	high roof 1932	
Areas Served:	See attached map 1st Floor North and basement	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - VAV Heating - Hot Water Cooling - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Unit Designation:	RTU-04	
Location of Unit:	high roof 1932	
Areas Served:	See attached map 2nd Floor East	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> • Supply System - VAV • Heating - Hot Water • Cooling - Dx • Energy Recovery Unit (ERU) - None 	<p>Outdoor air intake is accessible</p> <p>Outdoor air intake is located on the unit.</p> <p>No nearby pollution sources were found.</p>	<p>Outdoor air pre-filters are not present. Outdoor air main filters are somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Outdoor air main filters are installed correctly.</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>
Filter Type - Outdoor <ul style="list-style-type: none"> • Pre-filter: None • Main filter: Metal Mesh, N/A 	<p>Outdoor air intake is in good condition.</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>
Filter Type - Mixed <ul style="list-style-type: none"> • Pre-filter: None • Main filter: Pleated, MERV 11 		<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 closed, and its condition is good.</p> <p>Return damper is inaccessible, and its condition is not known.</p> <p>The general condition of the unit is good.</p>

Unit Designation:	RTU-05	
Location of Unit:	NW roof 1974	
Areas Served:	See attached map 1st and 2nd Floor West	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - VAV Heating - Hot Water Cooling - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Unit Designation:	RTU-06	
Location of Unit:	NW roof 1974	
Areas Served:	See attached map 2nd Floor West	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type <ul style="list-style-type: none"> Supply System - VAV Heating - Hot Water Cooling - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Unit Designation:	RTU-07	
Location of Unit:	NW roof 1974	
Areas Served:	See attached map Gymnasium	
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 - Dx Energy Recovery Unit (ERU) - None 	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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. 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.
Filter Type - Outdoor <ul style="list-style-type: none"> Pre-filter: None Main filter: Metal Mesh, N/A 	Outdoor air intake is in good condition.	Drain pans are not plugged. Drain pan condition is good. Heating coils are clean and cooling coils are clean. Heat wheels are not present.
Filter Type - Mixed <ul style="list-style-type: none"> Pre-filter: None Main filter: Pleated, MERV 11 		Exterior ducting is not visible. Exterior ducting insulation is in an unknown 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 closed, and its condition is good. Return damper is inaccessible, and its condition is not known. The general condition of the unit is good.

Recommendations

Appendix A

Photo Documentation



RTU-04

Outdoor Main Filter Cleanliness