IEA, INC.

2023 - 2024 Ventilation Assessment

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Saint Paul Public Schools

EXPO Magnet

Assessment Date:
Wednesday, April 19, 2023

Project Description

IEA conducted a ventilation inspection in EXPO Magnet by IEA representative, Eddie Anderson, 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	6:00 PM
Monday-Friday	Yes	6:30 AM	4:00 PM

Typical occupancy:

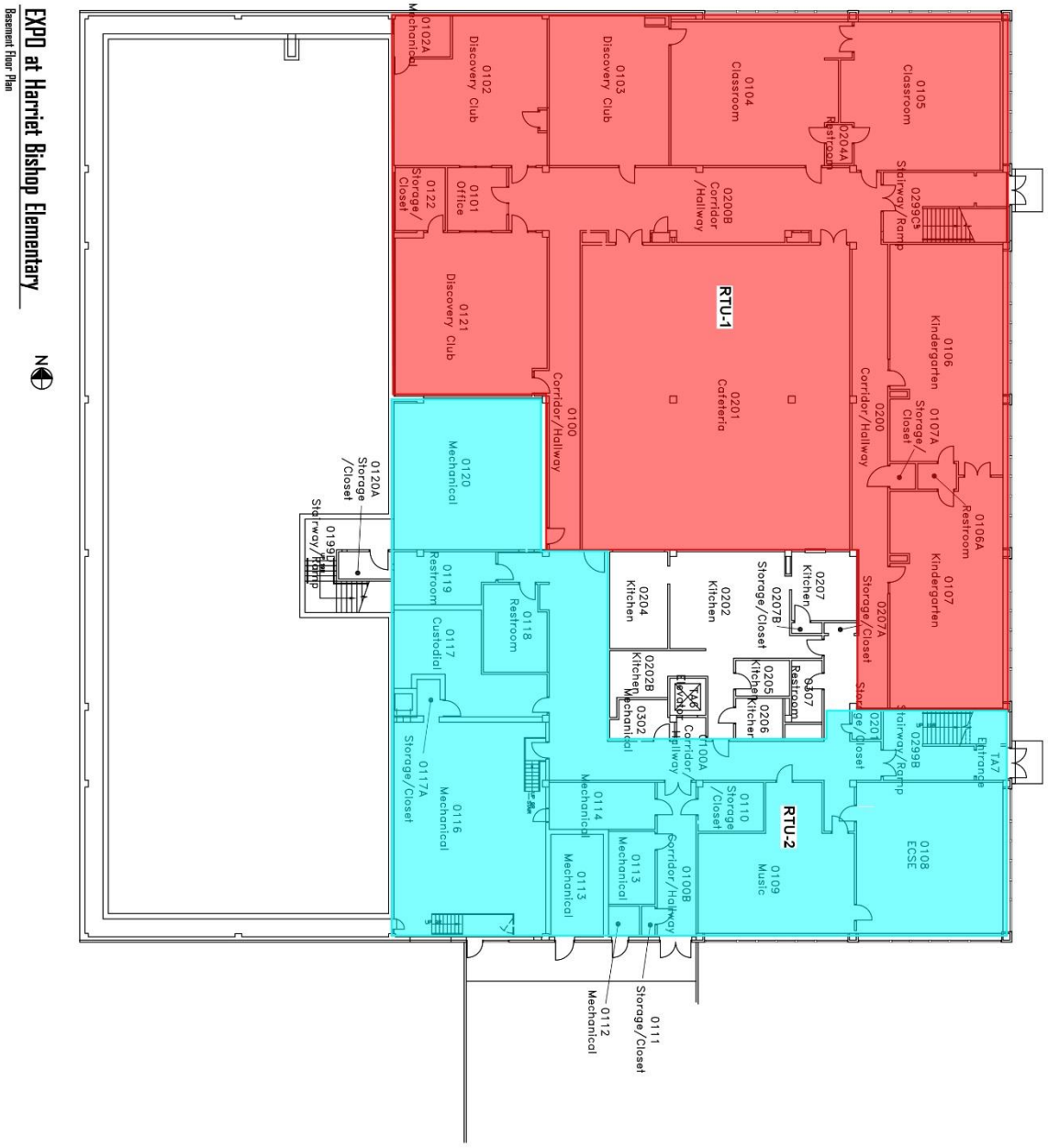
Day:	Occupied?	Start Time:	End Time:
Monday-Friday	Yes	6:30 AM	2:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

- It is not known whether or not CO2 sensors are associated with the ventilation system.
- VAVs are present. It is not known whether or not they are fan powered.
- Building has variable frequency drives (VFD).
- The heating system is a steam 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

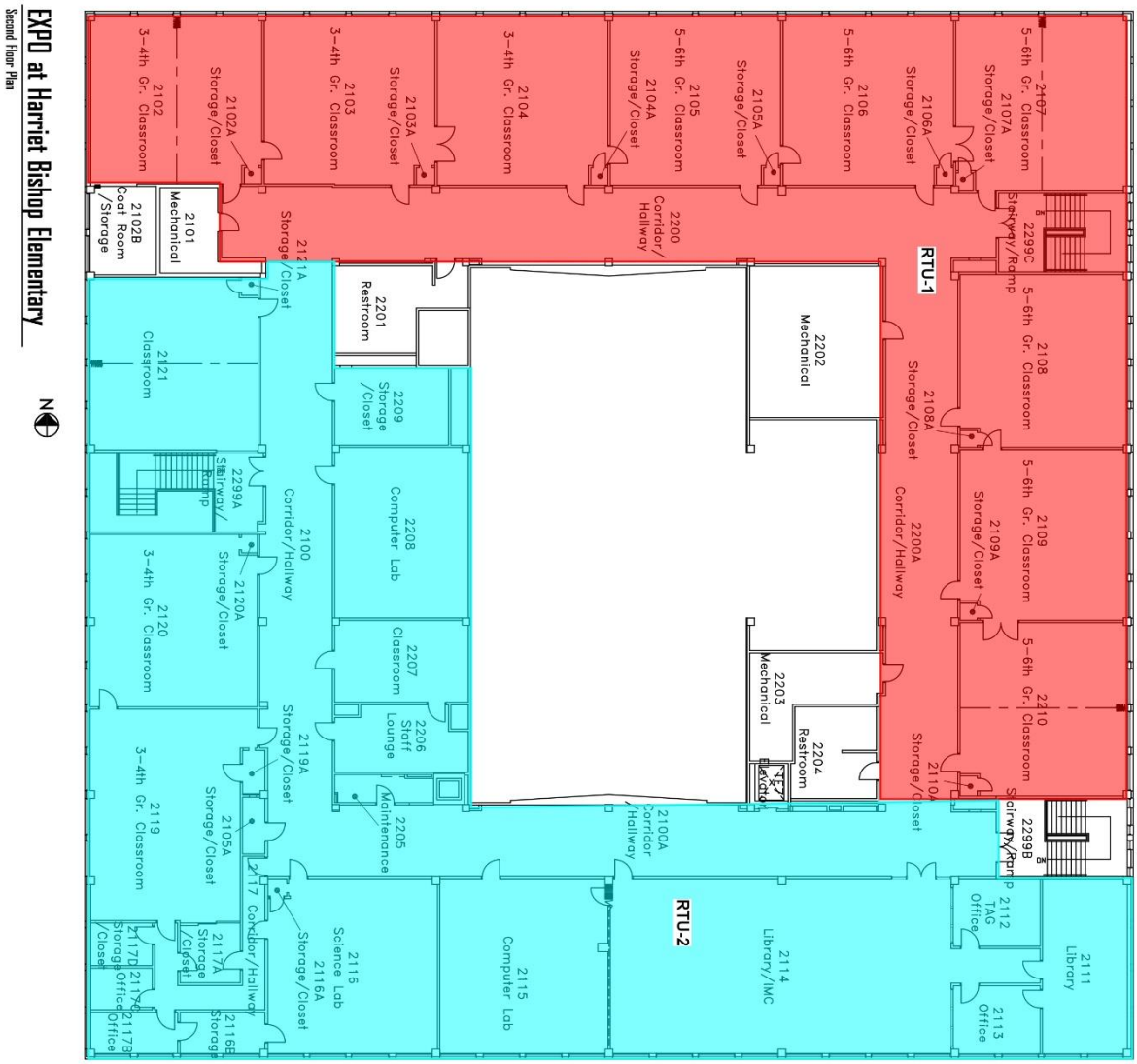
- Filters are changed quarterly.
- Energy Recovery Units are not present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are 3M/Winix .
    - Location: Various classrooms
- It is not known whether or not the building was commissioned during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



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:

Unit Designation:	AHU-01	
Location of Unit:	Mechanical room 2101	
Areas Served:	See attached map Serving 1st Floor Offices	
System Enhancements:	None	
Supply System	**Outdoor Air**	**Cleanliness and Observations**
Type • Supply System - VAV • Heating - Hot Water • Cooling - Chilled Water • Energy Recovery Unit (ERU) - None **Filter Type - Mixed** • Pre-filter: None • Main filter: Pleated, MERV 11	Outdoor air intake is inaccessible Outdoor air intake is located on the roof. It is not known if there are nearby pollution sources. 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 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.

Unit Designation:	AHU-02	
Location of Unit:	Mechanical room 2202	
Areas Served:	See attached map Serving Gymnasium	
System Enhancements:	None	
Supply System	**Outdoor Air**	**Cleanliness and Observations**
Type • Supply System - Constant Volume • Heating - Hot Water • Cooling - Chilled Water • Energy Recovery Unit (ERU) - None **Filter Type - Mixed** • Pre-filter: None • Main filter: Pleated, MERV 11	Outdoor air intake is inaccessible Outdoor air intake is located on the roof. It is not known if there are nearby pollution sources. 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 wheels are not present. Exterior ducting is visible. Exterior ducting insulation is not present. Interior ducting is visible. Interior ducting insulation is in poor condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is open, and its condition is good. Return damper is open, and its condition is good. The general condition of the unit is good.

Unit Designation:	RTU-01	
Location of Unit:	Roof	
Areas Served:	See attached map Serving 1st/2nd Floor Classrooms	
System Enhancements:	None	
Supply System	**Outdoor Air**	**Cleanliness and Observations**
<u>Type</u> • Supply System - VAV • Heating - Hot Water • Cooling - Chilled Water • Energy Recovery Unit (ERU) - None **<u>Filter Type - Mixed</u>** • Pre-filter: None • Main filter: Pleated, MERV 11	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 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 dirty and cooling coils are dirty. 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.

Unit Designation:	RTU-02	
Location of Unit:	Roof	
Areas Served:	See attached map Serving 1st/2nd Floor Classrooms	
System Enhancements:	None	
Supply System	**Outdoor Air**	**Cleanliness and Observations**
<u>Type</u> • Supply System - VAV • Heating - Hot Water • Cooling - Chilled Water • Energy Recovery Unit (ERU) - None **<u>Filter Type - Mixed</u>** • Pre-filter: None • Main filter: Pleated, MERV 11	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 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 wheels are not present. 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 open, and its condition is good. Return damper is open, and its condition is good. The general condition of the unit is good.

Recommendations

Dirty Coils were observed on units AHU-02 and RTU-01 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.

The accessible ductwork for unit AHU-02 was visibly dirty, damaged, or had evidence of moisture at the time of the site inspection.

> **Recommendation:** IEA recommends further inspection into the overall condition of the interior ductwork and level of dirt/debris quantified. If deemed a concern, it is recommended that the interior ducting be cleaned by a professional contractor to improve the impact on the IAQ for the supply spaces.

Appendix A

Photo Documentation

AHU-02

Cooling Coils

AHU-02

Interior Ducting

AHU-02

Interior Ducting

RTU-01

Mixed Main Filter Cleanliness

RTU-01
Heating Coils

RTU-01
Cooling Coils