

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 Highland Park Middle School

Assessment Date: Tuesday, April 25, 2023

Project Description

IEA conducted a ventilation inspection in Highland Park Middle School by IEA representative, Armon Parsi, 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	End
		Time:	Time:
Monday- Friday	Yes	6:00 AM	8:00 PM
Monday- Friday	Yes	6:00 AM	10:00 PM

Typical occupancy:

Day:	Occupied?	Start Time:	End Time:
Monday- Friday	Yes	8:30 AM	5:00 PM
Saturday	No		
Sunday	No		
Holiday	No		

- CO2 sensors are not associated with the ventilation system.
- VAVs are not present.
- Building does not have variable frequency drives (VFD).
- The heating system is a steam boiler.
- A cooling system is not present.
- Filters used are:

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

- Filters are changed 2-3 times annually.
- Energy Recovery Units are not present.
- Units do not contain system Enhancements.
- Personal air purifiers are supplied for individual rooms. They are Winix.
 - o Location: Throughout classrooms
- It is not known whether or not the building was commissioned during the original construction.

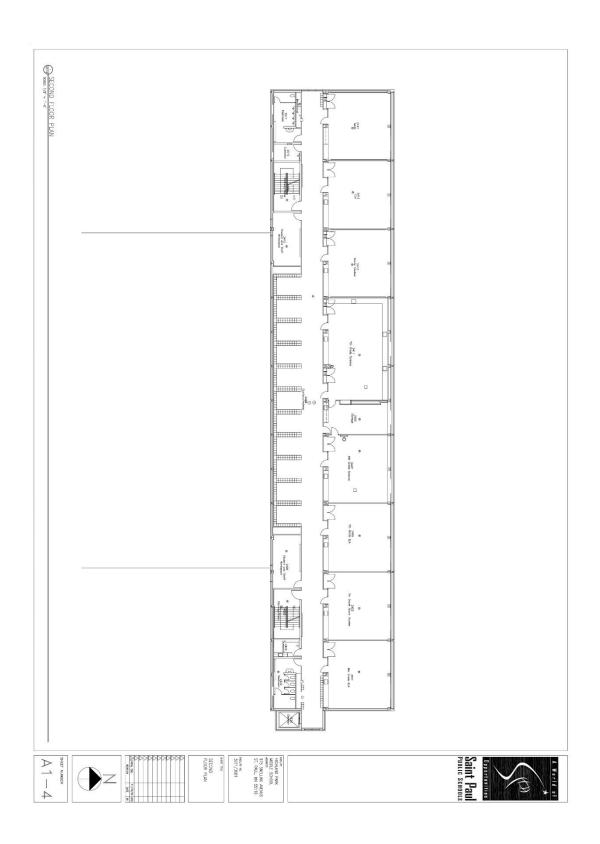
Air Handling Unit Designations & Service Zones: Basement



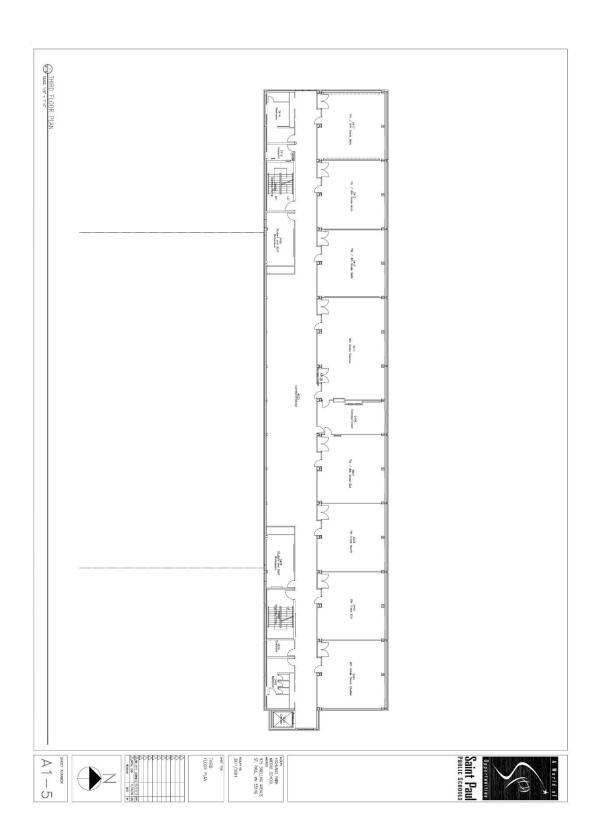
Air Handling Unit Designations & Service Zones: 1st Floor



Air Handling Unit Designations & Service Zones: 2nd Floor



Air Handling Unit Designations & Service Zones: 3rd Floor



Assessment

Ventilation System

The following information was gathered by IEA on Tuesday, April 25, 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:

<u>` ' '</u>	SSESSITIETIL IS ITICIQUEU	Tor each ante below.
Location of Unit:	Mechanical room WEST TUNNEL	
Areas Served:	131,313,151,319	
	See attached map	
System	None	
Enhancements:		
Supply System	Outdoor Air	Cleanliness and Observations
Туре	Outdoor air intake is	Outdoor air filters are not present.
Supply System		'
- Constant		Return air filters are not present.
Volume	Outdoor air intake is	·
 Heating - Hot 	located in an	Mixed air pre-filters are not present. Mixed air main filters
Water	unknown location.	are somewhat dirty and on the border of needing
Cooling - None		replacement (scoring 3 out of 5) and fit well. Mixed air
	It is not known if	main filters are installed correctly.
Recovery Unit	there are nearby	·
(ERU) - None	pollution sources.	Drain pans are not applicable or not present. Drain pan
		condition is not known.
Filter Type - Mixed	Outdoor air intake is	
Pre-filter: None	in good condition.	Heating coils are clean.
Main filter: Pleated, MERV		Heat wheels are not present.
11		Exterior ducting is visible. Exterior ducting insulation is not
11		present.
		Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.
		Air handling room is free of trash/chemicals.
		Outside damper is inaccessible, and its condition is not known.
		Return damper is inaccessible, and its condition is not known.
		The general condition of the unit is good.

 Water Cooling - None Energy Recovery Unit (ERU) - None Pre-filter: None Main filter: Pleated, MERV 11 Unknown location. are somewhat dirty and on the border of needing replacement (scoring 4 out of 5) and fit well. Mit main filters are installed correctly. Drain pans are not applicable or not present. Drain pans are not applicable or not present. Heating coils are clean. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insular good condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is inaccessible, and its condition 	Jnit Designation:	AHU 02		
System Enhancements: Supply System Supply System Supply System Supply System Supply System Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 See attached map Outdoor Air Cleanliness and Observations Outdoor air intake is located in an unknown location. Mixed air pre-filters are not present. Mixed air replacement (scoring 4 out of 5) and fit well. Mixed air pre-filters are not present. Mixed air pre-filters are not present. Mixed air pre-filters are not present. Mixed air replacement (scoring 4 out of 5) and fit well. Mixed air pre-filters are not present. Preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of 5) and fit well. Mixed air preplacement (scoring 4 out of	ocation of Unit:	f Unit: Mechanical room WEST TUNNEL		
Enhancements: Supply System Outdoor Air Cleanliness and Observations Outdoor air intake is inaccessible Supply System Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 Cleanliness and Observations Outdoor air filters are not present. Mixed air pre-filters are not present. Mixed air rare somewhat dirty and on the border of needir replacement (scoring 4 out of 5) and fit well. Mixed air pre-filters are not present. Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 Exterior ducting is visible. Exterior ducting insular good condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is inaccessible, and its condition			,1305,1505B	
Outdoor air intake is inaccessible Constant Volume Outdoor air intake is located in an unknown location. Cooling - None Energy Recovery Unit (ERU) - None Pre-filter: None Main filter: Pleated, MERV 11 Outdoor air intake is inaccessible Couling - None Return air filters are not present. Mixed air pre-filters are not present. Mixed air rare somewhat dirty and on the border of needing replacement (scoring 4 out of 5) and fit well. Mixed air pre-filters are not present. Mixed a	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	None		
 Supply System Constant Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV MERV Supply System inaccessible Unddoor air intake is located in an unknown location. Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV It is not known if there are nearby pollution sources. Outdoor air intake is in good condition. Heating coils are clean. Heat wheels are not present. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insular good condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is inaccessible, and its condition 	Supply System	Outdoor Air	Cleanliness and Observations	
	Supply System - Constant Volume - Heating - Hot Water - Cooling - None - Energy Recovery Unit (ERU) - None - Pre-filter: None - Main filter: Pleated, MERV	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 intake is	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 4 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known. Heating coils are clean. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is not present. Interior ducting is visible. Interior ducting insulation is in good condition. Interior ducting is clean.	
known. Return damper is inaccessible, and its condition known. The general condition of the unit is good.			Return damper is inaccessible, and its condition is not known.	

Unit D	esignation:	AHU 03	
Locatio	on of Unit:	Mechanical room 1305A	
Areas S	Served:	SE WING	
		See attached map	
System	n Enhancements:	None	
S	upply System	Outdoor Air	Cleanliness and Observations
Type		Outdoor air intake	Outdoor air filters are not present.
•	Supply System -	is accessible	
	Constant Volume		Return air filters are not present.
•	Heating - Hot	Outdoor air intake	
	Water	is located on the	Mixed air pre-filters are not present. Mixed air main filters
•	Cooling - None	roof.	are of unknown cleanliness and fit well. Mixed air main
•	Energy Recovery		filters are installed correctly.
	Unit (ERU) - None	No nearby pollution	
		sources were	Drain pans are not applicable or not present. Drain pan
Filter T	<u> Type - Mixed</u>	found.	condition is not known.
•	Pre-filter: None		
•	Main filter:	Outdoor air intake	Heating coils are clean.
	Pleated, MERV	is in good condition.	
	11		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.

Unit Designation:	AHU 04	
Location of Unit:	Mechanical room N. PENTHOUSE	
Areas Served:	1,302,130,413,061,300 See attached map	
System	None	
Enhancements:		
Supply System	Outdoor Air	Cleanliness and Observations
Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy	is accessible Outdoor air intake is located on an exterior wall. No nearby pollution sources were found. Outdoor air intake	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 4 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known. Heating coils are clean. Heat wheels are 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.

Unit Designation:	AHU 05 100% OA	
Location of Unit:	n of Unit: Mechanical room N. PENTHOUSE	
	1215, 1216 See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
 Heating - Hot Water Cooling - None Energy Recovery Unit 	Outdoor air intake is located on an exterior wall.	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.
Filter Type - Outdoor	Outdoor air intake	Heating 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 inaccessible, and its condition is not known. Return damper is not present. The general condition of the unit is poor.

Unit Designation:	AHU 06	
Location of Unit:	Mechanical room N.	PENTHOUSE
Areas Served:	1214	
	See attached map	
System Enhancements:	None	
Supply System	Outdoor Air	Cleanliness and Observations
Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None	accessible Outdoor air intake is located on an exterior wall. No nearby pollution	Mixed air pre-filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known.
		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 07	
Location of Unit:	Mechanical room N. PENTHOUSE	
Areas Served:	1209, 1210, 1211, 1	.212, 1213
	See attached map	
System	None	
Enhancements:	0 11 41	
Supply System	Outdoor Air	Cleanliness and Observations
Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: Non Main filter: Pleated, MERV 11	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 somewhat dirty and on the border of needing replacement (scoring 3 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known. Heating coils are clean. 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 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.

Unit Designation:	AHU 08	
Location of Unit:	Mechanical room N	I. PENTHOUSE
Areas Served:	1208	
	See attached map	
System	None	
Enhancements:		
Supply System	Outdoor Air	Cleanliness and Observations
<u>Type</u>	Outdoor air intake	Outdoor air filters are not present.
Supply Syster	m is accessible	n
- Constant Volume	Outdoor air intake	Return air filters are not present.
Heating - Hot		Mixed air pre-filters are not present. Mixed air main filters
Water	exterior wall.	are somewhat dirty and on the border of needing
Cooling - Nor		replacement (scoring 3 out of 5) and fit well. Mixed air main
Energy	No nearby	filters are installed correctly.
Recovery Uni	•	, i
(ERU) - None	were found.	Drain pans are not applicable or not present. Drain pan
		condition is not known.
Filter Type - Mixed	Outdoor air intake	
Pre-filter: No	_	Heating coils are clean.
Main filter:	condition.	
Pleated, MER 11	RV	Heat wheels are not present.
11		Exterior ducting is not visible. Exterior ducting insulation is in
		an unknown condition.
		an analowi 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 inaccessible, and its condition is not known.
		The general condition of the unit is good.

Unit D	esignation:	AHU 09	
Locatio	on of Unit:	Mechanical room N. PENTHOUSE	
Areas S	Served:	AUDITORIUM	
		See attached map	
System	n Enhancements:	None	
Su	upply System	Outdoor Air	Cleanliness and Observations
Type		Outdoor air intake is	Outdoor air filters are not present.
•	Supply System -	accessible	
	Constant		Return air filters are not present.
		Outdoor air intake is	
•	U		Mixed air pre-filters are not present. Mixed air main filters
		exterior wall.	are clean and not in need of replacement (scoring 2 out of
•	Cooling - None		5) and fit well. Mixed air main filters are installed correctly.
•		No nearby pollution	
	Recovery Unit	sources were found.	Drain pans are not applicable or not present. Drain pan
	(ERU) - None	Outdoon oin intoleo io	condition is not known.
Filtor T	Tuna Miyad	Outdoor air intake is in good condition.	
•	Type - Mixed Pre-filter: None	in good condition.	Heating coils are clean.
	Main filter:		Heat wheels are not present.
	Pleated, MERV		lieat wheels are not present.
	11		Exterior ducting is visible. Exterior ducting insulation is not
			present.
			F. 656.11
			Interior ducting is visible. Interior ducting insulation is in
			good 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 D	esignation:	AHU 10		
Location of Unit:		Mechanical room S. PENTHOUSE		
Areas	Served:	STAGE		
		See attached map		
System Enhancements:		None		
Su	upply System	Outdoor Air	Cleanliness and Observations	
<u>Type</u>		Outdoor air intake	Outdoor air filters are not present.	
•	Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None	Outdoor air intake is located on the roof. No nearby pollution sources	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 applicable or not present. Drain pan condition is not known.	
Filter 1	Fype - Mixed Pre-filter: None Main filter: Pleated, MERV 11	is in good condition.	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.	

Unit Designation:	AHU 11	
Location of Unit:	Mechanical room S	S. PENTHOUSE
Areas Served:	EAST UPPER GYM	
	See attached map	
System Enhanceme	nts: None	
Supply System	Outdoor Air	Cleanliness and Observations
Туре	Outdoor air intake	Outdoor air filters are not present.
	em - is accessible	'
Constant		Return air filters are not present.
Volume	Outdoor air intake	
Heating - Ho		Mixed air pre-filters are not present. Mixed air main filters
Water	roof.	are clean and not in need of replacement (scoring 2 out of 5)
Cooling - No Fnorm	No nearby	and fit well. Mixed air main filters are installed correctly.
 Energy Recovery Ur 	•	Drain pans are not applicable or not present. Drain pan
(ERU) - None	li*	condition is not known.
(2.10)	ivere rounar	Condition to the kilowin
Filter Type - Mixed	Outdoor air intake	Heating coils are clean.
Pre-filter: No.	one is in good	
Main filter:	condition.	Heat wheels are not present.
Pleated, ME	RV	
11		Exterior ducting is not visible. Exterior ducting insulation is in an unknown condition.
		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 demonstration and the security is seen
		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 poor.

Unit Designation:	AHU 12			
Location of Unit:	Mechanical room	Mechanical room S. PENTHOUSE		
Areas Served:	WEST UPPER G			
	See attached map			
System Enhanceme	ents: None			
Supply System	Outdoor Air	Cleanliness and Observations		
Туре	Outdoor air intak	Outdoor air filters are not present.		
 Supply Syst 	em - is accessible			
Constant		Return air filters are not present.		
Volume	Outdoor air intak	e		
 Heating - H 	ot is located on the	Mixed air pre-filters are not present. Mixed air main filters		
Water	roof.	are clean and not in need of replacement (scoring 2 out of 5)		
Cooling - No	one	and fit well. Mixed air main filters are installed correctly.		
 Energy 	No nearby			
Recovery U		Drain pans are not applicable or not present. Drain pan		
(ERU) - Nor	ne were found.	condition is not known.		
Filter Type - Mixed	Outdoor air intak	e Heating coils are dirty.		
 Pre-filter: N 	Ione is in good			
 Main filter: Pleated, M 		Heat wheels are not present.		
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 open, and its condition is good.		
		Return damper is open, and its condition is good.		
		The general condition of the unit is good.		

	1				
Unit Designation:		AHU 13			
Location of Unit:	Boiler Room Mechar	nical Room			
Areas Served:	Cafeteria				
	See attached map.				
System	None				
Enhancements:					
Supply System	Outdoor Air	Cleanliness and Observations			
<u>Type</u>		Outdoor air filters are not present.			
	tem inaccessible				
- Constant		Return air filters are not present.			
Volume	Outdoor air intake is				
_	lot located in an	Mixed air pre-filters are not present. Mixed air main filters			
Water	unknown location.	are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed but it is			
Cooling - NEnergy	It is not known if	unknown whether they are installed correctly.			
	Jnit there are nearby	driknown whether they are installed correctly.			
•	ne pollution sources.	Drain pans are not applicable or not present. Drain pan			
(21.0)	ne pondeion sources.	condition is not known.			
Filter Type - Mixed	Outdoor air intake is				
Pre-filter:	in good condition.	Heating coils are clean.			
None					
 Main filter 	:	Heat wheels are not present.			
Pleated, M	ERV				
11		Exterior ducting is visible. Exterior ducting insulation is not			
		present.			
		Interior ducting is not visible. Interior ducting insulation is in			
		Interior ducting is not visible. Interior ducting insulation is in an unknown condition. Interior ducting is of unknown			
		cleanliness.			
		cicaminess.			
		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.			

Unit Designation:	AHU 14		
Location of Unit:	Mechanical room 1319A		
Areas Served:	1323		
	See attached map		
System Enhancements:	None		
Supply System	Outdoor Air	Cleanliness and Observations	
Water Cooling - None Energy Recovery Unit (ERU) - None	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 applicable or not present. Drain pan condition is not known. 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 inaccessible, and its condition is not known.	
		The general condition of the unit is good.	

Unit Des	ignation:	AHU 15		
Location of Unit:		Mechanical room 1317C		
Areas Se	rved:	13,211,325		
		See attached map		
System Enhancements:		None		
Supply System		Outdoor Air	Cleanliness and Observations	
<u>Type</u>		Outdoor air intake	Outdoor air filters are not present.	
• H	Heating - Hot Water Cooling - None Energy Recovery Unit	Outdoor air intake is located on the roof. No nearby pollution sources	Return air filters are not present. Mixed air pre-filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 2 out of 5) and fit well. Mixed air main filters are installed correctly. Drain pans are not applicable or not present. Drain pan condition is not known.	
• F	pe - Mixed Pre-filter: None Main filter: Pleated, MERV 11	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.	

Unit Designation:	RTU 01		
Location of Unit:	Mechanical room LOWER ROOF		
Areas Served:	LIBRARY		
	See attached map		
System Enhancements:	None		
Supply System	Outdoor Air	Cleanliness and Observations	
Туре	Outdoor air intake	Outdoor air filters are not present.	
 Supply System - 	is accessible		
Constant		Return air filters are not present.	
Volume	Outdoor air intake		
 Heating - None 	is located on the	Mixed air pre-filters are not present. Mixed air main filters	
 Cooling - None 	unit.	are clean and not in need of replacement (scoring 2 out of 5)	
Energy		and fit well. Mixed air main filters are installed correctly.	
Recovery Unit	No nearby		
(ERU) - None		Drain pans are not applicable or not present. Drain pan	
	were found.	condition is not known.	
Filter Type - Mixed			
		Heat wheels are not present.	
Main filter: Main filter:	is in good		
Pleated, MERV	condition.	Exterior ducting is not visible. Exterior ducting insulation is in	
11		an unknown condition.	
		Interior ducting is visible. Interior ducting insulation is in	
		good condition. Interior ducting is clean.	
		good 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.	

 Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter:	Unit Designation:	RTU 02		
System Enhancements: None Supply System Outdoor Air Outdoor air intake Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Main filter: Pleated, MERV 11 Outdoor air intake outdoor air filters are not present. Outdoor air filters are not present. Return air filters are not present. Mixed air pre-filters are not present. Mixed air main filter are clean and not in need of replacement (scoring 2 out and fit well. Mixed air main filters are installed correctly Drain pans are not plugged. Drain pan condition is good Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is represent.	Location of Unit:			
Supply System Outdoor Air Cleanliness and Observations Type Outdoor air intake Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Main filter: Pleated, MERV 11 Outdoor air intake is accessible Coutdoor air intake is accessible Return air filters are not present. Mixed air pre-filters are not present. Mixed air main filter are clean and not in need of replacement (scoring 2 out and fit well. Mixed air main filters are installed correctly Drain pans are not plugged. Drain pan condition is good Heating coils are clean. Exterior ducting is visible. Exterior ducting insulation is represent.	Areas Served:	MAIN OFFICE		
Supply System Outdoor Air Cleanliness and Observations Outdoor air intake Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Main filter: Pleated, MERV 11 Outdoor air intake Outdoor air intake Outdoor air intake Outdoor air intake Outdoor air filters are not present. Mixed air pre-filters are not present. Mixed air main filter are clean and not in need of replacement (scoring 2 out and fit well. Mixed air main filters are installed correctly Drain pans are not plugged. Drain pan condition is good Heating coils are clean. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is r present.		See attached map		
Type Outdoor air intake Is accessible Outdoor air intake Is accessible Outdoor air intake Is accessible Return air filters are not present. Outdoor air intake Is located on the unit. Cooling - None Interest encount of the unit. Cooling - None Interest encount of the unit. Cooling - None Interest encount of the unit. No nearby pollution sources were found. Filter Type - Mixed Is in good Outdoor air intake Is in good Constant Outdoor air intake Is in good Constant Outdoor air intake Is located on the unit. Mixed air pre-filters are not present. Mixed air main filter are clean and not in need of replacement (scoring 2 out and fit well. Mixed air main filters are installed correctly Drain pans are not plugged. Drain pan condition is good Heating coils are clean. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is represent.	System Enhancements:	None		
 Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Mixed air pre-filters are not present. Mixed air main filter are clean and not in need of replacement (scoring 2 out and fit well. Mixed air main filters are installed correctly Drain pans are not plugged. Drain pan condition is good Heating coils are clean. Heat wheels are not present. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is represent. 	Supply System	Outdoor Air	Cleanliness and Observations	
Interior ducting is visible. Interior ducting insulation is in good 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.	Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV	Outdoor air intake is accessible Outdoor air intake is located on the unit. No nearby pollution sources were found. Outdoor air intake is in good	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. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is not present. Interior ducting is visible. Interior ducting insulation is in good condition. Interior ducting is clean. Air handling room is free of trash/chemicals. Outside damper is open, and its condition is good.	

 Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is not present. 	Unit Designation:	RTU 03		
System Enhancements: None Supply System Outdoor Air Outdoor air intake Supply System Supply System Outdoor air intake Supply System Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 Supply System Outdoor air intake is accessible 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 and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	Location of Unit:	Mechanical room LOWER ROOF		
Supply System Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Main filter: Pleated, MERV 11 Outdoor air intake Outdoor air intake is located on the unit. Mixed air pre-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 and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Dutdoor air intake is in good condition. Exterior ducting is visible. Exterior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	Areas Served:	13,021,304		
Supply System Outdoor air intake Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Main filter: Pleated, MERV 11 Outdoor air intake is accessible Outdoor air filters are not present. Outdoor air filters are not present. Outdoor 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 and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Outdoor air intake is located on the unit. Mixed air pre-filters are not present. Mixed air pre-filters are not present. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Exterior ducting is visible. Exterior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.		See attached map		
Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Main filter: Pleated, MERV 11 Outdoor air intake is accessible Mixed air pre-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 and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Exterior ducting is visible. Exterior ducting insulation is in an unknown condition. Interior ducting is of unknown cleanliness.	System Enhancements:	None		
 Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV 11 Return air filters are not present. Mixed air main filters are clean and not in need of replacement (scoring 1 out of and fit well. Mixed air main filters are installed correctly. Drain pans are not plugged. Drain pan condition is good. Heating coils are dirty. Heat wheels are not present. Exterior ducting is visible. Exterior ducting insulation is not present. 	Supply System	Outdoor Air	Cleanliness and Observations	
Outside damper is closed, and its condition is good. Return damper is open, and its condition is good.	Type Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None Filter Type - Mixed Pre-filter: None Main filter: Pleated, MERV	Outdoor air intake is accessible Outdoor air intake is located on the unit. 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 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 dirty. 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.	

Unit Des	signation:	RTU 04		
Location of Unit:		Mechanical room LOWER ROOF		
Areas Served:		13,101,312,131 See attached m		
System		None		
Enhance	ments:			
Supp	ly System	Outdoor Air	Cleanliness and Observations	
Type Signature Filter Ty Filter Ty	Supply System - Constant Volume Heating - Hot Water Cooling - None Energy Recovery Unit (ERU) - None pe - Mixed Pre-filter:	Outdoor air intake is accessible Outdoor air	Outdoor air filters are not present. Return air filters are not present. Mixed air pre-filters are somewhat dirty and on the border of needing replacement (scoring 3 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 applicable or not present. Drain pan condition is not known. Heating coils are dirty. Heat wheels are not present. Exterior ducting is not visible. Exterior ducting insulation is in an unknown condition. Interior ducting is visible. Interior ducting insulation is not present. 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.	

Recommendations

Dirty Coils were observed on units AHU 12, RTU 03 and RTU 04 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 06 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.

The general condition of units AHU 05 100% OA and AHU 11 was poor.

Recommendation: The units should be repaired or cleaned as needed.

Dirty or poorly fitting filters were observed in unit AHU 10 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

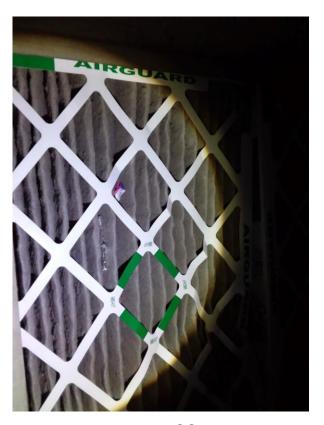
Photo Documentation



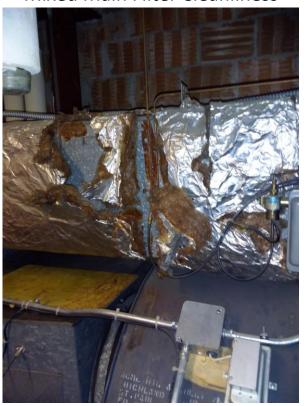
AHU 01
Mixed Main Filter Cleanliness



AHU 04
Mixed Main Filter Cleanliness



AHU 02
Mixed Main Filter Cleanliness



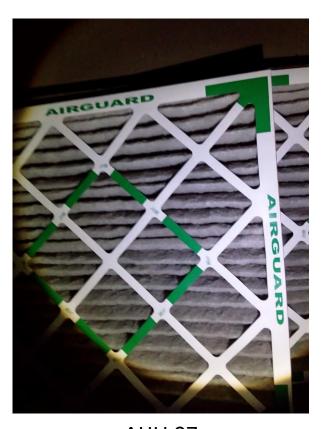
AHU 05 100% OA General Condition



AHU 06
Interior Ducting



AHU 08
Mixed Main Filter Cleanliness



AHU 07
Mixed Main Filter Cleanliness



AHU 10
Mixed Main Filter Installation



AHU 11
General Condition



RTU 03 Heating Coils



AHU 12 Heating Coils



RTU 04
Mixed Pre-Filter Cleanliness



RTU 04 Heating Coils