03/02/2021

Gault Elementary School
Attn: Trevor Miller
1320 Seabright Ave
Santa Cruz, CA 95062

ACCO Project Number: 60510049
Project Name: Santa Cruz City Schools Ventilation Survey – Gault Elementary
FINAL REPORT

Dear Mr. Miller,

ACCO has performed a field survey of the existing HVAC units across the Gault Elementary campus. With this information and provided as-built drawings, an engineering analysis has been conducted to determine methods for improving indoor air flowrate and filtration given each building's HVAC system type. The following table identifies each building that was surveyed and its HVAC system configuration. Subsequent sections of this report include recommendations for improving indoor air quality for each HVAC system type. Please note that the listed filter recommendations are based on the product specifications included in the report's appendices.

For each room summarized in this report, a color-coded designation has been applied to describe the current status of its HVAC system:

- Green – Continuous 100% outside air during occupied hours and MERV-13 filtration are achievable with existing HVAC infrastructure
- Blue – Increased outside airflow and/or MERV-10 or higher filtration are achievable with existing HVAC infrastructure
- Orange – Existing HVAC equipment does not have means for providing outside air or filtered air; therefore, improvements to outside airflow or MERV rating are not possible. Consider providing portable filtration devices.
- White – Existing HVAC equipment is an exhaust fan that is only intended to draw air out of the space; thus, adjustments to outside airflow and filtration are not applicable.

Room Information			HVAC Information		
Number	Purpose	Type	Configuration	Filter Installed	Outside Air / Total Air %
Principal	Admin	Permanent	B	MERV-13	57%
Nurse					
1	Classroom	Permanent	A	MERV-10	55%
2	Classroom	Permanent	A	MERV-10	49%
Library 1	Assembly	Permanent	A	MERV-10	60%
Library 2	Assembly	Permanent	A	MERV-10	55%
5	Classroom	Permanent	A	MERV-10	47%
6	Classroom	Permanent	A	MERV-10	67%
7	Classroom	Permanent	A	MERV-10	53%
8	Classroom	Permanent	A	MERV-10	51%
9	Classroom	Permanent	A	MERV-10	55%
Conference 1	Admin	Permanent	D	MERV-13	N/A
Conference 2	Admin	Permanent	D	MERV-13	N/A
Kitchen	Admin	Permanent	D	MERV-13	N/A
Auditorium	Assembly	Permanent	C	MERV-13	N/A
Stage	Assembly	Permanent	C	MERV-13	N/A
10	Classroom	Permanent	A	MERV-10	51%
11	Classroom	Permanent	A	MERV-10	59%
A1 (Kindergarten)	Classroom	Permanent	E	MERV-10	49%
A2 (Kindergarten)	Classroom	Permanent	A	MERV-10	37%
A3 (Kindergarten)	Classroom	Permanent	A	MERV-10	40%
Kids Connection	Classroom	Permanent	E	MERV-10	38%
R1	Classroom	Portable	A	MERV-13[1]	51%
R2	Classroom	Portable	A	MERV-13[1]	52%
R3	Classroom	Portable	A	MERV-13[1]	50%
R4	Classroom	Portable	A	MERV-13[1]	55%
R5	Classroom	Portable	A	MERV-13[1]	54%
R6	Classroom	Portable	A	MERV-13[1]	50%
R14	Classroom	Portable	A	MERV-13[1]	34%
R15	Classroom	Portable	A	MERV-13[1]	40%
R16	Classroom	Portable	A	MERV-13[1]	32%
R17	Classroom	Portable	A	MERV-13[1]	40%
R18	Classroom	Portable	A	MERV-13[1]	48%
Boys'	Toilet	Portable	F	N/A	N/A
Unisex	Toilet	Portable	F	N/A	N/A
Girls'	Toilet	Portable	F	N/A	N/A
Staff	Toilet	Permanent	F	N/A	N/A
Staff	Toilet	Permanent	F	N/A	N/A
Girls'	Toilet	Permanent	F	N/A	N/A
Boys'	Toilet	Permanent	F	N/A	N/A

[1]Filter installed may be a higher MERV rating than filter recommended due to inventory limitations

Configuration A

Room is served by a standalone air conditioning unit. The unit has a fan to draw air into the room, but no means of controlling airflow out.

- Maintain outside air damper position at 100% open to improve indoor air quality
    - If the room temperature is colder (in winter) or hotter (in summer) than desired, outside air damper may be closed incrementally until acceptable room temperature is achieved. This incremental approach is recommended to ensure that maximum airflow is being provided.
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow out of the room
- Replace existing air filter with MERV-10 filter
    - Airflow into room may be reduced, but is not expected to affect AC unit operation
    - If AC unit cannot operate with increased filter rating, revert to MERV-8 filter

Configuration B

Room is served by central air conditioning unit that also serves other rooms, and an exhaust system drawing air out of the room.

- Maintain outside air damper position at 100% open to improve indoor air quality
    - If the room temperature is colder (in winter) or hotter (in summer) than desired, outside air damper may be closed incrementally until acceptable room temperature is achieved. This incremental approach is recommended to ensure that maximum airflow is being provided.
- Operate exhaust fans at full speed
    - If there are dampers within the exhaust duct system, set them at 100% open
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow out of the room
- Replace existing air filter with MERV-13 filter
    - Airflow into room may be reduced, but should not affect AC unit operation
    - If AC unit cannot operate with increased filter rating, install MERV-10 filter

Configuration C

Room has an air conditioning unit that recirculates air within the space, but no means of drawing fresh air in.

- If outside air is ducted to the room, ensure that outside air intake louver is free of obstructions
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow into the room
- If the above options are unavailable, consider installing operable windows or a room air purifier to treat recirculated air with ultraviolet light and bipolar ionization
- Replace existing recirculating air filter with MERV-13 filter
    - If a MERV-13 filter is incompatible with the unit or the unit cannot operate with increased filter rating, install MERV-10 filter
    - Recirculating airflow rate may be reduced, but should not affect room temperature

Configuration D

Room has an air conditioning unit that recirculates air within the space, but no means of drawing fresh air in. Room is also served by an exhaust fan drawing air out of the space.

- If outside air is ducted to the room, ensure that outside air intake louver is free of obstructions
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow into the room
- If the above options are unavailable, consider installing operable windows or a room air purifier to treat recirculated air with ultraviolet light and bipolar ionization
- Operate the exhaust fan at full speed
    - If there are dampers within the exhaust fan system, set them at 100% open
- Replace existing filter with MERV-13 filter
    - If a MERV-13 filter is incompatible with the unit or the unit cannot operate with increased filter rating, install MERV-10 filter
    - Recirculating airflow rate may be reduced, but should not affect room temperature

Configuration E

Room is served by a standalone air conditioning unit, and an exhaust system drawing air out of the room.

- Maintain outside air damper position at 100% open to improve indoor air quality
    - If the room temperature is colder (in winter) or hotter (in summer) than desired, outside air damper may be closed incrementally until acceptable room temperature is achieved. This incremental approach is recommended to ensure that maximum airflow is being provided.
- Operate exhaust fans at full speed
    - If there are dampers within the exhaust duct system, set them at 100% open
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow out of the room
- Replace existing air filter with MERV-13 filter
    - Airflow into room may be reduced, but should not affect AC unit operation
    - If AC unit cannot operate with increased filter rating, install MERV-10 filter

Configuration F

Room has a fan to draw air out of the room, but no means of supplying air into it.

- Operate exhaust fans at full speed
    - If there are dampers within the exhaust duct system, set them at 100% open
- If room has operable windows and/or doors to the building exterior, consider opening them to encourage airflow out of the room

The recommendations in this report are based on observed site conditions and proposed filter product data. If further modifications are desired, ACCO would be happy to continue working with Gault Elementary on its HVAC systems.

Sincerely,

Wendy Wang, PE
ACCO Engineered Systems
Design Engineer