

03/15/2021

Branciforte Middle School  
Attn: Trevor Miller  
315 Poplar Ave  
Santa Cruz, CA 95062

ACCO Project Number: 60510051

Project Name: Santa Cruz City Schools Ventilation Survey – Branciforte Middle

## **INTERIM REPORT**

Dear Mr. Miller,

ACCO has performed a field survey of the existing HVAC units across the Branciforte Middle 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		
Name	Configuration	Filter Recommendation	Outside Air / Total Air %
1	B	MERV-13	N/A
1A	B	MERV-13	N/A
2	B	MERV-13	N/A
3	B	MERV-13	N/A
4	B	MERV-13	N/A
5	A	MERV-10	46%
6	A	MERV-10	47%
7	A	MERV-10	54%
8	A	MERV-10	56%
8A	A	MERV-10	46%
9	A	MERV-10	55%
10	A	MERV-10	49%
11	A	MERV-10	49%
12	A	MERV-10	49%
13	A	MERV-10	49%
14	A	MERV-10	55%
15	A	MERV-10	52%
16	A	MERV-10	55%
17	A	MERV-10	55%
18	A	MERV-10	48%
19	A	MERV-10	57%
21	A	MERV-10	55%
21A	D	N/A	N/A
22	A	MERV-10	53%
23	A	MERV-10	55%
Music Room	B	MERV-13	43%
Staff	A	MERV-10	52%
Office	A	MERV-10	60%
Library	A	MERV-10	51%
Boys' Locker Room	C	MERV-13	N/A
Girls' Locker Room	C	MERV-13	N/A
Big Gym - North	A	MERV-10	TBD
Big Gym - South	A	MERV-10	51%
Small Gym	B	MERV-13	N/A
Girls' Restroom	D	N/A	N/A
Boys' Restroom	D	N/A	N/A
Women's Admin Restroom	D	N/A	N/A
Men's Admin Restroom	D	N/A	N/A
Unisex Admin Restroom	D	N/A	N/A

### **Configuration A**

Room is served by a standalone air conditioning unit with a fan drawing air into the building. Building may also have some combination of exhaust fans, return air ductwork, and gravity relief vents to encourage airflow out of the space.

- 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 present, confirm that all exhaust fans, return air ducts, and gravity relief vents are free of obstructions to allow airflow out of the room
- 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 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 C**

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 D**

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 Branciforte Middle on its HVAC systems.

Sincerely,

Wendy Wang, PE  
ACCO Engineered Systems  
Design Engineer