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Subject: **Ventilation Screening
School 20
Northstar Program
54 Oakman Street, Rochester, NY**

On Thursday, February 26, 2021, Ed Olmsted and Margaret Sergent, representing the Rochester, NY Teachers Association (RTA) inspected representative classrooms at the Northstar program located in school 20 at 54 Oakman Street in Rochester, NY. The survey team also included a representative of the Rochester City School District (RCSD), Matthew Seeger, Schools Facilities Management.

The survey was done as part of the exposure control program for pandemic SARS-CoV-2. RCSD instituted many exposure control measures for the coming year including mandatory wearing of masks, distancing of occupants (reduced occupancy), enhanced cleaning, in-school COVID-19 testing, operating the ventilation systems with a maximum fraction of outside air, installation of ASHRAE MERV 13 filters, where the HVAC units can accommodate them, and the provision of air purifiers to all occupied spaces. Each school will have temperature screening upon entry and have a nurse's office. Students with symptoms or suspected of having COVID-19 will be isolated in an isolation room. More information on the RCSD reopening plans can be found on the [RCSD website](#).

The building is intended to be utilized in the Phase 3 February reopening for blended and in-school classes in middle and high schools. This inspection was requested prior to the staff and students' return and conducted after their return. The survey included the following:

1. A visual inspection of a number of representative classrooms;
2. A visual inspection of the building ventilation system(s); and
3. Taking airflow measurement at supply outlets, return/exhaust grilles, and open windows using a TSI 9515 VelociCalc Air Velocity Meter (anemometer).

The findings include:

1. The School No. 20 building has a central ventilation system with air handlers located in the attic. A separate air handler for the gym is located in a mechanical room adjacent to the gym area. The air handlers provide a mixture of outside air and return air controlled by dampers. The mixed air is filtered and heated and provided through a sheet metal duct system. There are a number of air handler units that serve different zones.
2. Return air is drawn through the ceiling plenum above the drop ceiling.
3. The building is also heated by a baseboard perimeter hot water system and a boiler.
4. There are exhaust fans on the roof that pull air from the classrooms, common areas, and bathrooms.
5. Mixed outside and return air are filtered through MERV-13 final filters. MERV 13 or higher ratings are recommended for HVAC systems due to their ability to filter smaller particles, including viruses. As such, upgrading to a MERV-13 rated filter, or the highest-rated filter in HVAC systems have been recommended by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) as a method to reduce the transmission of the SARS-CoV-2 virus in recirculated air.¹
6. From these air handler units, that tempered and filtered air is distributed via a system of ductwork. The ductwork then terminates in an occupiable space through standard diffusers
7. All the above-mentioned components of the school's central mechanical ventilation systems were examined but at the time of this survey, the air handlers were not working. A contractor and the shop mechanics were working on the ventilation system at the time of this survey.
8. Not all rooms could be inspected but a representative number was included in the inspection. As the central ventilation system was not working at the time of the walkthrough, there was no detectable flow at the supply diffuser in the rooms visited.
9. Each classroom has operable windows that can be opened for outside air. The windows were checked to verify that they are operable and can be opened. The air velocity was measured at a window opened 2 inches and the room size was measured to estimate the air exchange rate. The following room air exchange rates were estimated for each room:
 - a. Classroom 208 – one window open 3 inches provides 2 air changes per hour
 - b. Classroom 106 - one window open 2 inches provides 4 air changes per hour
 - c. Isolation room (113) - one window open 2 inches provides 4 air changes per hour
 - d. Nurses Office - one window open 2 inches provides 3.5 air changes per hour
10. The nurses' office and isolation room have HEPA filter air cleaners in addition to central mechanical ventilation and operable windows.

CONCLUSIONS

Overall, the school's ventilation can help reduce the risk of exposure to SARs-CoV-2 and meets the published guidelines. The mechanical ventilation system is filtered through MERV 13 filters. However, the system was being worked on at the time of this survey. All classrooms also have operable windows that can be used to provide natural ventilation. It was recommended that windows be opened and consideration given to putting box fans in the windows until the air handlers were up and running.

With the air handlers running it is not necessary to open windows. However, if necessary, teachers can open two windows in each room to an opening of two inches. This will provide natural ventilation without causing the room to become cold and will provide 4 to 5 supplemental air changes per hour. However, as previously noted, the building's mechanical ventilation system appears capable of delivering filtered and tempered outside air to occupiable spaces in the building. Lastly, ensure other safety and health precautions, such as mask-wearing, social distancing, cleaning/sanitization, and routine handwashing, are also practiced to prevent the transmission of SARS-CoV-2. Pairing effective ventilation with mask-wearing, social distancing, and other precautions are crucial in reducing the risk of COVID-19 in schools.

REFERENCE

1. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Reopening of Schools and Universities. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). 2020. Available at: <https://www.ashrae.org/technical-resources/reopening-of-schools-and-universities>.



MERV 13 filters in the air handlers