

# **OLMSTED ENVIRONMENTAL SERVICES, INC.**

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Subject: **Ventilation Screening**  
**Nathaniel Rochester Middle School – School 3**  
**85 Adams 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 Nathaniel Rochester Middle School located 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 Nathaniel Rochester school has a central ventilation system with air handlers located in mechanical rooms. The system was upgraded in the last few years and is a hot deck/cold deck system. The air handlers provide a mixture of outside air and return air controlled by dampers. The mixed air is filtered and heated and mixing dampers mix a fraction of cold air and hot air to control the temperature in the zone served.
2. Return air is drawn through the ceiling plenum above the drop ceiling.
3. There are exhaust fans on the roof that pull air from the classrooms, common areas, and bathrooms.
4. Mixed outside and return air are filtered through MERV 8 pre-filters and 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.<sup>1</sup>
5. 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 using either slot diffusers around the perimeter of ceiling tiles or standard 2 foot by 2 foot ceiling diffusers.
6. There is also a perimeter heating system that allows for opening windows in the winter.
7. All the above-mentioned components of the school's central mechanical ventilation systems were examined and found to be working.
8. Not all rooms could be inspected but a representative number was included in the inspection. The supply outlets were screened with a thermal anemometer to determine whether supply air was discharging from the outlet. All rooms visited were found to have a good flow of ventilation air from the slot diffusers.
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 211 – one window open 2 inches provides 2 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 providing a mixture of outside air and return air which is filtered through MERV 13 filters. All classrooms also have operable windows that can be used to provide natural ventilation.

Where possible and 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 is 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>.



Slot supply diffusers are around ceiling tiles



Supply slot diffusers around tiles



Windows are openable and air flows strongly through the window into each room



High efficiency bag filters are MERV 13