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Report for: Barbara Bowen
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**Subject: Ventilation Inspection Hunter College High School
71 E 94th St, New York, NY**

On September 28, 2020 a walk-through inspection was done to assess the ventilation system serving Hunter College High School located at 71 East 94th Street in Manhattan, NY. The purpose of the survey was to evaluate the supply ventilation to classrooms, offices and other spaces and to assess the preparations for SARs-CoV-2 infection prevention. The survey was done in preparation for opening the school and return of staff and students. Hunter College High School has instituted exposure control measures in the school for the coming year including mandatory wearing of masks, distancing of occupants (reduced occupancy), enhanced cleaning, and operating the ventilation systems with a maximum fraction of outside air, and installation filters with the highest efficiency the system can accommodate.

Hunter College High School has a central heating and air conditioning ventilation system that serves all rooms including classrooms as well as common spaces. The two main air-handlers are new and located on the rooftop. These are packaged units made by Trane that are direct cooled and have hot water heating coils. The supply fans operate in concert with return fans and normally provide a mixture of return air and outside air. The return fans return some air from the building to the supply fans and spill some return air outside. The supply fans also have outside air dampers that take air from the roof top. Some rooms are served by the roof top units through a system of ducts that discharge air through ceiling supply diffusers. The roof top units can provide heating and cooling and filter supply air through two sets of filters. It was reported that MERV 8 and MERV 10 rated filters are used in series.

Some classrooms have univents that take a mixture of outside air either from a plenum behind each unit or from a sleeve through the wall to the outdoors. Univents also have a return air inlet that takes air from the room. The univents also provide both heating and cooling. The filters on the univents are MERV 8 pleated filters.

The inspection team were provided access and an overview of the ventilation system by the Hunter College Asst Director of Facilities and a building HVAC engineer. All ventilation units provide air-

conditioning and heating. Interior rooms including classrooms, cafeteria, offices in the building do not have windows and rely on the mechanical ventilation. The system is a constant volume and there are no variable volume dampers. Adequate ventilation is recognized as a critical element for reducing exposure risk to the airborne droplet aerosol containing the virus. The following summarizes the findings:

1. The two main rooftop supply air handlers are new. They are all operating with the outside air dampers open to the maximum setting and are spilling return air to the roof. The supply fans have MERV 8 filters backed by MERV 10 filters. There are no MERV 13 filters, but the systems are delivering the maximum amount of fresh air and little to no return air. As such there is little need for MERV 13 filters. The air handlers have hot water coils and this winter it will not be possible to operate the system with 100% outside air. Installation of MERV 13 filters is expected before winter. Installation of MERV 13 filters will permit the system to recirculate more air and prevent coil freezing.
2. There are new air cooled chillers on the roof that provide chiller water throughout the building serving the univents. There is no cooling tower and as such the risk of Legionella bacteria is minimal.
3. The supply of ventilation air was screened at ceiling diffuser in representative areas in the building. Air supply was measured in all areas. This system is operating and providing outside air and delivering the air through the interior vents and the univents.
4. HEPA air scrubbers have been set up in each classroom. These are large units designed for abatement projects and they usually move from 600 to 800 cubic feet per minute. For the largest rooms these would provide approximately 5 to 6 air changes per hour, which is effective for cleaning the air.
5. The bathroom exhausts were found to be working. One bathroom had reduced flow at the exhaust grill and the engineer indicated that this would be investigated and corrected.
6. The univents were inspected in a number of classrooms. They were found to be working and it was reported that they have been adjusted to provide the maximum fraction of outside air.
7. A ventilation balancing report prepared by Genesys was provided and reviewed. This report included a calculation of the maximum room occupancy permitted, the size of the room, volume flow of outside air, the volume of outside air provided per room occupant and whether this meets the indoor air quality standard 62.1 published by the American Society of Heating Refrigerating and Air-conditioning Engineers (ASHRAE). Only rooms that meet the ASHRAE standard are being used. These rooms have the maximum occupancy posted at the door. Some rooms were not posted but it was indicated that there are still rooms that must be further evaluated.
8. Room 441, a counseling suite, was found to have good airflow in the perimeter offices, but the reception center office area did not have airflow. The exhaust in this area was working. This room has a reduced occupancy and the counselors have been moved elsewhere. The engineer indicated that the flow of air from the center outlet would be further evaluated. If only one employee is stationed in this room the supply ventilation in the perimeter offices provide sufficient airflow, but the door should be kept open.
9. The basement has the cafeteria and other assembly areas that will not be used. The basement will only be used as a walk through for the courtyard.
10. Bottled water will be provided throughout the building. The water fountains have been taken out of service.

11. There were complaints of a roof leak that impacted room 407. Inspection of this room was not permitted. It was reported that the room is closed and water damaged materials have been removed. The room will only be re-opened when the roof leak is fully repaired. A contractor is working on repairing the roof.
12. It was reported that filters are changed quarterly and prefilters on the HEPA units changed every two weeks.
13. The isolation room is carpeted and this makes it harder to clear the floors. The College indicated that if a positive COVID-19 case occurs the room and carpet will be professionally cleaned and sanitized.

CONCLUSIONS

The central ventilation system is delivering nearly 100% outside air and this minimizes recirculation of air. The unit ventilators are also delivering outside air. The school receives effective ventilation with a large fraction of outside air and most classrooms can increase the supply of outside by opening windows. This is expected to reduce the risk of exposure to SARs-CoV-2 and meets the published guidelines. The system should be upgraded with higher efficiency filters before winter months when the outside air dampers must be adjusted to a reduce level. The school is acceptable for occupancy.