

August 28, 2020

**Rabbi Arthur Schneier Park East Day School**

164 East 68<sup>th</sup> Street  
New York, NY 10065

Attention: Cantor Benny Rogosnitzky

Reference: Park East Day School HVAC System Assessment  
**Summary Findings and Recommendations**  
Becht Engineering BT, Inc. Project Number: 20-0757

Cantor Rogosnitzky:

In light of the ongoing Covid-19 pandemic, Becht Engineering BT, Inc. was contracted to conduct a survey of the existing HVAC systems serving the various classroom, administrative and support spaces at the Rabbi Arthur Schneier Park East Day School and provide recommendations on what modifications can be made to the configuration and operation of the existing HVAC systems based on the recommendations of the American Society of Heating Refrigeration and Air Conditioning Engineers Epidemic Task Force (ASHRAE ETF). Recognizing the time constraints that RASPEDS is operating under given the current school re-opening schedule, the following is intended to be a high level summary of our findings and recommendations. A more detailed and comprehensive report will be provided to the school in the coming weeks.

Systems Descriptions:

The systems found at RASPEDS are very typical of most school facilities of a similar age.

The typical classrooms are served by unit ventilators (UV), which provide ventilation (outdoor) air, heating and air conditioning to each classroom. Each classroom is typically equipped with one UV. The benefit to this system type under Covid is that each classroom is served by its own dedicated system, which allows for “compartmentalizing” of student groups and minimizes air movement between classrooms. The drawback to this equipment is that, while UVs are designed to provide the code required minimum outdoor air volume to each classroom, there is very limited ability to increase the outdoor air volume. Additionally, while ASHRAE recommends increasing filtration on all HVAC equipment to as high a MERV rating as possible, and ideally MERV 13, unit ventilators lack the space and fan power to accommodate anything more than MERV 8.

The corridors, lobby, administration spaces and Wool Room are served by a multi-zone central air handling unit. This unit, while operational, is at the end of its useable life and in need of upgrade. The unit is currently configured with MERV 8 filters, but because of the configuration of the unit, and the available fan static pressure, increasing the filtration to MERV 13 is not possible with the current equipment. The unit does have the ability to accommodate 100% outside air when outdoor air conditions permit, however the controls require some repairs and modifications to the sequence of operations in order to automate that control process and prevent under-heating or -cooling under extreme outdoor temperature conditions. The system can currently only be manually controlled.

Recommendations:

Per the ASHRAE ETF guidance, the outdoor air dampers on the classroom UVs should be modulated to their maximum open position (RASPEDS facilities staff had already implemented this at the time of our survey). Return air filters on the UVs should be replaced with new MERV 8 filters. Because of the inherent

limitations with the existing equipment, in the near term consideration should be given to providing portable HEPA filtration units in each classroom, sized for a minimum of 2 air changes per hour.

Per the ASHRAE ETF guidance, the central air handler's filters should be maintained at MERV-8 at minimum. As most HVAC systems are designed with a degree of oversizing, consideration should be given to installing MERV 9 or 10 filters and monitoring the ability of the system to maintain appropriate supply air conditions. The unit should be operated at 100% outside air over as broad a range of outdoor air conditions as possible. A balance must be struck between maximizing fresh air intake, while still maintaining appropriate indoor air temperature and humidity conditions. The air handler's controls should be upgraded to allow for fully automatic modulation of the outdoor air volume in response to varying indoor air temperature and humidity conditions. Given the limitations of the existing equipment, if office spaces and other areas served by this unit are to be regularly occupied, portable HEPA filtration units should be considered for those spaces (again sized for a minimum of 2 air changes per hour). Consideration should also be given to the implementation of supplemental air cleaning technologies such as photocatalytic oxidation (PCO) or bi-polar ionization (BPI).

Once school re-opens, the operation of all HVAC equipment in normal occupied mode should be extended for a minimum of 2 hours before and 2 hours after occupancy each day in order to "purge" the building.

Filters in all of the equipment should be inspected at minimum on a monthly basis and replaced as necessary (outdoor air conditions in New York City can vary significantly based on traffic levels, construction in surrounding areas, prevailing wind direction and a host of other factors).

Looking forward, the planning the upgrade of this unit should be initiated, as a project of that size and complexity will require many months to properly design, procure, coordinate and implement. Additionally, as unit ventilators fail and require replacement, new UVs with the capacity to supply 100% outdoor air should be specified, and economizer controls provided. Finally, a comprehensive Building Management System (BMS) should be provided to centrally coordinate the control of all of the building's HVAC systems and facilitate monitoring and pro-active maintenance of those systems.

Very truly yours,

**BECHT ENGINEERING BT, INC.**



Eric C. Collins, P.E.  
Division Manager