

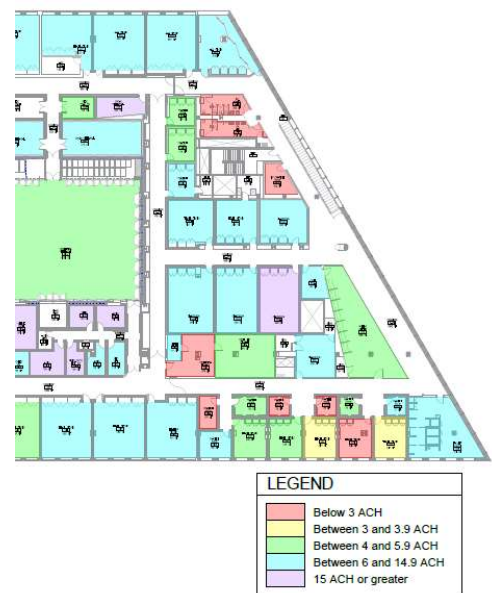
# Juilliard

## Statement of Program and Results

The ventilation study and improvements project along with the ongoing monitoring program is an effort to ensure that the Juilliard community not only has a comfortable environment for them to do their work but also maintain the safety recommendations published to protect against the spread of COVID-19. This was achieved by a study conducted by in-house engineers that identified key improvement needs of the systems.

In all, 182 rooms over 42,799 square feet received improvements. The average ACH of those requiring attention rooms improved from 1.60 to 10.45. Most of the rooms were improved by the completion of basic maintenance activities. Through implementation of the associated monitoring program, the system improvements implemented will be effectively maintained as well as new needs identified.

As a result, the community can breathe easier knowing ventilation systems meet the requirements to protect against COVID-19 while also providing a more comfortable and energy efficient environment. The data revealed in this program was also instrumental in our successful request for additional resources in the engineering shop to support our efforts to stay on top of these needs and avoid allowing them to slip back into disrepair.



















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## Innovative Characteristics

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Admittedly, the basic tenets of this program are not new. Facilities operations have been conducting similar retro-commissioning studies for a long time. What makes this program particularly innovative is the approach and implementation. Compelled by a pandemic prompting building de-densification, budget constraints, rapid response, and labor shortages, we needed to find a way to assess and prepare the building for safe re-occupancy.

For larger institutions with larger teams, these studies are more attainable with the constraints mentioned. For a small operation with three total management staff and four engineers, completing the study, making the repairs, and implementing the monitoring program was an immense challenge.

The successful implementation of this program helped to demonstrate and trailblaze a path for other small to medium size institutions on how this can also be done to support their work. They do not need to hire expensive consulting and mechanical firms to get this done. With the right tools and training, they can complete this study themselves and better support their campus communities.

The key characteristics that make this program innovative are...

- The simplicity of the equipment and software required. All that was required was...
  - Bolometer (capture hood) for diffusers 2' x 2' or smaller.
  - Anemometer for linear diffusers or any diffuser larger than 2' x 2'.
  - Microsoft Excel.
  - AutoCAD or other drafting software to plot the findings.
- The scarcity of staff available to implement the program.
  - Through a building of approximately 500,000 SF, only an AVP, Director, Ops Manager, Chief Engineer, and 3 engineers
- The budget constraints available to carry out the plan.
  - No new capital funds were required. Less than \$10,000 in repairs and overtime labor.
- The competing impacts and demands of an ongoing pandemic.
  - In addition to ventilation improvements and all required ongoing preventive and corrective maintenance, some other demands included...
    - Isolation valve repairs and replacements
    - Ongoing capital renewal projects on mechanical systems already in motion
    - Ongoing, in-progress construction projects to manage
    - Entry sequence development
    - Disinfecting practice implementation
    - Social distance planning and de-densification modeling
    - Signage installation
    - Workspace planning and relocation management