

Project: MD0205 - Silver Spring Metro Center 1 (Silver Spring, MD)**Summary: MD0205 - Silver Spring Metro Center 1**

Each Air Handler Unit in the building was inspected in detail and had its airflow measured out. This summary describes both the inspection process and the method of measuring airflow. It also describes the general layout of the system.

Overall, most units are found in good operating conditions, there are some minor recommendations for specific units throughout this report that mostly include minor preventative maintenance, cleaning or small repair fixes. The most prevalent recommendation is to Configure Air Terminal Units (Including CAV's), ensure all VAVs are operational, perform Testing, Adjusting, and Balancing on all systems to achieve proper airflows.

Airflow Measurement:

The outside air is brought in by two MAU feeding that provide air directly into the room which serves the AHUs on floors GB-1 through 9. Each side of the building has its own riser between the north and south side. Each duct in the mechanical room has a motorized damper that controls the amount of CFM based on CO₂, this was disabled and all dampers were commanded open to obtain our readings.

The building is controlled by DDC control. AHUs with VAVs were open to full flow to be tested. This allows the AHUs to be tested in full speed to simulate building in high demand. To do this the BAS operator lowed the cooling and heating discharge air temperature setpoint at each VAVs. Constant volume air handlers were tested after the BAS engineer disabled any economizing operation through the OA damper.

Airflow testing of the units consisted of the following. MAUs are read at the OA intake to obtain total flow to risers. For the AHU's a traverse of the supply airflow was taken to calculate a measured total flow of the unit. The Outside air in each mechanical room was measured at the outlet of the duct with a velocity matrix. This reading was used to calculate a total Outside airflow to each mechanical room.

Inspection:

A detailed inspection was conducted on each AHU and items inspected include the following. Cleanliness of the unit, Filter sizes, and the overall condition of the filters were evaluated. The heating and cooling coil were inspected for damages, and the overall condition of the belt and belt sizes were recorded. A checklist was filled out for each and any issues with the above items were documented, and the condition of the AHU was photographed as well as any other remarks or issues that were found during the inspection.

Due to the high number of Air-handling units on this job it was common to find units that are not operating at full capacity whether it is due to motor failure, VFD failure, or other mechanical issue. It was also common to find cracked belts, dirty filters, rust of top of units, and deteriorated coils. These items can affect performance of units, and negatively impact air quality to building. All these items can affect the amount of outdoor air being brought in as well as overall system performance is affected.

Comments / Recommendations:

- A complete TAB of the MAU systems needs performed to obtain the correct outside air to all AHUs. Some are over design and some are under design. There is a motorized damper that modulates based on CO2 levels this needs to be disabled and a manual volume damper added to each duct feeding all AHUs or a flow station installed that can control the motorized damper position based on required outside needed per AHU not CO2 levels.
- Units that contain rust, deteriorated coil, and other deficiencies need to be further inspected to ensure supply air is not negatively impacted.
- AHUs in building need proper access panel to coil compartment to prevent further coil deterioration.
- Ensure VAVs that lost connection to BAS system are fixed.
- After investigation of MAUs there is a safety setpoint that prevents the unit from turning on during cold outdoor air temperatures.
- MAUs have cooling coils and heating blowers that are not in use and need to be serviced. This will allow the MAU to temper the air and continuously provide outdoor air regardless of outdoor temperature.

ASHRAE Calculated Ventilation Rates:

Calculated ventilation rates are included in the AHU M&V Schedule page within this report. Calculations are only able to be provided where sufficient information is available, requiring the occupant populations and SqFt areas to be provided for the AHU systems serving each space. ASHRAE calculations for occupied Office Building areas are based on ASHRAE's 62.1 table 6-1 Minimum Ventilation rates of 5 CFM / Person and 0.06 CFM / ft². Any AHU's that report an actual measured outside air CFM below the minimum ventilation rates, are recommended to be adjusted and balanced to achieve proper ventilation rates.