



November 26, 2018

City of Stamford Engineering Department
Attn: Lou Casolo Jr., PE, City Engineer
888 Washington Blvd, 7th floor
Stamford, CT 06901

Dear Mr. Casolo,

Thank you for reaching out to us regarding the survey and inspection of the AAF Unit Ventilators at the Westover Elementary School.

Based on your direction we selected a handful of units to evaluate in various parts of the school. In coordination with Jeffery Smith and Kurt Rubbleman from JCI and with Jeff Brown and Luda Fuks from your office, we were able to access and assess the units listed in the general survey report below. The reports contain the model and serial numbers for each unit, as well as an operational assessment of the various components (actuator valve, fresh air damper, blower motor, and coil). Photos of the general conditions accompany each of the individual unit assessments.

As a general conclusion, the units are past their typical life cycle (20 years), are showing general wear and tear along the coil consistent with their service life, and there were sporadic service issues (highlighted in the report below). Most concerning as it relates to the school closing was the coil deterioration, which was consistent from unit to unit. Blocked and deteriorating coils will lead to the collection of moisture along the bottom rear of the coil and that moisture will drip onto the cardboard and paper of the air filters below, which may then lead to contamination issues. (Condensation appears to have been collecting on the filters, as evidenced by water staining, since their last replacement on about August 24, 2018. See attached photos.)

Also of note on the service items were sporadic failures of the economizer dampers, which allow outside fresh air into the building as needed. The failure in the closed position inhibits outdoor fresh air (ventilation issue), lessens efficient cooling in the shoulder seasons when the 2-pipe system is unable to make cooling as it will be in boiler heating mode. This may lead to overheating in the space. Finally, failed actuator valves will lead to a lack of hot or chilled water passing through the coil and will result in no heating or cooling, depending on the season.

Unrelated to the Unit Ventilators general condition, we also noticed significant infiltration of outside air into the building envelope at the window and louvre grill behind some of the units. Rust was apparent on the metal studs, indicating the presence of moisture in the outside wall cavity at some point in the past. (See related notes/photos at the end our report.) I would strongly recommend further investigation of these areas.

I will put together approximate per unit pricing for the drain down, removal (followed by remediation/sheetrock work by others), and then subsequent re-installation and recommissioning of the unit ventilators. As another option, I will include approximate per unit pricing for the drain down, removal (followed by remediation/sheetrock work by others), and then subsequent installation and commissioning of NEW unit ventilators for you to compare for budgeting purposes. I will send this proposal separately once the final pricing has been calculated.

Lastly, I want to thank you again for calling us in to help you investigate this project as it pertains the HVAC/mechanicals. We appreciate your business. Please feel free to contact me at your convenience. My cell is 203-241-3374.

Regards,

Mike Jessee
Account Manager
Daikin Applied Danbury



DAIKIN APPLIED AMERICAS INC.

BROOKFIELD Ct Factory Service Center

WESTOVER SCHOOL

412 Stillwater Ave., Stamford, Ct 06902

AAF AZ Herman Nelson Unit Ventilator (s) 70 units

Building is closed due to mold and in remediation process. The following conditions were discovered during planned random sampling and general operating inspection on November 20, 2018.

Inspection by John Morris Supervisor and Ryan Mann Technician

In collaboration with Johnson Controls Technicians Jeffery Smith and Kurt Rubbleman

General Survey:

- UV units have Johnson Controls UNT Controllers each with local remote wall thermostats
- Controllers are all networked to Johnson Controls MetaSys Building Management System (BMS)
- UV units each consists of 3 speed fan motor, 2 pipe system with dual temperature hydronic coil, Belimo 2-way 0-10 volt DC actuator and includes outside air economizer damper modulated by Johnson Controls 0-10 Volt DC actuator motor
- System Status: manually switched over in Heat Mode
- **Daikin Chiller on roof off line shut down for winter**
- Boilers reset loop water temperature weather dependent on outside air temperature
- Based on Serial Number date codes, all units were manufactured in 1997
- **All units surveyed showed coils that were fouled and deteriorating at a level that would be consistent with units with approximately 20+ years of service**

APS130 ART ROOM: UV #41: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09032 00

Unit status: cover off occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results PASS

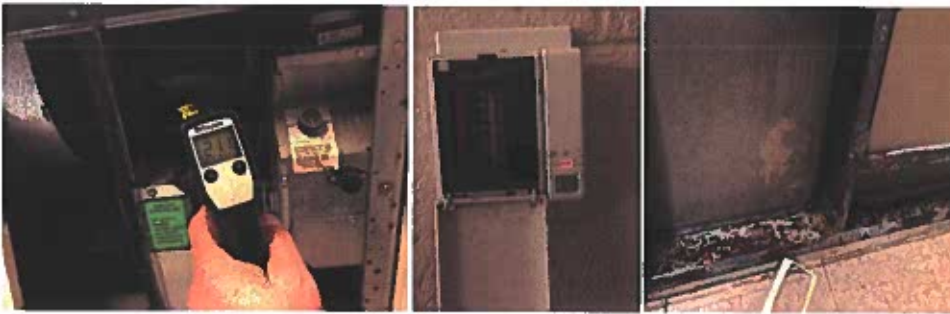
Tested operation of outside air damper actuator results **Fail (stuck in closed position)**

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC

Noted Motor surface temperature running Hot @ 211F!

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time



Room D219: UV #63: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001050 Serial # 7 7K09081 00

Unit status: cover on occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: Pass

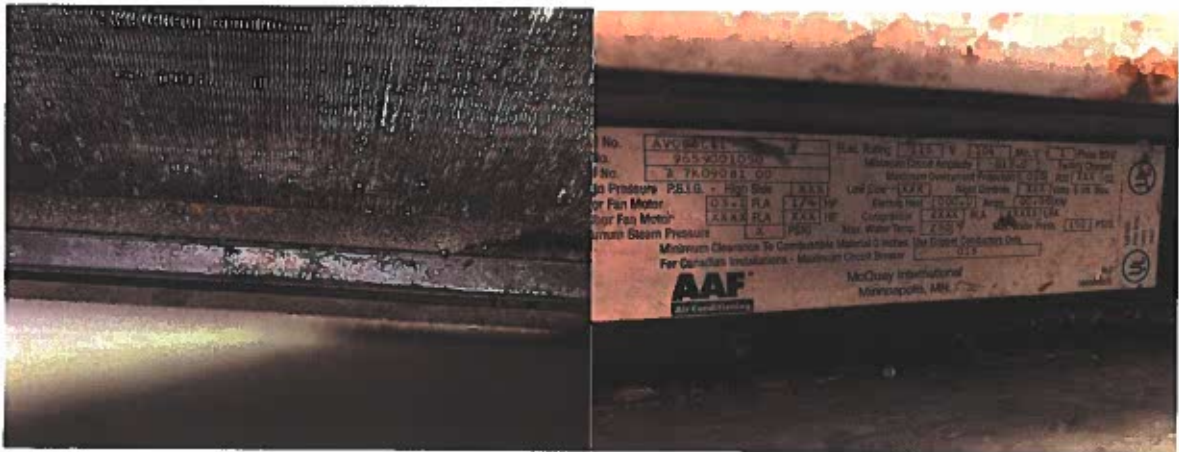
Tested operation of outside air damper actuator results: **Fail (stuck in closed position)**

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time



Room C213 UV #63: Inspected UV and Tested Operation
 Unit model AV006C11 Part # 9659001050 Serial # 7 7K09072 00
 Unit status: cover on occupied heat - running fan only
 JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: **Fail**
 Tested operation of outside air damper actuator results: Pass
 Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass
 Noted Motor surface temperature running typical (140°-175°)
 Unit and coil are fouled in fair to poor condition relative to their years in service
Unit NOT operational for heating at this time



Room B109 UV #23: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09059 00

Unit status: cover on occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: Pass

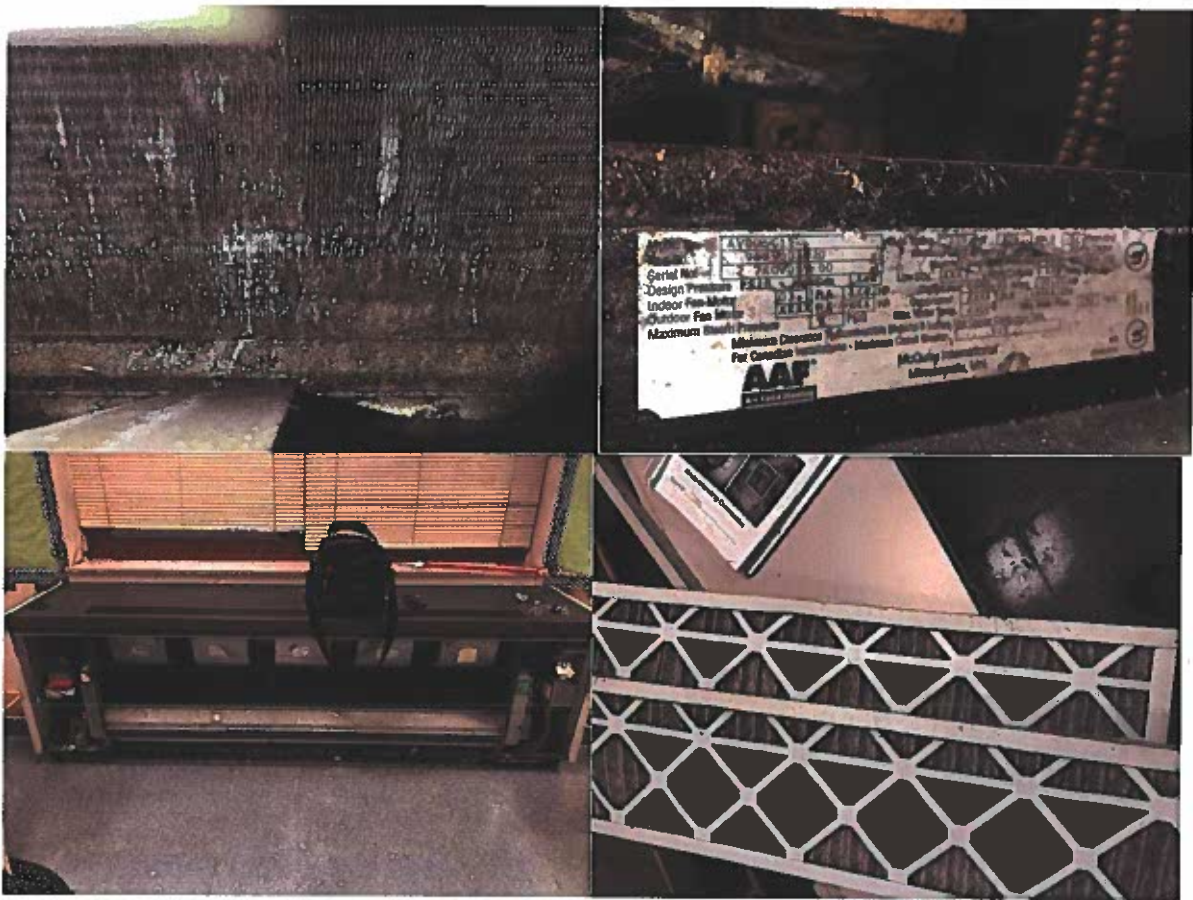
Tested operation of outside air damper actuator results: Pass

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time



Room B125 UV #30: Inspected UV and Tested Operation

Unit model AV003C11 Part # 9659001010 Serial # 7 7K08850 00

Unit status: cover on occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: Pass

Tested operation of outside air damper actuator results: Pass

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time



Room A104 UV #10: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09043 00

Unit status: cover on occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water

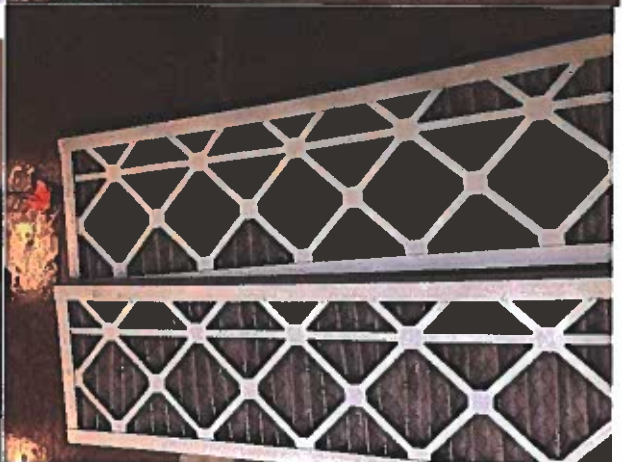
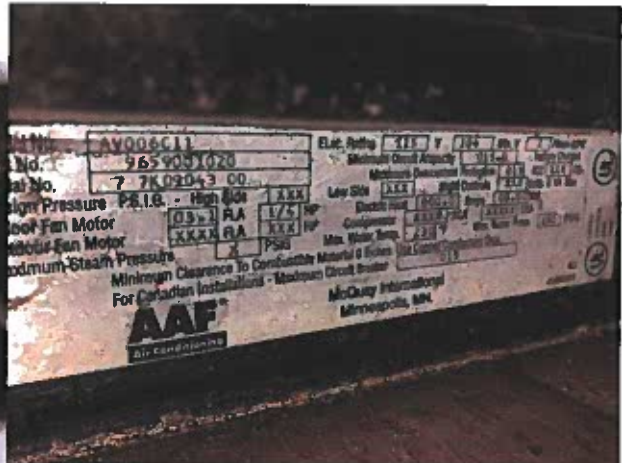
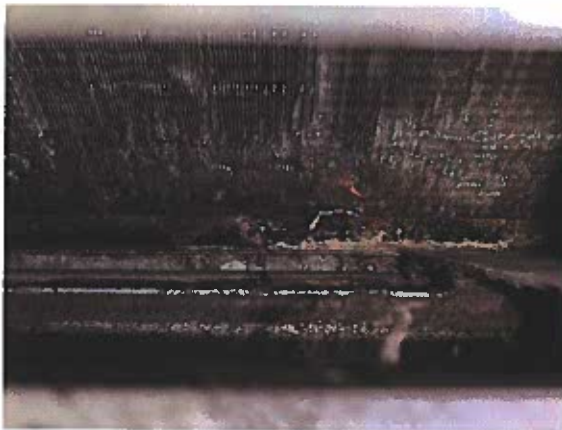
actuator valve results: **Fail—the heating valve has been removed and unit is piped directly, and the BMS control is also failed. Unit is inoperable at this time.**

Tested operation of outside air damper actuator results: **TBD**

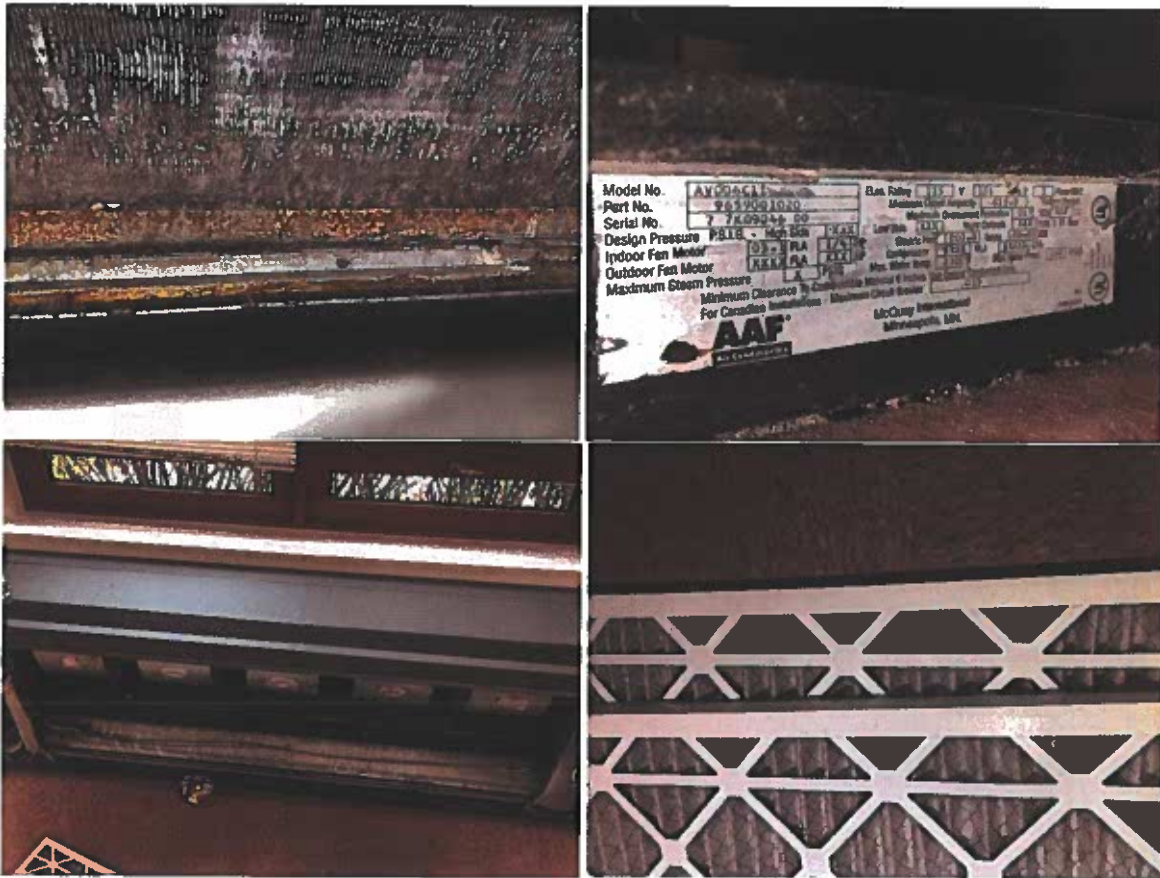
Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: **TBD**

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit is NOT operational for heating at this time



Room A102 UV #11: Inspected UV and Tested Operation
Unit model AV006C11 Part # 9659001020 Serial # 7 7K09046 00
Unit status: cover on occupied heat - running fan only
JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: Pass
Tested operation of outside air damper actuator results: Pass
Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass
Noted Motor surface temperature running typical (140°-175°)
Unit and coil are fouled in fair to poor condition relative to their years in service
Unit operational for heating at this time



Room FRC1 UV #7: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09060 00

Unit status: cover on occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results: Pass

Tested operation of outside air damper actuator results: Pass

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC: Pass

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time



ROOM A101: UV #3: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09100 00

Unit status: cover off occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results PASS

Tested operation of outside air damper actuator results **Fail (stuck in closed position)**

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time

ROOM A105: UV #13: Inspected UV and Tested Operation

Unit model AV006C11 Part # 9659001020 Serial # 7 7K09020 00

Unit status: cover off occupied heat - running fan only

JCI technician utilized HVAC PRO program on lap top and tested operation hot water / chill water actuator valve results PASS

Tested operation of outside air damper actuator results **Fail (stuck in closed position)**

Indoor Fan Motor FLA = 3.1 Amps @ 115 VAC

Noted Motor surface temperature running typical (140°-175°)

Unit and coil are fouled in fair to poor condition relative to their years in service

Unit operational for heating at this time

Regarding Building Envelope & Infiltration: See attached photos, drawings, and notes.

Inactive section of louver requires protection from outside air

DETAIL AT BACK OF UNIT VENTILATOR

UNIT VENTILATOR

Unit Ventilator installation detail from design documents and photos showing opening through outside wall.

Uninsulated plumbing on exterior wall

Protruding bent metal in pipe chase in floor with unit