Roger Sherman Elementary School

250 Fern Street
Fairfield, CT 06824

FAIRFIELD PUBLIC SCHOOLS

ROGER SHERMAN ELEMENTARY

Fairfield Public Schools Recommissioning (RCx) and Testing, Adjusting, & Balancing (TAB) Study

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FAIRFIELD PUBLIC SCHOOLS RECOMMISSIONING (RCX) AND TESTING, ADJUSTING, & BALANCING (TAB) STUDY

EXECUTIVE SUMMARY

Roger Sherman Elementary School was deemed to be school priority number seven by Fairfield Public Schools. The following report will indicate the compliance or non-compliance of this school with current International Mechanical Code (2015 IMC) regarding Ventilation for Acceptable Indoor Air Quality.

Roger Sherman Elementary School is located at 250 Fern Street, Fairfield, CT and serves as an educational facility for approximately 400 students as of the May 2022 census and up to 87 faculty and staff. This school used to be in an smaller, wooden building until 1913 when a brick school took its place. This stood until 1965 when a new school was built on Fern Street, where the current building remains to this day. Some major renovations since the newer building was constructed include a Media Center on the south side and a Gymnasium on the northwest corner, both in 1977. In 2003 and 2004, Fairfield Public Schools brought in contractors to perform building envelope and HVAC remediation studies respectively. While these showed the school was generally doing well at the time, there were definite needs for improvement. Fairfield implemented many of these changes, particularly items like adding direct ventilation to classroom spaces rather than merely exhausting air, but there has not been any major system analysis since that time.

The school ventilation systems mainly comprises four (4) Aaon or Daikin main building rooftop air handling units serving the main office, gym, cafeteria, and media center, eleven (11) Aaon dedicated energy recovery ventilators with mixed air capability serving the classrooms, and seven (7) York modular rooftop units serving the annex classroom section. Classrooms typically utilized the ERV for ventilation only, as these did not come equipped with coils for temperature regulation, rather using VRF cassette and fintube radiation to maintain space conditions. Otherwise, the building has exhaust fans for various purposes including, but not limited to, toilet exhaust, kitchen exhaust, mechanical/electrical space ventilation, etc. Since this is the 1963 building, many spaces still have operable windows, which might vary in use depending on the particular occupant or environmental conditions, but these are not directly tied into any monitoring system nor are expected to be used for the purposes of providing fresh outside air as a component of the building ventilation. They *were* used for ventilation back when the classrooms were only served by exhaust fans, but since the installation of the ERVs it would better serve the school to keep the windows closed. The control system uses an integrated JCI FX Explorer, and though access was gained, many of the units were not operating as expected during the investigations.

We performed our on-site RCx inspection starting on April 20, 2022, and TAB review starting in July 2022.The goal of this study is primarily focused towards addressing the outside air and outside air change rates of the occupied spaces. Although there are code exhaust air requirements for spaces like storage rooms, electrical rooms, mechanical rooms, etc., these spaces are often not directly ventilated with outside air, nor are they required to be since they typically have occupancy totals of zero (actual or expected). These spaces typically do not affect building occupants since they are typically provided with some form of exhaust which drives these spaces negative to the surrounding area. At worst, improper levels of exhaust would drive a negative building further negative, but it does not introduce air from these locations to classroom or office spaces. Should the district pursue additional work for the building including recommissioning, balancing, and controls upgrades, these spaces would be addressed as a component of that process.

Overall, the performance of the building with regard to ventilation was found to be poor and most sections of the building were not satisfied with enough outside air. Findings from the Retro-Commissioning (RCx) and air-side Testing Adjusting and Balancing (TAB) process found significant issues that should be addressed immediately to improve building environmental control, reduce energy usage, and improve building ventilation compliance with the 2015 version of the International Mechanical Code (2015 IMC). Although there are additional guidelines and recommendations put forward by organizations dedicated to the research and implementation of healthy buildings that have plenty of overlap with IMC 2015, these were not the driving factors for this assessment. Please be aware that many of these changes on their own will not reduce energy consumption, but rather will increase it; in some cases, this increase could be significant. Measures should be considered that offset this additional energy use with control upgrades that adjust ventilation systems based on use and measured values. The remainder of this report will address these concerns directly and provide a path forward for Fairfield Public Schools.

EVALUATION

For the purposes of this study, the Fairfield Public Schools district had five primary questions about the capability and performance of each of the school buildings. Based on our findings, we have some insight into each of these below.

2015 International Mechanical Code (IMC) Compliance

As the accompanying spreadsheet indicates, most of the individual occupied spaces at this school do not fully comply with the applicable building codes or guidelines regarding indoor air quality and outdoor ventilation. The measured ventilation air being delivered into each occupied space observed during the study would be considered a worst-case scenario only, and even at such, there are some areas within the building that do meet and exceed these ventilation requirements by a significant amount.

The supply of outside air to interior occupied spaces is governed by the 2018 Connecticut Building Code, which is based on the 2015 International Mechanical Code. This code prescribes the flow rate of outside air that must be supplied mechanically to occupied areas based on occupancy classifications. Depending on the type of use of a space, outdoor air flow rates in cubic feet per minute (CFM) per person are defined when the number of occupants within a space is known. When total occupants per space are unknown, the code defines occupant density for each classification type in number of occupants per space floor area. The final flow rate in CFM for every occupied space can thus be calculated. Please note that, although this is a school, some spaces like an office will not be indicated as being part of an “education” occupancy classification because the IMC does not distinguish between an office in an office building, a school, or anywhere else. This applies to nearly every space that is not considered a space for traditional classroom activities including, but not limited to, nurse and healthcare offices, gymnasium, assembly halls, etc.

As an alternative to providing outside air mechanically to occupied spaces, the building code also allows for outside air to enter occupied areas naturally through operable windows. If the area of operable windows for an occupied space is at least 4% of the space’s floor area, mechanical ventilation for that space is not required by code. However, although spaces with sufficient operable window area may satisfy code requirements, this is not a realistic way of providing adequate ventilation during periods of cold or hot weather, and this often adversely affects the temperature and humidity levels within the building. In any case, some sort of ventilation equipment is provided in every occupied space here including in spaces with operable windows, but whether it was supplying ventilation is a different question.

The amount of outside air supplied to occupied spaces is important for occupant comfort and health because contaminants generated by people and materials in the space must be removed or they will build up to unhealthy levels. Diluting interior air with outside air reduces the concentration of various airborne contaminants, including viral particles that carry the COVID-19 virus and other viral and bacterial contaminants.

Outside Air Flow and Air Change Rate Findings

The "Ventilation Data Calculations" Appendix contains the data from all RCx findings and TAB measurements regarding ventilation within occupied spaces. This data conforms to the requirements within IMC 2015 and the results are calculated based on individual space classification and category. Additionally, these readings rely on the "worst case" scenario, whereby each space is considered fully occupied and the associated air handling units are operating with minimum outside air to satisfy the controlled parameters. The reason for using this method is to ensure that if a building is capable of maintaining required outside air flow in this minimum ventilation mode, it will definitely maintain them when more outside air is introduced. It does not necessarily mean that the units will handle thermal or humidity regulation in maximum ventilation modes. As a caveat, it is important to understand that forcing the worst case is not necessarily typical building operation but is necessary to discover root issues behind the ventilation control of the building. It is possible that correcting certain issues regarding outside airflow will cause different issues to be revealed, which in turn would need to be addressed.

For the occupied zones within this building, the total minimum required ventilation airflow came out to 12,909 CFM. The TAB process revealed that only 4,336 CFM of outside air is delivered to the spaces, resulting in a 8,574 CFM deficit or 33.6% of the required minimum flow. Additionally, the ventilation calculations reveal that only 8.8% of the occupied zones actually met the requirements (5 of 57). This means that generally, all sections of the building are lacking ventilation in this condition. By far, this minimum airflow state resulted in the smallest percentage of passing spaces compared to other buildings, including those that retain the exhaust-only classroom setup that this school also employed over a decade ago (it would not have improved this school to do that). A major reason that spaces received little ventilation was because the associated unit damper was not functioning properly or had the minimum setpoint set too low. An analysis of the rooms based on the associated air handling unit reveals additional reasons why clusters of rooms might have failed to meet code, which is expanded on within the Issues List appendix.

A common calculation used for measuring the amount of air flushed through the space every hour is the Air Change Rate (ACH), and for this analysis specifically we are concerned with the Outside Air Change Rate (OACH). At its core, this is a ratio of the volume of air that can theoretically completely fill the volume of each space and how many times it can do that every hour. For example, a 1000 ft^2 room with 10 ft ceilings will have a volume of 10,000 ft^3. If 250 CFM is delivered to this space, that results in 15,000 ft^3 of air. Every hour, the space will be flushed with that much air, resulting in an ACH of 1.5. This number on its own will not determine if a space satisfies code requirements and it does not mean that every molecule of the air in that space has been replaced after the hour, but it helps to give an idea into the type of performance that could be expected and there are guidelines for many space regarding the OACH. While general spaces like classrooms and offices are among the space categories that do not have outside air ACH requirements, these rates help to give some insight into overall performance. Current recommendations prescribe a total ACH of at least 3 throughout the building, without falling below the minimum outside air CFM. Taking the entire building volume and air delivered cycled through the building, which includes outside air and filtered, return air, this building was capable of achieving 4.175 ACH. This is well beyond the recommended 3 ACH, and it could indicate that there is potential for the building to increase outside air where there is too little in order to meet the code requirements. The total

unit airflows might be capable of reduction after this increase to the outside air, which will help offset the energy costs attributed to additional outside air conditioning. This can be further broken out by spaces that meet or fail to meet code. Among the spaces that failed to meet code, the outside air ACH was 0.592; for spaces that at least met or exceeded code, the outside air ACH was 1.603; the combined outside air ACH for the entire building, including unoccupied spaces was 0.571. Special rooms such as a nurse's suite do require an outside air ACH of at least 2 and total ACH of 6, which was not only met in this building but barely had any air delivered to the various sections of the health suite as it is. This is in addition to other recommendations or requirements such as negative pressure relative to adjacent spaces, extra filtration requirements for recirculated air, space pressure profiles for nurse suite spaces, etc..

Total ACH (RA + OA)	**Total OACH (OA/EA)**	**OACH for zones that do not meet code**	**OACH for zones that meet code**
4.175	0.571	0.592	1.603

Outside Air Flow Improvement Recommendations

Immediate action should be taken to bring all spaces up to minimum ventilation requirements. For the annex, every unit either had no outside air intake (C & D) or hade the outside air intake blanked off with sheet steel. If this was done for thermal regulation, this is not the correct way to handle that issue seeing as it removed the vital component of ventilation from the space conditioning equation. Much of the main building is now served with energy recovery ventilators, which are typically capable of 100% outside air operation except for perhaps the most extreme outside air temperature conditions. The bare minimum should involve a unit-by-unit controls review for adjusting the minimum outside air damper positions up significantly, to a level that each unit can handle without taxing the heating or cooling equipment. A control technician and TAB contractor should both be present for this process to confirm proper control operation and positioning of the unit dampers. This alone will bring some quantity of outside air to spaces that currently have none and will necessarily improve building performance as a result. All control end devices should be checked for calibration including airflow monitoring stations, damper actuators, and temperature/RH sensors, particularly so that full control over OA dampers can be regained. Afterwards, The HVAC systems should be holistically rebalanced to current design requirements.

Aside from the above, since the emergence of the COVID-19 virus in December 2019, the specific requirements and precautions taken regarding outside air have become more stringent. For example, ASHRAE has been continuously investigating the transmission of COVID-19 through HVAC systems and has made recommendations on how to adapt existing HVAC systems to minimize transmission of COVID-19. Changes to building systems to address the virus also positively improve the performance of the ventilation systems with handling the filtration of other particulate that directly impacts building air quality. On April 14, 2020, ASHRAE released a document "ASHRAE Position Document on Infectious Aerosols". This report was provided in an Appendix to the FPS high school ventilation summary reports. ASHRAE also gave a presentation on June 16, 2020, regarding Recommendations and Activities for re-opening schools for the fall 2020 academic semester. These recommendations remain relevant as COVID and other contaminants that impact indoor air quality continue to remain a concern. Although this report is primarily concerned with meeting 2015 IMC for compliance, ASHRAE's insight into addressing the code is invaluable. Their recommendations for reducing the transmission of infectious aerosols through HVAC systems as they apply to schools are as follows:

- Generally, increase outdoor ventilation rates (Dilution) for all zones with deficit minimum outside air by adjusting the outside air damper minimum position of the associated air handling equipment. More tends to be better, but any changes should follow ASHRAE Standard 62.1 as a minimum and should not overpower the capability of the heating or cooling equipment so as to maintain temperature and humidity requirements in the occupied spaces.
- Filter changes should become more frequent. Current policy indicates a twice-annual filter change at all schools. The filters had been changed at the time of inspection but current district contracts only allot for twice-annual changes. Every unit is different, and some filters load faster than others. A dirty filter decreases the filter's efficiency and forces the unit fans to run at higher speeds (more energy consumption) or to deliver less outdoor ventilation air to the space.
- Increase total air change rates to between 3 and 6 ACH where possible while still satisfying minimum OA ventilation. Only two spaces had ACH rates greater than 3, the media center classroom and the kitchen, but almost every other space was significantly below this target.
- Flush or purge building before and after occupancy for at least two (2) hours, if possible.
- While all units appear to have MERV 13 filters now installed, units that have both final and pre-filters have MERV 13 filters in both positions. Having two of the same efficiency filters in series does not significantly improve the filtration efficiency and mostly just reduces total airflow. MERV 8 pre-filters can be used in double bank racks to act as an inexpensive shield for the more expensive MERV 13 or 14 filters. Additionally, any units, particularly the ERVs, that will be running exclusively in 100% outside air mode during occupied periods can forgo MERV-13 filters since outside air alone only really needs MERV-8 filtration to be effective.
- Consider installation of UV-C or bi-polar ionization to recirculating air systems where installation of these systems do not interfere with the unit construction or operation.
- Though typically difficult to implement, consider providing humidification to maintain 40% RH during the heating seasons, and dehumidification in the summer to maintain room RH below 60%.
- Supplement poorly or un-ventilated areas with portable HEPA filtration units in classrooms until such time as proper ventilation can be delivered to the space.
- Add low return / high supply airflow paths or utilize displacement ventilation where possible.
- Increase restroom exhaust where possible while maintaining a positive building pressurization to the exterior.
- Perform duct cleaning for existing systems.

Control Sequence Update Recommendations

Without a specific retro-commissioning of the BAS control system itself, it is not possible to tell exactly what systems and components of the BAS needs repair or upgrade, but a cursory review of what was available indicates great need to:

- Repair or replace all faulty equipment controllers and end Input/Output devices.

- Look to program units to provide a pre and post occupancy purge for all occupied spaces.
- Generally, increase airflow to each space
- Increase the minimum OA damper position for each unit.
- Confirm that trending and alarms have been set up for all units and establish alarm points for units operating below required minimum ventilation levels during occupied modes
- Implement CO_2 and Demand Control Ventilation (DCV) sequences for units to adjust ventilation air being delivered automatically and efficiently based on actual individual space occupancy. Not only will these sequences save a substantial amount of money in energy costs, but they remove the guesswork for facilities and control personnel for how much air each space needs, and code/guidelines incorporate these capabilities into exceptions for blanket minimum outside air flow rates. The implementation of this control strategy is especially vital since increased ventilation to the building will increase all energy costs as it has a direct impact on the heating and cooling systems as well.

Equipment Upgrade or Replacement Recommendations

A typical major recommendation involves swapping out older units for ERVs, but this has already been done at this school. However, none of the spaces served by the ERVs there now were meeting the minimum ventilation requirements, primarily because the outside air dampers associated with these units were closed off so much. A thorough review of existing damper equipment and control sequences for these classroom units will help drastically improve the indoor ventilation rates for the classrooms.

Each existing air handler should have outside air flow rates increased above current setpoints if they can be obtained. Even units that currently meet code requirements for ventilation flow rates could be increased, but should not be increased beyond the capacity of the unit to heat or cool the air. Total space air change rates should also be increased to the extent possible along with increases in outside air flow to better remove contaminants from the air. If a unit at maximum fan speeds is still incapable of providing at least the minimum ventilation or ACH required, then the system should be evaluated further to determine the best solution such a total system modification, or the installation of a self-contained HEPA filtration unit in areas where increasing fresh air is limited.

Supplemental air cleaning technology, such as ultraviolet-C (UV-C) light or bi-polar ionization, is available for recirculated air systems and could be considered if additional disinfection measures are desired. UV-C is short wavelength ultraviolet light that has been found to effectively kill COVID-19 particles. UV-C systems are already used in other HVAC systems where they are installed in air streams to kill bacteria and other harmful living organisms. These systems can be installed relatively easily in already constructed system ductwork or air handlers without major modifications. Bi-polar ionization systems are also installed in ductwork or air handlers and use an electric charge to create a concentration of positively and negatively charged particles in an airstream. These particles cause pathogens to stick to each other and become larger, thus increasing the probability of them being captured by air filters. The charged particles created also leave the ductwork and remain charged when they enter occupied spaces. If the particles come in contact with pathogens in the occupied space, the charge removes hydrogen from the pathogen so that it is no longer able to sustain itself. For this reason, bi-polar ionization is preferred to UV-C air cleaning because bi-polar ionization has the ability to decontaminate pathogens outside of the ductwork whereas UV-C only decontaminates pathogens that enter the ducts.

ASHRAE recommends relative humidity values between 40 and 65% as these values have been shown to hamper the ability of COVID-19 and other pathogens to travel and thrive. When cooling systems are in operation, ensure dehumidification is adequate to keep relative humidity below 65%. During heating system operation, relative humidity values are typically less than 40%. Adding humidification to the existing HVAC systems is often exceedingly difficult and costly; additionally, humidification for HVAC systems can be problematic if not well maintained and adds to operating costs. For this reason, recommendations discussed above should be enacted before humidification is considered.

In order to best confirm that the implementation of the above recommendations is met as well as other improvements, we recommend performing whole-building Recommissioning. This is an extensive procedure that will help with fully documenting the building systems, their capabilities, and optimizes the control system to maintain the best performance while conserving the most energy. In general, Recommissioning should be performed approximately once every five years to keep the buildings operating smoothly.

For any unit that operates *only* with 100% outside air (e.g., makeup air units, dedicated outside air units, etc.) MERV 8 filters can be used instead of MERV 13s. This will allow for fan energy savings and increased ventilation without sacrificing indoor air quality.

All units currently allow for some amount of recirculation, so the following are recommendations for upgrading the air handling units:

- Where any unit has a two filter racks where the first has room for 2" filters and the second has room for 4" or greater filters, the 2" filters can be MERV 8 for pre-filtering, but the larger filters should remain MERV 13.
- Based upon our observations HVAC unit filter changes should be performed more frequently. The party responsible for changing the filters should note which unit filters become dirty quicker and should further increase the frequency of changes to those units. If necessary, some units might need more or less frequent changes, and the filter schedule could be updated to change out problem units sooner.
- Consider adding Bi-polar ionization or another means of air disinfection wherever possible.
- Consider investigating the potential of increasing the ventilation air flow rate wherever possible.
- All of the items noted within the RCx and TAB field finding appendices should be addressed by the facilities personnel. These items are separated by category: IAQ/Ventilation items, Maintenance items, Control items, and Information Only. While these lists are not a substitute for a full-building commissioning service, these corrections contain many of the significant issues that will quickly improve indoor air quality and energy consumption rates. Some typical issues include, but are not limited to:
    - Cleaning all unit coils: Some are in worse shape than others. Cleaning the coils will improve airflow patterns through the coil, increasing coil effectiveness and preventing deterioration due to rust or corrosion.
    - Damper cleaning and lubrication: All unit dampers should be cleaned and lubricated and tested throughout their movement range from the BAS. As dampers age, lubrication fails and dirt builds up causing the actuator to need to push harder to move the damper. Too

much build-up can result in control actuators failures or broken damper hardware, which would need to be replaced.

- Exterior Insulation: ductwork and piping insulation should have UV-resistant coating or shields installed, particularly if any of the insulation is already failing. Typically, foil-faced aluminum insulation or banded aluminum jacketing works for this. For exposed refrigerant piping, these should be reinsulated with elastomeric insulation and coated with a UV-resistant paint. This will prevent deterioration from the sun and avoid costly repairs since almost all air handling and refrigerant equipment is located on the roof.
- General Unit Cleanliness: All units should be cleaned to remove any dirt or debris that has accumulated. Some units were observed with loose paper, cardboard, and other materials within the units that can become a breeding ground for bacteria and molds should those materials absorb moisture. Sections of units that have developed rust or corrosion should be kept dry and cleaned with appropriate chemicals for removing the build-up before repainting or repairs tasks.
- Fan Belt Tension and Wheel Alignment: Though we did not observe any major issues for applicable units, all fan motor pulley's, sheaves and belts should be reviewed for proper alignment and tension. Some motors might need to be repositioned in the unit to fix the tension or adjust for alignment. Some fan wheels also wobble or pulleys could be misaligned. Consider adjust motor positions if out of alignment and installing belt tensioners where possible to extend intervals between belt changes without compromising unit efficiency as the belt wears. Units with direct-drive ECMs do not typically need rebalancing.

CONCLUSIONS

While Fairfield Public Schools has taken measures in the past to address identified deficiencies regarding the recommended proper filtration upgrades for indoor air quality (IAQ) improvements, this study found that the Roger Sherman Elementary School is does not meet the current minimum ventilation requirements per 2015 IMC mainly due to the lack of delivered outside air to the space. The van Zelm, Wings, and Fairfield Public Schools team will collectively discuss options and estimate costs for correcting issues and code deficiencies discovered as part of this study. The cost analysis portion will be a continual process.

While some recommendations will help improve performance, there are a number of key recommendations that should be implemented immediately since the school is currently occupied. These include bringing into proper operation the outside air dampers for all units and generally increasing outside airflow throughout the building. The primary solution involves adjustments to the unit damper minimum positions, but also general control sequence overhauls, rebalancing, and reopening the sealed off outside air sections of the Annex units. Given the results of this survey, we highly recommend further evaluation to be performed including whole-building Recommissioning and rebalancing, possibly including engineered ventilation calculations/modifications aid in code compliance and generally better working order.

APPENDICES

APPENDIX 1 – Issues List

ISSUES LIST

Issue List General Discussion

The following sections within this appendix include observations we made as a part of the study. Some of these items directly impact Indoor Air Quality (IAQ) or Ventilation and, since this is the primary concern of the study, are recommended to be addressed immediately. Other items are overdue/improper maintenance, control system issues, or general observations. Just because an issue is not included in the IAQ/Ventilation sections does not necessarily mean that it will have no effect on improving the building environment, but it is more likely that the effects are minimal or would only indirectly address a concern. In some cases, these could potentially *reduce* overall building outside airflow, even if in such instances it would keep the associated spaces within code compliance. While this might seem counterintuitive, given the concerns, it is a way to manage a healthy, code-compliant building environment while also saving energy.

The nature of this process being one that affects almost the entire building means that a response to this issue list should be through a holistic approach. Any one issue correction on its own might locally improve the condition of the served areas, but if an adjacent, non-functioning unit is also not corrected then the positive effects will be diminished. The interconnectivity of the issues cannot be easily indicated due to the complexity of the built environment, but a thorough review of all issues and an implementation plan will provide better results overall for the building and its stakeholders.

It should be noted that the inspections we performed as part of this study were undertaken during the month of April 2022, so it is possible that some noted concerns, particularly maintenance items or issues already known about could have been addressed prior to the distribution of this report. Ongoing discussions with Fairfield Public Schools will allow us to update these items as we continue through other schools and into the implementation phase later in the year.

To aid in the process of addressing and tracking these issues, we have included a column indicating when action has been taken by Fairfield Public Schools or a hired contractor to address any individual issues, and will allow the district to document and timestamp issues that have been corrected since the initial inspection.

Indoor Air Quality And Ventilation Issue Findings

Below is a compilation of findings from our commissioning indoor space evaluation, TAB verification effort, and the air handling equipment analysis that relate to indoor air quality or ventilation status of the building. These findings should be considered as a high priority for budgeting and action steps. Many of the listed issues might lend clarity as to why the ventilation findings of throughout were found to be deficient. Addressing these issues individually will not correct any systemic, unit, or building-wide issues related to the IAQ or ventilation of the building..

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (62)
Open	IAQ/Vent	10.1	Storage 5	No ventilation or exhaust
Open	IAQ/Vent	A1	Classroom	No control by ALC OA intake Blank off
Open	IAQ/Vent	A2	Classroom	No control by ALC OA intake Blank off
Open	IAQ/Vent	A3	Classroom	No control No OA intake
Open	IAQ/Vent	A3.3	Custodian	No control No OA intake
Open	IAQ/Vent	A4	Classroom	No control OA intake Blank off
Open	IAQ/Vent	A5	Classroom	No control OA intake Blank off
Open	IAQ/Vent	Air Handling Equipment	Coils	Generally, air handling equipment coils are dirty and need to be cleaned.
Open	IAQ/Vent	AP.01B	Platform Storage	No ventilation or exhaust
Open	IAQ/Vent	AP.02	Storage 1	No ventilation or exhaust
Open	IAQ/Vent	DOAS	Cleaning	DOAS equipped with energy recovery wheels (ERW) are in decent shape but they are dirtier than expected. These will need to be cleaned.
Open	IAQ/Vent	DOAS-1	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-10	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (62)
Open	IAQ/Vent	DOAS-10	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-10	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-11	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-11	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-11	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-2	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-3	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-3	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-4	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-4	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-5	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-5	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-6	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-6	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-6	Outside Air	Little or no outside air is being introduced to the space by this unit

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (62)
Open	IAQ/Vent	DOAS-7	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-7	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-7	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-8	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-8	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-8	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	DOAS-9	Cleaning	The Return Air fan unit section and motor were very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-9	Cleaning	The energy recovery wheel is very dirty and need to be cleaned
Open	IAQ/Vent	DOAS-9	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	K.02	Kitchen Toilet	No ventilation or exhaust
Open	IAQ/Vent	MC.01D	Media Center Large Storage	No ventilation or exhaust
Open	IAQ/Vent	MC.01E	Media Center Small Storage	No ventilation or exhaust
Open	IAQ/Vent	MO.01A	Main Office Storage	No ventilation or exhaust
Open	IAQ/Vent	MO.03A	Principal Storage	No ventilation or exhaust
Open	IAQ/Vent	MO.06A	MST Storage	No ventilation or exhaust
Open	IAQ/Vent	MO.08	Special Education	No return path for air is provided in this space
Open	IAQ/Vent	MO.11	Storage	No ventilation or exhaust

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (62)
Open	IAQ/Vent	MO.14A	Nurse Office Isolation Storage	No ventilation or exhaust
Open	IAQ/Vent	Portable Classrooms	Outside Air	The portable classrooms do not have means of proper direct ventilation via the air handling units
Open	IAQ/Vent	RTU-1	Outside Air	Little or no outside air is being introduced to the space by this unit
Open	IAQ/Vent	RTU-A	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-A	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.
Open	IAQ/Vent	RTU-A-G	Outside Air	Outside air intakes were found blanked off on 5 of the 7 units and 2 units did not have an outside air section at all.
Open	IAQ/Vent	RTU-B	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-B	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.
Open	IAQ/Vent	RTU-C	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-C	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.
Open	IAQ/Vent	RTU-D	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-D	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.
Open	IAQ/Vent	RTU-E	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-E	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (62)
Open	IAQ/Vent	RTU-F	Outside Air	There is no outside air damper on this unit, causing the unit to provide no ventilation to the spaces it serves.
Open	IAQ/Vent	RTU-G	Coils	The cooling coil is dirty and should be cleaned
Open	IAQ/Vent	RTU-G	Outside Air	The outside air damper was fully closed, causing the unit to provide no ventilation to the spaces it serves.

Maintenance Issue Findings

Below is a compilation of findings from our commissioning indoor space evaluation, TAB verification effort, and the air handling equipment analysis that relate to indoor air quality or ventilation status of the building. The priority level of these findings will vary, and correcting any of them could improve the associated unit's performance, which might have an incidental effect on the indoor air quality or ventilation in the spaces. These issues do not necessarily explain reasons why the ventilation findings of the associated spaces were found to be deficient but should be corrected, nonetheless.

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (52)
Open	Maintenance	A2	Classroom	The thermostat was set to 69 °F but the in-room temperature was 59 °F. This is far below acceptable temperatures for the classroom
Open	Maintenance	A3	Classroom	This room was noticeably colder than expected
Open	Maintenance	Air Handling Equipment	Procedures	General unit maintenance seems to indicate that the PM contractor is focusing mostly or solely on filter changes instead of wholistic reviews of the units
Open	Maintenance	Boilers	Operation	The boiler system was found off even though numerous spaces were not satisfied in temperature
Open	Maintenance	DOAS	Burners	Generally, the gas burners on the DOAS units show signs of rusting due to age and use. These should be cleaned and maintained to ensure efficient and clean heating
Open	Maintenance	DOAS-1	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-1	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-10	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-10	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-11	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-11	Drain Pan	The drain pan is dirty and should be cleaned

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (52)
Open	Maintenance	DOAS-2	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-2	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-3	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-3	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-4	Bearings	The unit rumbles loudly upon startup, indicating a possible bad bearing. This should be investigated.
Open	Maintenance	DOAS-4	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-4	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-5	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-5	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-6	Burners	The burner piping in this unit is noticeably rusty and should be treated
Open	Maintenance	DOAS-6	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-6	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-7	Burners	The burner piping in this unit is noticeably rusty and should be treated
Open	Maintenance	DOAS-7	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-7	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-8	Dampers	The unit dampers are in need of cleaning and lubrication

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (52)
Open	Maintenance	DOAS-8	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	DOAS-9	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	DOAS-9	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	MAU	Belt	The belt on this unit was loose
Open	Maintenance	MC.01B	Media Classroom	This room was noticeably colder than expected
Open	Maintenance	RTU	Modular Classroom	This unit was not operational at all during testing, though the space it serves is currently being used solely as storage. This is possibly the reason the space is used in this way.
Open	Maintenance	RTU-1	Cleaning	RTU-1 is in need of maintenance and cleaning
Open	Maintenance	RTU-1	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-1	Drain Pan	The drain pan is dirty and should be cleaned
Open	Maintenance	RTU-2	Filters	The new filters are being pulled out of the frames due to the pressure drop. These are otherwise clean, changed recently from the time of inspection
Open	Maintenance	RTU-4	Filters	The new filters are being pulled out of the frames due to the pressure drop. These are otherwise clean, changed recently from the time of inspection
Open	Maintenance	RTU-A	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-A	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.
Open	Maintenance	RTU-B	Dampers	The unit dampers are in need of cleaning and lubrication

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (52)
Open	Maintenance	RTU-B	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.
Open	Maintenance	RTU-C	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-C	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.
Open	Maintenance	RTU-D	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-D	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.
Open	Maintenance	RTU-E	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-E	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.
Open	Maintenance	RTU-F	Drain Pan	There is no condensate trap installed at this unit drain pan
Open	Maintenance	RTU-F	Heating	There is no backup electric heat coil like the other units
Open	Maintenance	RTU-G	Dampers	The unit dampers are in need of cleaning and lubrication
Open	Maintenance	RTU-G	Filters	Filter change accessibility is restricted by the electrical conduit serving the unit. This could potentially lead to damaging the filters when putting them in, reducing their effectiveness.

Control Issue Findings

Below is a compilation of findings from our commissioning indoor space evaluation, TAB verification effort, and the air handling equipment analysis that relate to the status of the control system within the building. The priority level of these findings will vary, and correcting any of them could improve the associated unit's performance, which might have an incidental effect on the indoor air quality or ventilation in the spaces. Some control issues do affect whether or not facilities or maintenance personnel are informed of issues at systems or equipment, which can result in delays to maintenance or repairs that would otherwise have been quick to correct. These issues do not necessarily explain reasons why the ventilation findings of the associated spaces were found to be deficient but should be corrected, nonetheless.

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (39)
Open	Control	A1	Classroom	No control by ALC OA intake Blank off
Open	Control	A2	Classroom	No control by ALC OA intake Blank off
Open	Control	A3	Classroom	The thermostat display was non-functional
Open	Control	A3	Classroom	No control No OA intake
Open	Control	A3.1	Boys	No control
Open	Control	A3.2	Toilet	No control
Open	Control	A3.3	Custodian	No control No OA intake
Open	Control	A4	Classroom	No control OA intake Blank off
Open	Control	A5	Classroom	No control OA intake Blank off
Open	Control	BAS	Access	Access to the JCI FX control system is difficult and did not properly control all components, particularly dampers
Open	Control	DOAS	Dampers	Eleven of the DOAS unit dampers are not operating as expected, including mismatching commands/operation with the energy recovery wheel.
Open	Control	DOAS	VFDs	All VFDs for the DOAS units were found disconnected

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (39)
Open	Control	DOAS-1	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-1	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-10	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-10	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-11	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-11	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-2	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (39)
Open	Control	DOAS-2	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-3	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-3	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-4	Dampers	The outside air damper command was 8% open but the actual damper position was 20%.
Open	Control	DOAS-4	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-4	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-5	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-5	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (39)
				and ERW operation based on environmental conditions
Open	Control	DOAS-6	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-6	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-7	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-7	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-8	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-8	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	DOAS-9	Duct Smoke	The supply fans are located behind the duct smoke detector panel. We did not open this in case it would have caused the detector to trip. If possible, this should be considered for relocation

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (39)
				so that maintenance procedures are not restricted by safety devices.
Open	Control	DOAS-9	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	MO.14	Nurse Office Isolation	Min 20% set
Open	Control	RTU-1	Interlocks	The Power Exhaust was running with ERW bypass open and the Outside air damper closed. The controls should be reviewed to optimize fan and ERW operation based on environmental conditions
Open	Control	RTU-3	Controller	This is a packaged RTU-C type unit but we could not locate either a JCI FX or BACnet controller. That would indicate the unit is running without input from the BAS. This should be reviewed.
Open	Control	RTU-4	Dampers	The outside air damper command was 10% open but the actual damper position was 25%.

Information Only Findings

Below is a list of the general "information only" findings from the room take-off measurements, TAB verification effort, and the air handling equipment analysis. If a correction can be made to these items, it will not affect improving the indoor air quality or ventilation for occupied spaces. Some of these items might actually speak to *reducing* outside airflow, particularly if a space is significantly overventilated or has inconsistent/large swings in occupancy, in which case their status has been indicated as "Energy Savings."

Action Taken	Status	Unit/Zone	Serving/Room Name	Information Only Findings (01)
Info Only	Info Only	17	Classroom	This room is separated from 18 Classroom by a partition

APPENDIX 2 – Ventilation Data Calculations

Project Name:	**Fairfield Public Schools RCx & TAB Study**
Project Number:	**2020102.00.07**
Scope	**Ventilation Calculation by Building**
Date	**September 7, 2022**

Roger Sherman Elementary School

VANZELM ENGINEERS

Zone Identification												IMC 2015 Ventilation Calculations									
Floor	**Room#**	**Room Name**	**Occupancy Classification**	**Category**	**Total Airflow**	**Unit Actual OA %**	**BAS OA Damper Cond**	**Served By**	**Zone Area, Az, per space**	**Ceiling Height**	**Volume, per space**	**Zone Population, Pz, per space**	**People OA Rate in Breathing Zone, Rp**	**Area OA Rate in Breathing Zone, Ra**	**Default Occupant Density**	**Min. Required Ventilation Airflow**	**ACTUAL MEASURED VENTILATION AIR FLOW**	**Excess Ventilation Air (negative indicates deficit)**	**Excess Ventilation Air Percentage**	**PASS/FAIL**	**Ventilation ACH**
					(cfm)	(%)	(%)		(sq.ft)	(ft)	(cu.ft)	Adult	(cfm/ person)	(cfm/sf)	(#/1000sf)	(cfm)	(cfm)	(cfm)	(%)		(AC/hr)
1	MO.01	Main Office	Offices	Office spaces	**94**	47% - 171	20%	RTU-1 VAV-3	540	8.5	4590	4	5.0	0.06	5	52	**44**	-8	-16.0%	**Fails**	**0.575**
1	MO.01A	Main Office Storage	Storage	Warehouses	**---**	---	---	---	11	8	88	0	0.0	0.06	0	1	**---**	N/A		**N/A**	
1	MO.02	Waiting Area	Offices	Office spaces	**---**	---	---	---	255	8.5	2168	4	5.0	0.06	5	35	**0**	-35	-100.0%	**Fails**	**0.000**
1	MO.03	Principal	Offices	Office spaces	**37**	47% - 171	20%	RTU-1 VAV-6	205	15	3075	6	5.0	0.06	5	42	**17**	-25	-59.8%	**Fails**	**0.332**
1	MO.03A	Principal Storage	Storage	Warehouses	**---**	---	---	---	11	8	88	0	0.0	0.06	0	1	**---**	N/A		**N/A**	
1	MO.04	Principal Conference	Offices	Conference rooms	**122**	47% - 171	20%	RTU-1 VAV-7	298	15	4470	13	5.0	0.06	50	83	**57**	-26	-31.2%	**Fails**	**0.765**
1	MO.04	"Office"	Offices	Office spaces	**57**	47% - 171	20%	RTU-1 VAV-4	200	12	2400	7	5.0	0.06	5	47	**27**	-20	-42.6%	**Fails**	**0.675**
1	MO.05	Psychologist (North Conference)	Offices	Office spaces	**0**	47% - 171	20%	RTU-1 VAV-5	247	8.6	2124	6	5.0	0.06	5	45	**0**	-45	-100.0%	**Fails**	**0.000**
1	MO.06	Math/Science Teacher Office (Guidance)	Offices	Office spaces	**29**	47% - 171	20%	RTU-1 VAV-2	153	8.6	1316	6	5.0	0.06	5	39	**14**	-25	-64.3%	**Fails**	**0.638**
1	MO.06A	MST Storage	Storage	Warehouses	**---**	---	---	---	15	8	120	0	0.0	0.06	0	1	**---**	N/A		**N/A**	
1	MO.07	Main Office Toilet	Public Spaces	Toilet rooms - public	**-101**	---	---	EF above Ceiling	53	8	424	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	MO.08	Special Education	Offices	Office spaces	**28**	47% - 171	20%	RTU-1 VAV-1	262	8.6	2253	9	5.0	0.06	5	61	**13**	-48	-78.6%	**Fails**	**0.346**
1	MO.08A	Special Education Storage	Offices	Office spaces	**---**	---	---	---	23	8	184	0	5.0	0.06	5	2	**0**	-2	-100.0%	**Fails**	**0.000**
1	MO.09	Office 4	Offices	Office spaces	**0**	47% - 171	20%	RTU-1 VAV-8	152	8.6	1307	4	5.0	0.06	5	29	**0**	-29	-100.0%	**Fails**	**0.000**
1	MO.10	Office 5	Offices	Office spaces	**0**	47% - 171	20%	RTU-1 VAV-8	155	8.6	1333	5	5.0	0.06	5	34	**0**	-34	-100.0%	**Fails**	**0.000**
1	MO.11	Storage	Storage	Warehouses	**---**	---	---	---	80	8.6	688	0	0.0	0.06	0	5	**---**	N/A		**N/A**	
1	MO.12	Custodian	Storage	Warehouses	**---**	---	---	AC	211	9	1899	1	0.0	0.06	0	13	**---**	N/A		**N/A**	
1	MO.12A	Custodian Toilet	Public Spaces	Toilet rooms - public	**-102**	---	---	EF above Ceiling	30	9.6	288	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	MO.12B	Custodian Storage	Storage	Warehouses	**120**	47% - 171	20%	RTU-1	124	9.6	1190	4	0.0	0.06	0	7	**56**	49	652.7%	**Meets**	**2.823**
1	MO.13	Health Suite	Hospitals nursing and convalescent homes	Patient rooms	**20**	47% - 171	20%	RTU-1 VAV-9	210	8.6	1806	3	25.0	0.00	10	75	**9**	-66	-88.0%	**Fails**	**0.299**
1	MO.13A	Nurse Lobby	Offices	Office spaces	**0**	47% - 171	20%	RTU-1 VAV-9	90	8.6	774	1	5.0	0.06	5	10	**0**	-10	-100.0%	**Fails**	**0.000**

Project Name:	**Fairfield Public Schools RCx & TAB Study**
Project Number:	**2020102.00.07**
Scope	**Ventilation Calculation by Building**
Date	**September 7, 2022**

Roger Sherman Elementary School

VANZELM ENGINEERS

Zone Identification												IMC 2015 Ventilation Calculations									
Floor	**Room#**	**Room Name**	**Occupancy Classification**	**Category**	**Total Airflow**	**Unit Actual OA %**	**BAS OA Damper Cond**	**Served By**	**Zone Area, Az, per space**	**Ceiling Height**	**Volume, per space**	**Zone Population, Pz, per space**	**People OA Rate in Breathing Zone, Rp**	**Area OA Rate in Breathing Zone, Ra**	**Default Occupant Density**	**Min. Required Ventilation Airflow**	**ACTUAL MEASURED VENTILATION AIR FLOW**	**Excess Ventilation Air (negative indicates deficit)**	**Excess Ventilation Air Percentage**	**PASS/FAIL**	**Ventilation ACH**
					(cfm)	(%)	(%)		(sq.ft)	(ft)	(cu.ft)	Adult	(cfm/ person)	(cfm/sf)	(#/1000sf)	(cfm)	(cfm)	(cfm)	(%)		(AC/hr)
1	MO.13B	Health Suite Toilet	Public Spaces	Toilet rooms - public	**-122**	---	---	EF above Ceiling	54	8.6	464	1	0.0	0.00	0	0	---	N/A	0.0%	N/A	
1	MO.14	Nurse Office Isolation	Hospitals nursing and convalescent homes	Recovery and ICU	**0**	47% - 171	20%	RTU-1 VAV-9	130	8.6	1118	3	15.0	0.00	20	45	**0**	-45	-100.0%	**Fails**	**0.000**
1	MO.14A	Nurse Office Isolation Storage	Storage	Warehouses	**---**	---	---	---	9	8.6	77	0	0.0	0.06	0	1	---	N/A		N/A	
1	MO.15	Boiler Room	Storage	Warehouses	**---**	---	---	2 SF's for combuston air	928	26	24128	0	0.0	0.06	0	56	---	N/A		N/A	
1	AP.01	All Purpose Room	Education	Multiuse assembly	**1132**	25.5% - 289	10%	RTU-3	2081	20	41620	120	7.5	0.06	100	1025	**289**	-736	-71.8%	**Fails**	**0.417**
1	AP.01A	Platform Stage	Education	Music/theater/dance	**---**	---	---	RTU-3	489	20	9780	15	10.0	0.06	35	179	**0**	-179	-100.0%	**Fails**	**0.000**
1	AP.01B	Platform Storage	Storage	Warehouses	**---**	---	---	---	57	12	684	0	0.0	0.06	0	3	---	N/A		N/A	
1	AP.02	Storage 1	Storage	Warehouses	**---**	---	---	---	57	8	456	0	0.0	0.06	0	3	---	N/A		N/A	
1	AP.03	Office 1	Offices	Office spaces	**---**	---	---	AC	165	9.5	1568	5	5.0	0.06	5	35	**0**	-35	-100.0%	**Fails**	**0.000**
1	AP.04	Toilet	Public Spaces	Toilet rooms - public	**-299**	---	---	EF	44	9	396	1	0.0	0.00	0	0	---	N/A	0.0%	N/A	
1	AP.05	Boys	Public Spaces	Toilet rooms - public	**-328**	---	---	EF	220	9	1980	4	0.0	0.00	0	0	---	N/A	0.0%	N/A	
1	AP.06	Toilet	Public Spaces	Toilet rooms - public	**-116**	---	---	EF	35	9	315	1	0.0	0.00	0	0	---	N/A	0.0%	N/A	
1	AP.07	Girls	Public Spaces	Toilet rooms - public	**-105**	---	---	EF	260	9	2340	4	0.0	0.00	0	0	---	N/A	0.0%	N/A	
1	AP.08	Faculty Room	Food and beverage service	Cafeteria, fast food	**---**	---	---	AC	354	9.7	3434	15	7.5	0.18	100	176	**0**	-176	-100.0%	**Fails**	**0.000**
1	01	Classroom	Education	Classroom (ages 5-8)	**319**	18% - 365	3%	ERV-1 AC	742	9	6678	24	10.0	0.12	25	329	**184**	-145	-44.1%	**Fails**	**1.653**
1	02	Classroom	Education	Classroom (ages 5-8)	**129**	18% - 365	3%	ERV-1 AC	799	9	7191	26	10.0	0.12	25	356	**175**	-181	-50.8%	**Fails**	**1.460**
1	03	Classroom	Education	Classroom (ages 5-8)	**-89**	17% - 296	3%	ERV-2 AC	780	9	7020	25	10.0	0.12	25	344	**152**	-192	-55.8%	**Fails**	**1.299**
1	04	Classroom	Education	Classroom (ages 5-8)	**199**	17% - 296	3%	ERV-2 AC	771	9	6939	25	10.0	0.12	25	343	**164**	-179	-52.1%	**Fails**	**1.418**
1	05	Classroom	Education	Classroom (ages 5-8)	**76**	13% - 220	3%	ERV-3 AC	771	9	6939	25	10.0	0.12	25	343	**126**	-217	-63.2%	**Fails**	**1.089**
1	06	Classroom	Education	Classroom (ages 5-8)	**269**	13% - 220	3%	ERV-3 AC	771	9	6939	25	10.0	0.12	25	343	**99**	-244	-71.1%	**Fails**	**0.856**
1	07	Classroom	Education	Classroom (ages 5-8)	**167**	329% - 509	8%	ERV-4 AC	771	9	6939	23	10.0	0.12	25	323	**285**	-38	-11.6%	**Fails**	**2.464**

Project Name:	**Fairfield Public Schools RCx & TAB Study**
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Scope	**Ventilation Calculation by Building**
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Roger Sherman Elementary School

VANZELM ENGINEERS

Zone Identification											IMC 2015 Ventilation Calculations									
Floor	**Room#**	**Room Name**	**Occupancy Classification**	**Category**	**Total Airflow**	**Unit Actual OA %**	**BAS OA Damper Cond**	**Served By**	**Zone Area, Az, per space**	**Ceiling Height**	**Volume, per space**	**Zone Population, Pz, per space**	**People OA Rate in Breathing Zone, Rp**	**Area OA Rate in Breathing Zone, Ra**	**Default Occupant Density**	**Min. Required Ventilation Airflow**	**ACTUAL MEASURED VENTILATION AIR FLOW**	**Excess Ventilation Air (negative indicates deficit)**	**Excess Ventilation Air Percentage**	**PASS/FAIL**	**Ventilation ACH**
					(cfm)	(%)	(%)		(sq.ft)	(ft)	(cu.ft)	Adult	(cfm/ person)	(cfm/sf)	(#/1000sf)	(cfm)	(cfm)	(cfm)	(%)		(AC/hr)
1	08	Classroom	Education	Classroom (ages 5-8)	**353**	32% - 509	8%	ERV-4 AC	915	9	8235	29	10.0	0.12	25	400	**226**	-174	-43.5%	**Fails**	**1.647**
1	09	Classroom Music	Education	Music/theater/dance	**-238**	22.5% - 241	4%	ERV-5 AC	901	9	8109	20	10.0	0.06	35	254	**240**	-14	-5.5%	**Fails**	**1.776**
1	09.01	Office 2	Offices	Office spaces	**90**	22.5% - 241	4%	ERV-5 AC	107	9	963	4	5.0	0.06	5	26	**20**	-6	-24.3%	**Fails**	**1.246**
1	09.02	Storage 2	Storage	Warehouses	**0**	22.5% - 241	4%	ERV-5 AC	74	9	666	0	0.0	0.06	0	4	---	N/A		**N/A**	
1	09.03	Storage 3	Storage	Warehouses	**77**	22.5% - 241	4%	ERV-5 AC	86	9	774	0	0.0	0.06	0	5	---	N/A		**N/A**	
1	09.04	Storage 4	Storage	Warehouses	**47**	22.5% - 241	4%	ERV-5 AC	62	9	558	0	0.0	0.06	0	4	---	N/A		**N/A**	
1	MC.01	Media Center	Education	Media Center	**1861**	20% - 719	10%	RTU-4	1364	12	16368	35	10.0	0.12	25	514	**372**	-142	-27.6%	**Fails**	**1.364**
1	MC.01A	Copy Room	Workrooms	Copy, printing rooms	**390**	20% - 719	10%	RTU-4	240	9	2160	4	5.0	0.06	4	34	**78**	44	126.7%	**Meets**	**2.167**
1	MC.01B	Media Classroom	Education	Classroom (ages 5-8)	**898**	20% - 719	10%	RTU-4	271	10	2710	12	10.0	0.12	25	153	**180**	27	18.0%	**Meets**	**3.985**
1	MC.01C	Circulation Desk	Offices	Office spaces	**---**	---	---	RTU-4	1167	9	10503	10	5.0	0.06	5	120	**0**	-120	-100.0%	**Fails**	**0.000**
1	MC.01D	Media Center Large Storage	Storage	Warehouses	**---**	---	---	---	43	9	387	0	0.0	0.06	0	3	---	N/A		**N/A**	
1	MC.01E	Media Center Small Storage	Storage	Warehouses	**---**	---	---	---	22	9	198	0	0.0	0.06	0	1	---	N/A		**N/A**	
1	MC.02	Teaching Station A	Education	Classroom (ages 5-8)	**192**	20% - 719	10%	RTU-4	106	9	954	4	10.0	0.12	25	53	**38**	-15	-27.9%	**Fails**	**2.390**
1	MC.03	Teaching Station B	Education	Classroom (ages 5-8)	**201**	20% - 719	10%	RTU-4 AC	109	9	981	4	10.0	0.12	25	53	**40**	-13	-24.6%	**Fails**	**2.446**
1	10	Classroom	Education	Classroom (ages 5-8)	**-74**	11% - 224	3%	ERV-6 AC	852	9	7668	26	10.0	0.12	25	362	**94**	-268	-74.1%	**Fails**	**0.736**
1	10.1	Storage 5	Storage	Warehouses	**---**	---	---	---	112	9	1008	0	0.0	0.06	0	7	---	N/A		**N/A**	
1	10A	Toilet	Public Spaces	Toilet rooms - public	**-115**	---	---	EF	16	8	128	1	0.0	0.00	0	0	---	N/A	0.0%	**N/A**	
1	11	Classroom	Education	Classroom (ages 5-8)	**277**	11% - 224	3%	ERV-6 AC	819	9	7371	23	10.0	0.12	25	328	**130**	-198	-60.4%	**Fails**	**1.058**
1	11A	Toilet	Public Spaces	Toilet rooms - public	**-110**	---	---	EF	15	9	135	1	0.0	0.00	0	0	---	N/A	0.0%	**N/A**	
1	12	Classroom	Education	Classroom (ages 5-8)	**153**	12% - 245	3%	ERV-7	763	9	6867	23	10.0	0.12	25	322	**121**	-201	-62.4%	**Fails**	**1.057**
1	12A	Toilet	Public Spaces	Toilet rooms - public	**-117**	---	---	EF	15	9	135	1	0.0	0.00	0	0	---	N/A	0.0%	**N/A**	

Project Name:	**Fairfield Public Schools RCx & TAB Study**
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Roger Sherman Elementary School

VANZELM ENGINEERS

Zone Identification												IMC 2015 Ventilation Calculations									
Floor	**Room#**	**Room Name**	**Occupancy Classification**	**Category**	**Total Airflow**	**Unit Actual OA %**	**BAS OA Damper Cond**	**Served By**	**Zone Area, Az, per space**	**Ceiling Height**	**Volume, per space**	**Zone Population, Pz, per space**	**People OA Rate in Breathing Zone, Rp**	**Area OA Rate in Breathing Zone, Ra**	**Default Occupant Density**	**Min. Required Ventilation Airflow**	**ACTUAL MEASURED VENTILATION AIR FLOW**	**Excess Ventilation Air (negative indicates deficit)**	**Excess Ventilation Air Percentage**	**PASS/FAIL**	**Ventilation ACH**
					(cfm)	(%)	(%)		(sq.ft)	(ft)	(cu.ft)	Adult	(cfm/ person)	(cfm/sf)	(#/1000sf)	(cfm)	(cfm)	(cfm)	(%)		(AC/hr)
1	13	Classroom	Education	Classroom (ages 5-8)	**227**	12% - 245	3%	ERV-7	804	9	7236	23	10.0	0.12	25	326	**121**	-205	-62.9%	**Fails**	**1.003**
1	13A	Toilet	Public Spaces	Toilet rooms - public	**-107**	---	---	EF	15	9	135	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	14	Classroom	Education	Classroom (ages 5-8)	**161**	11% - 220	3%	ERV -8	796	9	7164	24	10.0	0.12	25	336	**111**	-225	-66.9%	**Fails**	**0.930**
1	14A	Toilet	Public Spaces	Toilet rooms - public	**100**	---	---	EF	15	9	135	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	15	Classroom	Education	Classroom (ages 5-8)	**139**	11% - 220	3%	ERV-8	774	9	6966	24	10.0	0.12	25	333	**112**	-221	-66.4%	**Fails**	**0.965**
1	15A	Toilet	Public Spaces	Toilet rooms - public	**97**	---	---	EF	15	9	135	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	16	Classroom	Education	Classroom (ages 5-8)	**234**	7% - 144	3%	ERV-9	813	9	7317	26	10.0	0.12	25	358	**73**	-285	-79.6%	**Fails**	**0.599**
1	16A	Toilet	Public Spaces	Toilet rooms - public	**-105**	---	---	EF	15	9	135	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	17	Classroom	Education	Classroom (ages 5-8)	**116**	7% - 144	3%	ERV-9	798	9	7182	25	10.0	0.12	25	346	**73**	-273	-78.9%	**Fails**	**0.610**
1	18	Classroom	Education	Classroom (ages 5-8)	**200**	6% - 125	3%	ERV-10	808	9	7272	24	10.0	0.12	25	337	**61**	-276	-81.9%	**Fails**	**0.503**
1	19	Classroom	Education	Classroom (ages 5-8)	**140**	6% 125	3%	ERV-10	778	9	7002	23	10.0	0.12	25	323	**61**	-262	-81.1%	**Fails**	**0.523**
1	19.01	Kiln Storage 6	Storage	Warehouses	**-88**	---		EF	111	8.8	977	0	0.0	0.06	0	7	**---**	N/A		**N/A**	
1	K.01	Kitchen	Food and beverage service	Kitchens (cooking)	**-806**	127% - 232	3%	ERV-11	484	8.2	3969	4	0.0	0.00	0	0	**211**	211	0.0%	**N/A**	**3.190**
1	K.01A	Kitchen Office	Offices	Office spaces	**116**	127% - 232	3%	ERV-11	78	8.2	640	1	5.0	0.06	5	10	**14**	4	44.6%	**Meets**	**1.313**
1	K.01B	Serving Line	Food and beverage service	Kitchens (cooking)	**---**	---	---	ERV-11	444	8.2	3641	15	0.0	0.00	0	0	**0**	0	0.0%	**N/A**	**0.000**
1	K.02	Kitchen Toilet	Public Spaces	Toilet rooms - public	**---**	---	---	---	51	8.2	418	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	K.03	Receiving	Storage	Warehouses	**123**	12% - 232	3%	ERV-11	248	8.7	2158	1	0.0	0.06	0	15	**---**	N/A		**N/A**	
1	K.03A	Refr	Food and beverage service	Kitchens (cooking)	**---**	---	---	---	87	7	609	0	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	G.01	Gymnasium	Sports and amusement	Gym, stadium, arena (play area)	**12320**	2%	10%	RTU-2	4038	23	92874	60	0.0	0.30	0	1211	**246**	-965	-79.7%	**Fails**	**0.159**
1	G.01A	Gym Office	Offices	Office spaces	**---**	---	---	---	245	12	2940	1	5.0	0.06	5	20	**0**	-20	-100.0%	**Fails**	**0.000**
1	G.01B	Gym Storage	Storage	Warehouses	**117**	2%	10%	RTU-2	278	12	3336	0	0.0	0.06	0	17	**---**	N/A		**N/A**	

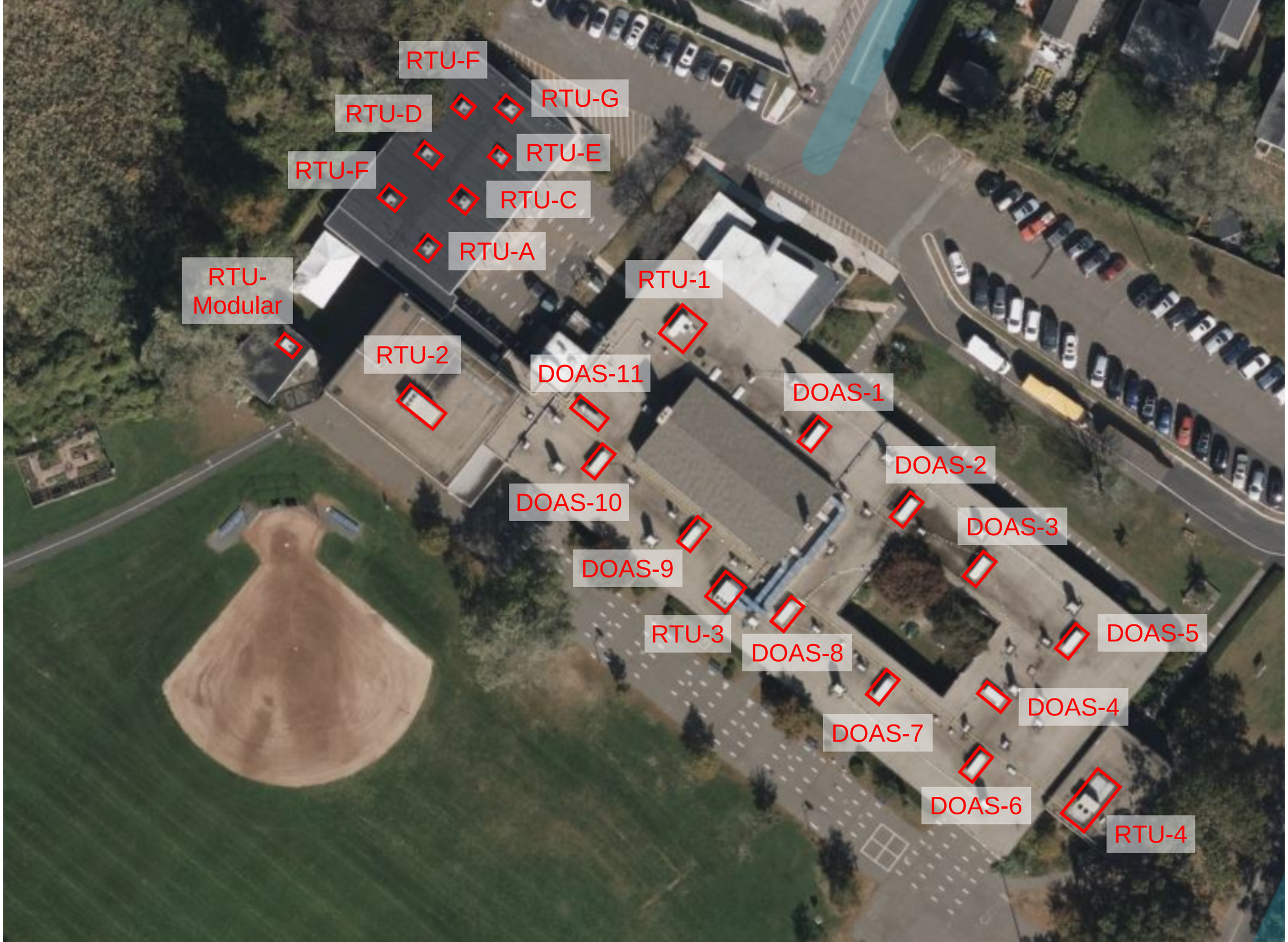
Project Name:	**Fairfield Public Schools RCx & TAB Study**
Project Number:	**2020102.00.07**
Scope	**Ventilation Calculation by Building**
Date	**September 7, 2022**

Roger Sherman Elementary School

VANZELM ENGINEERS

Zone Identification												IMC 2015 Ventilation Calculations									
Floor	**Room#**	**Room Name**	**Occupancy Classification**	**Category**	**Total Airflow**	**Unit Actual OA %**	**BAS OA Damper Cond**	**Served By**	**Zone Area, Az, per space**	**Ceiling Height**	**Volume, per space**	**Zone Population, Pz, per space**	**People OA Rate in Breathing Zone, Rp**	**Area OA Rate in Breathing Zone, Ra**	**Default Occupant Density**	**Min. Required Ventilation Airflow**	**ACTUAL MEASURED VENTILATION AIR FLOW**	**Excess Ventilation Air (negative indicates deficit)**	**Excess Ventilation Air Percentage**	**PASS/FAIL**	**Ventilation ACH**
					(cfm)	(%)	(%)		(sq.ft)	(ft)	(cu.ft)	Adult	(cfm/ person)	(cfm/sf)	(#/1000sf)	(cfm)	(cfm)	(cfm)	(%)		(AC/hr)
1	G.02	Boys	Public Spaces	Toilet rooms - public	**-406**	---	---	EF	56	8.8	493	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	G.03	Girls	Public Spaces	Toilet rooms - public	**-234**	---	---	EF	56	8.8	493	1	0.0	0.00	0	0	**---**	N/A	0.0%	**N/A**	
1	G.04	Equipment Storage	Storage	Warehouses	**111**	2%	10%	RTU-2	210	12	2520	0	0.0	0.06	0	13	**2**	-10	-82.4%	**Fails**	**0.053**
1	A1	Classroom	Education	Classroom (ages 5-8)	**894**	0	---	RTU A1	759	7.8	5920	21	10.0	0.12	25	301	**0**	-301	-100.0%	**Fails**	**0.000**
1	A2	Classroom	Education	Classroom (ages 5-8)	**960**	0	---	RTU A2	742	7.8	5788	24	10.0	0.12	25	329	**0**	-329	-100.0%	**Fails**	**0.000**
1	A3	Classroom	Education	Classroom (ages 5-8)	**1104**	0	---	RTU A3	702	7.8	5476	22	10.0	0.12	25	304	**0**	-304	-100.0%	**Fails**	**0.000**
1	A3.1	Boys	Public Spaces	Toilet rooms - public	**249**	0	---	RTU TLT	165	7.8	1287	1	0.0	0.00	0	0	**0**	0	0.0%	**N/A**	**0.000**
1	A3.2	Toilet	Public Spaces	Toilet rooms - public	**-20**	0	---	RTU TLT	45	7.8	351	1	0.0	0.00	0	0	**0**	0	0.0%	**N/A**	**0.000**
1	A3.3	Custodian	Storage	Warehouses	**80**	0	---	RTU TLT	20	7.8	156	1	0.0	0.06	0	1	**0**	-1	-100.0%	**Fails**	**0.000**
1	A3.4	Girls	Public Spaces	Toilet rooms - public	**264**	0	---	RTU TLT	140	7.8	1092	1	0.0	0.00	0	0	**0**	0	0.0%	**N/A**	**0.000**
1	A4	Classroom	Education	Classroom (ages 5-8)	**888**	0	---	RTU A6	775	7.8	6045	14	10.0	0.12	25	233	**0**	-233	-100.0%	**Fails**	**0.000**
1	A4.1	Mech	Storage	Warehouses	**126**	0	---	RTU TLT	64	7.8	499	0	0.0	0.06	0	4	**---**	N/A		**N/A**	
1	A5	Classroom	Education	Classroom (ages 5-8)	**946**	0	---	RTU A5	686	7.8	5351	24	10.0	0.12	25	322	**0**	-322	-100.0%	**Fails**	**0.000**
1	A6	Classroom	Education	Classroom (ages 5-8)	**967**	0	---	RTU A6	744	7.8	5803	22	10.0	0.12	25	309	**0**	-309	-100.0%	**Fails**	**0.000**
1	A7	Modular Classroom	Education	Classroom (ages 5-8)	**---**	---	---	RTU	734	7.6	5578	24	10.0	0.12	25	328	**0**	-328	-100.0%	**Meets**	**0.000**

APPENDIX 3 – Roof Map


RTU-F
RTU-G
RTU-D
RTU-E
RTU-F
RTU-C
RTU-A
RTU-
Modular
RTU-1
RTU-2
DOAS-11
DOAS-1
DOAS-2
DOAS-10
DOAS-3
DOAS-9
RTU-3
DOAS-8
DOAS-5
DOAS-4
DOAS-7
DOAS-6
RTU-4

APPENDIX 4 – TAB Airflow Survey Data

WING'S TESTING & BALANCING CO., INC.

Fairfield Public Schools

Roger Sherman Elementary School

* * * *

VanZelm Engineers
Attn: Bill Donald
10 Talcott Notch Road
Farmington, CT 06032

August 5, 2022

94 North Branford Road • Suite One • Branford, CT 06405
(203) 481-4988 • Fax (203) 488-5634 • wings@wingstesting.com
SM-1 License #6803
www.wingstesting.com

WING'S TESTING & BALANCING CO., INC.

July 29, 2022

VanZelm Engineers
Attn: Bill Donald
10 Talcott Notch Road
Farmington, CT 06032

Re: Roger Sherman Elementary School / Air Flow Testing

Dear Bill,

The air flow rate testing of the above referenced location has been completed as noted on our attached data sheets. The following are our results:

- We measured outside air flow rates on all 4 RTU's and 11 ERV's units on main building, as well total flow for RTU-2 and RTY-3. Other units total were calculated based on distribution sums.
- We recorded exhaust flow in the classrooms, toilets and other rooms equipped with exhaust.
- RTU's on Annex Building OA flow rates were not measured. OA intakes were blanked off on units 1,2,5,6,7 and OA intake not installed on units 3 and 4.
- RTU on modular classroom was not operational during our time of testing. Space used as storage.

The following pages are your record of current operating conditions. If you have any questions, or if we can be of further service, please do not hesitate to call.

Very truly yours,

Wing's Testing & Balancing Co., Inc.
ICB Certified Contractor for:
TABB—Commissioning—Fire/Life Safety L1&L2—Sound & Vibration

Marek Sadowski
Certified TABB Technician #BB1083468T
CT SM-2 License #7078
MA SM-2 4508
HVAC Fire Life Safety Level 1 Tech FLS11083468T
EPA Universal Technician AA2804U0003

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WING'S TESTING & BALANCING CO., INC.

August 5, 2022

Fairfield Public Schools
Roger Sherman Elementary School

Field Worksheet

Unit #	Condition		VFD		OA Command	OA Actual
	Filter	Coil	Supply	Return		
RTU-1	Good	Good	32.4Hz	21Hz	10%	10%
RTU-2	Good	Good	60Hz	N/A	10%	10%
RTU-3	Good	Good	60Hz	N/A	10%	10%
RTU-4	Good	Good	N/A	N/A	10%	25%
ERV-1	Good	No Coil	(1)	N/A	3%	3%
ERV-2	Good	No Coil	(1)	N/A	3%	3%
ERV-3	Good	No Coil	(1)	N/A	3%	3%
ERV-4	Good	No Coil	(1)	N/A	8%	20%
ERV-5	Good	No Coil	(1)	N/A	4%	4%
ERV-6	Good	No Coil	(1)	N/A	3%	3%
ERV-7	Good	No Coil	(1)	N/A	3%	3%
ERV-8	Good	No Coil	(1)	N/A	3%	3%
ERV-9	Good	No Coil	(1)	N/A	3%	3%
ERV-10	Good	No Coil	(1)	N/A	3%	3%
ERV-11	Good	No Coil	(1)	N/A	3%	3%
RTU-1	Good	Good	N/A	N/A	OA Intake blanked off	
RTU-2	Good	Good	N/A	N/A	OA Intake blanked off	
RTU-3	Good	Good	N/A	N/A	No OA Intake	
RTU-4	Good	Good	N/A	N/A	No OA Intake	
RTU-5	Good	Good	N/A	N/A	OA Intake blanked off	
RTU-6	Good	Good	N/A	N/A	OA Intake blanked off	
RTU-7	Good	Good	N/A	N/A	OA Intake blanked off	
Note #1: ALL VFDs disconnected on ERV units						

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AC-1
RTU-1
HV-2
RTU-2
HV-3
KITCHEN MAKE UP
HV-1
RTU-3
AC-2
RTU-4
AC-3
EAV #1
EAV #2
EAV #3
EAV #4
EAV #5
MUSIC RM-9
EAV #6
EAV #7
EAV #8
EAV #9
EAV #10
EAV #11
RTU
RTU

VELOCITY PRESSURE READINGS

PROJECT:	FPS - Roger Sherman Elementary School					**DATE:**	8/2/2022	
AREA SERVED:	1st Floor - Main Building					**TECH:**	MS	
TRAVERSE LOCATIONS	**DUCT SIZE "**	**AREA SQ.FT.**	**DESIGN**		**CENT. STAT. PRESS."**	**TEST**		**NOTES**
			FPM	**CFM**		**FPM**	**CFM**	
RTU-1								
OA	32"x17"	3.8	---	N/D	w/Velgrid	45	171	
RTU-2								
Total	83"x22"	12.7	---	N/D	w/Velgrid	988	12,548	
OA	83"x22"	12.7	---	N/D	w/Velgrid	23	292	
RTU-3								
Total	24"x24"	4	---	N/D	+0.14"	283	1132	
OA	67"x23"	10.7	---	N/D	w/Velgrid	27	289	
RTU-4								
OA	42"x16"	4.67	---	N/D	w/Velgrid	154	719	
ERV-1 OA	32"x17"	3.8	---	N/D	w/Velgrid	96	365	
ERV-2 OA	32"x17"	3.8	---	N/D	w/Velgrid	78	296	
ERV-3 OA	32"x17"	3.8	---	N/D	w/Velgrid	58	220	
ERV-4 OA	32"x17"	3.8	---	N/D	w/Velgrid	134	509	
ERV-5 OA	16"x16"	1.8	---	N/D	w/Velgrid	134	241	
ERV-6 OA	32"x17"	3.8	---	N/D	w/Velgrid	59	224	
ERV-7 OA	32"x17"	3.8	---	N/D	w/Velgrid	67	245	
ERV-8 OA	32"x17"	3.8	---	N/D	w/Velgrid	58	220	
ERV -9 OA	32"x17"	3.8	---	N/D	w/Velgrid	38	144	
ERV-10 OA	32"x17"	3.8	---	N/D	w/Velgrid	33	125	
ERV-11 OA	32"x17"	3.8	---	N/D	w/Velgrid	61	232	
MVA - Kitchen								
Total	42"x14"	4.1	---	N/D	w/Velgrid	161	660	(1)

REMARKS

(1) Loose Belt.

NA Not Available | **ND** No Design | **DD** Direct Drive | **N/R** No Requirement

VELOCITY PRESSURE READINGS

PROJECT:	FPS - Roger Sherman Elementary School	**DATE:**	8/2/2022
AREA SERVED:	1st Floor Annex Building	**TECH:**	MS

TRAVERSE LOCATIONS	DUCT SIZE "	AREA SQ.FT.	DESIGN		CENT. STAT. PRESS."	TEST		NOTES
			FPM	CFM		FPM	CFM	
RTU-A1 OA	12"x12"	1.0	---	N/D	---	0	0	(3)
RTU-A2 OA	12"x12"	1.0	---	N/D	---	0	0	(3)
RTU-A3 OA	(2)	---	---	N/D	---	---	---	(2)
RTU-A4 OA	(2)	---	---	N/D	---	---	---	(2)
RTU-A5 OA	12"x12"	1.0	---	N/D	---	0	0	(3)
RTU-A6 OA	12"x12"	1.0	---	N/D	---	0	0	(3)
TLT	12"x12"	1.0	---	N/D	---	0	0	(3)
Modular Classrm								
RTU	---	---	---	N/D	---	---	---	(1)

REMARKS

(1) Unit not operational
(2) No OA intake installed
(3) OA intake blanked off.

NA Not Available | **ND** No Design | **DD** Direct Drive | **N/R** No Requirement

Project Name:	**Fairfield Public Schools RCx: Roger Sherman Elementary School**
Project Number:	*2020102.00.07*
Scope	**TAB Data**
Date	**[DATE]**

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA % (OA cfm)	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
1	MO.01	Main Office	94	44	47% - 171	20%	RTU-1 VAV-3	
1	MO.01A	Main Office Storage	---	---	---	---	---	No ventilation or exhaust
1	MO.02	Waiting Area	---	---	---	---	---	1 room with Main Offfice
1	MO.03	Principal	37	17	47% - 171	20%	RTU-1 VAV-6	
1	MO.03A	Principal Storage	---	---	---	---	---	No ventilation or exhaust
1	MO.04	Principal Conference	122	57	47% - 171	20%	RTU-1 VAV-7	Unit total 367 CFM @ Min
1	MO.04	"Office"	57	27	47% - 171	20%	RTU-1 VAV-4	
1	MO.05	Psychologist (North Conference)	0	0	47% - 171	20%	RTU-1 VAV-5	
1	MO.06	Math/Science Teacher Office (Guidance)	29	14	47% - 171	20%	RTU-1 VAV-2	
1	MO.06A	MST Storage	---	---	---	---	---	No ventilation or exhaust
1	MO.07	Main Office Toilet	EX101	---	---	---	EF above Ceiling	
1	MO.08	Special Education	28	13	47% - 171	20%	RTU-1 VAV-1	
1	MO.08A	Special Education Storage	---	---	---	---	---	No room
1	MO.09	Office 4	0	0	47% - 171	20%	RTU-1 VAV-8	
1	MO.10	Office 5	0	0	47% - 171	20%	RTU-1 VAV-8	
1	MO.11	Storage	---	---	---	---	---	No ventilation or exhaust
1	MO.12	Custodian	---	---	---	---	AC	Wall split unit
1	MO.12A	Custodian Toilet	EX 102	---	---	---	EF above Ceiling	
1	MO.12B	Custodian Storage	120	56	47% - 171	20%	RTU-1	
1	MO.13	Health Suite	20	9	47% - 171	20%	RTU-1 VAV-9	
1	MO.13A	Nurse Lobby	0	0	47% - 171	20%	RTU-1 VAV-9	
1	MO.13B	Health Suite Toilet	EX 122	---	---	---	EF above Ceiling	
1	MO.14	Nurse Office Isolation	0	0	47% - 171	20%	RTU-1 VAV-9	Min 20% set
1	MO.14A	Nurse Office Isolation Storage	---	---	---	---	---	No ventilation or exhaust
1	MO.15	Boiler Room	---	---	---	---	2 SF's for combuston air	Boilers not running- fans off
1	AP.01	All Purpose Room	1132	289	25.5% - 289	10%	RTU-3	

Project Name:	**Fairfield Public Schools RCx: Roger Sherman Elementary School**
Project Number:	*2020102.00.07*
Scope	**TAB Data**
Date	**[DATE]**

Zone Identification

Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA % (OA cfm)	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
1	AP.01A	Platform Stage	---	---	---	---	RTU-3	1 room with all purpose ?
1	AP.01B	Platform Storage	---	---	---	---	---	No ventilation or exhaust
1	AP.02	Storage 1	---	---	---	---	---	No ventilation or exhaust

Project Name:	**Fairfield Public Schools RCx: Roger Sherman Elementary School**
Project Number:	*2020102.00.07*
Scope	**TAB Data**
Date	**[DATE]**

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA % (OA cfm)	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
1	AP.03	Office 1	---	---	---	---	AC	Wall split unit
1	AP.04	Toilet	EX 299	---	---	---	EF	Exhaust only
1	AP.05	Boys	EX 328	---	---	---	EF	Exhaust only
1	AP.06	Toilet	EX 116	---	---	---	EF	Exhaust only
1	AP.07	Girls	EX 105	---	---	---	EF	Exhaust only
1	AP.08	Faculty Room	---	---	---	---	AC	Window AC and wall split unit
1	01	Classroom	1020 EX 701	184	18% - 365	3%	ERV-1 AC	3 split unit ERV-1 Total 1991 CFM
1	02	Classroom	971 EX 842	175	18% - 365	3%	ERV-1 AC	3 split unit
1	03	Classroom	757 EX 846	152	17% - 296	3%	ERV-2 AC	3 split unit ERV-2 Total 1756 CFM
1	04	Classroom	1109 EX 910	164	17% - 296	3%	ERV-2 AC	3 split unit
1	05	Classroom	1043 EX 967	126	13% - 220	3%	ERV-3 AC	3 split unit ERV-3 Total 1731 CFM
1	06	Classroom	1033 EX 764	99	13% - 220	3%	ERV-3 AC	3 split unit
1	07	Classroom	1059 EX 892	285	329% -509	8%	ERV-4 AC	3 split unit ERV-4 Total 1597 CFm
1	08	Classroom	1058 EX 705	226	32% - 509	8%	ERV-4 AC	3 split unit
1	09	Classroom Music	1068 EX 1306	240	22.5% - 241	4%	ERV-5 AC	3 split unit ERV-5 Total 1282
1	09.01	Office 2	90	20	22.5% - 241	4%	ERV-5 AC	
1	09.02	Storage2-B-	0, EX 0	0	22.5% - 241	4%	ERV-5 AC	
1	09.03	Storage3-C-	77	17	22.5% - 241	4%	ERV-5 AC	
1	09.04	Storage4-D-	47	11	22.5% - 241	4%	ERV-5 AC	
1	MC.01	Media Center	1861	372	20% - 719	10%	RTU-4	RTU-4 Total 3542 CFM
1	MC.01A	Copy Room	390	78	20% - 719	10%	RTU-4	
1	MC.01B	Media Classroom	898	180	20% - 719	10%	RTU-4	1 split unit
1	MC.01C	Circulation Desk	---	---	---	---	RTU-4	1 room with Media Center
1	MC.01D	Media Center Large Storage	---	---	---	---	---	No ventilation or exhaust
1	MC.01E	Media Center Small Storage	---	---	---	---	---	No ventilation or exhaust
1	MC.02	Teaching Station A	192	38	20% - 719	10%	RTU-4	

Project Name:	**Fairfield Public Schools RCx: Roger Sherman Elementary School**
Project Number:	*2020102.00.07*
Scope	**TAB Data**
Date	**[DATE]**

Zone Identification

Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA % (OA cfm)	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
1	MC.03	Teaching Station B	201	40	20% - 719	10%	RTU-4 AC	1 split unit
1	10	Classroom	781 EX 855	94	11% - 224	3%	ERV-6 AC	3 split units ERV-6 Total 2035 CFM
1	10.1	Storage 5	---	---	---	---	---	No ventilation or exhaust
1	10A	Toilet	EX 115	---	---	---	EF	Above ceiling
1	11	Classroom	1180 EX 903	130	11% - 224	3%	ERV-6 AC	3 split units
1	11A	Toilet	EX 110	---	---	---	EF	
1	12	Classroom	1008 EX 855	121	12% - 245	3%	ERV-7	ERV-7 Total 2020 CFM
1	12A	Toilet	EX 117	---	---	---	EF	Above ceiling
1	13	Classroom	1012 EX 785	121	12% - 245	3%	ERV-7	
1	13A	Toilet	EX107	---	---	---	EF	Above ceiling
1	14	Classroom	1006 EX 845	111	11% - 220	3%	ERV -8	ERV-8 Total 2020 CFM
1	14A	Toilet	100	---	---	---	EF	Above ceiling
1	15	Classroom	1014 EX 875	112	11% - 220	3%	ERV-8	
1	15A	Toilet	97	---	---	---	EF	Above ceiling
1	16	Classroom	1043 EX 809	73	7% - 144	3%	ERV-9	ERV-9 Toral 2086
1	16A	Toilet	EX 105	---	---	---	EF	Above ceiling
1	17	Classroom	1043 EX 927	73	7% - 144	3%	ERV-9	
1	18	Classroom	1008 EX 808	61	6% - 125	3%	ERV-10	ERV-10 Total 2024 CFM
1	19	Classroom	1016 EX 876	61	6% 125	3%	ERV-10	
1	19.01	Kiln Storage 6	EX 88	---	---		EF	
1	K.01	Kitchen	1762 EX 2568	211	127% - 232	3%	ERV-11	Total 2001 CFM
1	K.01A	Kitchen Office	116	14	127% - 232	3%	ERV-11	
1	K.01B	Serving Line	---	---	---	---	ERV-11	Part of kitchen
1	K.02	Kitchen Toilet	---	---	---	---	---	No ventilation or exhaust
1	K.03	Receiving	123	15	12% - 232	3%	ERV-11	
1	K.03A	Refr	---	---	---	---	---	

Project Name:	**Fairfield Public Schools RCx: Roger Sherman Elementary School**
Project Number:	*2020102.00.07*
Scope	**TAB Data**
Date	**[DATE]**

Zone Identification

Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA % (OA cfm)	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
1	G.01	Gymnasium	12,320	2% - 292	246	10%	RTU-2	No Room
1	G.01A	Gym Office	---	---	---	---	---	
1	G.01B	Gym Storage	117	2%- 292	2.	10%	RTU-2	
1	G.02	Boys	EX 406	---	---	---	EF	
1	G.03	Girls	EX 234	---	---	---	EF	
1	G.04	Equipment Storage	111	2% - 292	2.	10%	RTU-2	
1	A1	Classroom	894. RET 842	0	0	---	RTU A1	No control by ALC OA intake Blank off
1	A2	Classroom	960, RET 883	0	0	---	RTU A2	No control by ALC OA intake Blank off
1	A3	Classroom	1104, RET 1070	0	0	---	RTU A3	No control No OA intake
1	A3.1	Boys	249, EX 276	0	0	---	RTU TLT	No control
1	A3.2	Toilet	80, EX 100	0	0	---	RTU TLT	No control
1	A3.3	Custodian	80	0	0	---	RTU TLT	No control No OA intake
1	A3.4	Girls	264, RET 258	0	0	---	RTU TLT	
1	A4	Classroom	888, RET 841	0	0	---	RTU A6	No control OA intake Blank off
1	A4.1	Mech	126	0	0	---	RTU TLT	
1	A5	Classroom	946, RET 860	0	0	---	RTU A5	No control OA intake Blank off
1	A6	Classroom	967, RET 926	0	0	---	RTU A6	
1	---	Modular Classroom	---	---	---	---	RTU	Unit not operating

APPENDIX 5 – RCx Unit and Room Take-Off Data

Project Name:	**Fairfield Public Schools RCx**
Project Number:	*2020102.00.07*
Scope	**Room Take-Off Data**
Date	**April 20, 2022**
	Roger Sherman Elementary School

RCM, RA, JRK

Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
1	MO.01	Main Office	540	8.5	4590	4	4 SA, 2 RA		
1	MO.01A	Main Office Storage	11	8	88	0			
1	MO.02	Waiting Area	255	8.5	2168	4			
1	MO.03	Principal	205	15	3075	6	1 SA, 1 RA, FTR		
1	MO.03A	Principal Storage	11	8	88	0			
1	MO.04	Principal Conference	298	15	4470	13	2 SA, 1 RA, FTR		
1	MO.04	"Office"	200	12	2400	7	1 SA. 1 RA, FTR		
1	MO.05	Psychologist (North Conference)	247	8.6	2124	6	1 SA, 1 RA, FTR		
1	MO.06	Math/Science Teacher Office	153	8.6	1316	6	1 Sam 1 RA		
1	MO.06A	MST Storage	15	8	120	0			
1	MO.07	Main Office Toilet	53	8	424	1	1 Exh		
1	MO.08	Special Education	262	8.6	2253	9	1 SA, FTR	No RA	
1	MO.08A	Special Education Storage	23	8	184	0			
1	MO.09	Office 4	152	8.6	1307	4	1 SA, 1 RA		
1	MO.10	Office 5	155	8.6	1333	5	1 SA, 1 RA		
1	MO.11	Storage	80	8.6	688	0			
1	MO.12	Custodian	211	9	1899	1			
1	MO.12A	Custodian Toilet	30	9.6	288	1			
1	MO.12B	Custodian Storage	124	9.6	1190	4	PCAT		
1	MO.13	Health Suite	210	8.6	1806	3	2 SA, 1 RA, FTR		

Project Name:	**Fairfield Public Schools RCx**
Project Number:	*2020102.00.07*
Scope	**Room Take-Off Data**
Date	**April 20, 2022**
	Roger Sherman Elementary School

RCM, RA, JRK

Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
1	MO.13A	Nurse Lobby	90	8.6	774	1			
1	MO.13B	Health Suite Toilet	54	8.6	464	1	Exh		
1	MO.14	Nurse Office Isolation	130	8.6	1118	3	1 SA, 2 RA		
1	MO.14A	Nurse Office Isolation Storage	9	8.6	77	0			
1	MO.15	Boiler Room	928	26	24128	0			
1	AP.01	All Purpose Room	2081	20	41620	120	AHU, FTR	44x44 with Height 18 - 23'	
1	AP.01A	Platform Stage	489	20	9780	15			
1	AP.01B	Platform Storage	57	12	684	0			
1	AP.02	Storage 1	57	8	456	0			
1	AP.03	Office 1	165	9.5	1568	5	1 A, FTR with Daikin VRF		X
1	AP.04	Toilet	44	9	396	1			
1	AP.05	Boys	220	9	1980	4	FTR		
1	AP.06	Toilet	35	9	315	1			
1	AP.07	Girls	260	9	2340	4	FTR		
1	AP.08	Faculty Room	354	9.7	3434	15	VRF, FTR		
1	01	Classroom	742	9	6678	24	4 SA, 1 RA. FTR 3 VRF		
1	02	Classroom	799	9	7191	26	4 SA, 1 RA. FTR 3 VRF		
1	03	Classroom	780	9	7020	25	4 SA, 1 RA. FTR 3 VRF		
1	04	Classroom	771	9	6939	25	4 SA, 1 RA. FTR 3 VRF		
1	05	Classroom	771	9	6939	25	4 SA, 1 RA. FTR 3 VRF		

Project Name:	**Fairfield Public Schools RCx**
Project Number:	*2020102.00.07*
Scope	**Room Take-Off Data**
Date	**April 20, 2022**
	Roger Sherman Elementary School

RCM, RA, JRK

Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
1	06	Classroom	771	9	6939	25	4 SA, 1 RA. FTR 3 VRF		
1	07	Classroom	771	9	6939	23	4 SA, 1 RA. FTR 3 VRF		
1	08	Classroom	915	9	8235	29	4 SA, 1 RA. FTR 3 VRF		
1	09	Classroom Music	901	9	8109	20	6 SA, 1 RA, FTR 3 VRF		
1	09.01	Office 2	107	9	963	4	1 SA, 1 RA, FTR plus Daikin		X
1	09.02	Storage 2	74	9	666	0			
1	09.03	Storage 3	86	9	774	0			
1	09.04	Storage 4	62	9	558	0	Roof Hatch		
1	MC.01	Media Center	1364	12	16368	35	RTU 3 SA, 2 RA		
1	MC.01A	Copy Room	240	9	2160	4	2 SA, 1 RA		X
1	MC.01B	Media Classroom	271	10	2710	12	2 SA, 1 VRF	Room Cold	
1	MC.01C	Circulation Desk	1167	9	10503	10	3SA, 2 RA		
1	MC.01D	Media Center Large Storage	43	9	387	0			
1	MC.01E	Media Center Small Storage	22	9	198	0			
1	MC.02	Teaching Station A	106	9	954	4	1 SA, VRF		X
1	MC.03	Teaching Station B	109	9	981	4	1 SA, VRF		X
1	10	Classroom	852	9	7668	26	3 SA, 2 RA, FTR 3 VRF, Exh		
1	10.1	Storage 5	112	9	1008	0			
1	10A	Toilet	16	8	128	1	Exh		
1	11	Classroom	819	9	7371	23	4 SA, 1 RA. FTR 3 VRF		

Project Name:	**Fairfield Public Schools RCx**
Project Number:	*2020102.00.07*
Scope	**Room Take-Off Data**
Date	**April 20, 2022**
	Roger Sherman Elementary School

RCM, RA, JRK

Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
1	11A	Toilet	15	9	135	1	Exh		
1	12	Classroom	763	9	6867	23	4 SA, 1 RA. FTR 3 VRF		
1	12A	Toilet	15	9	135	1	Exh		
1	13	Classroom	804	9	7236	23	4 SA, 1 RA. FTR 3 VRF		
1	13A	Toilet	15	9	135	1	Exh		
1	14	Classroom	796	9	7164	24	4 SA, 1 RA. FTR 3 VRF		
1	14A	Toilet	15	9	135	1	Exh		
1	15	Classroom	774	9	6966	24	4 SA, 1 RA. FTR 3 VRF		
1	15A	Toilet	15	9	135	1	Exh		
1	16	Classroom	813	9	7317	26	4 SA, 1 RA. FTR 3 VRF		
1	16A	Toilet	15	9	135	1	Exh		
1	17	Classroom	798	9	7182	25	4 SA, 1 RA. FTR 3 VRF	Can be Open to Room 18	
1	18	Classroom	808	9	7272	24	4 SA, 1 RA. FTR 3 VRF		
1	19	Classroom	778	9	7002	23	4 SA, 1 RA. FTR 3 VRF		
1	19.01	Kiln Storage 6	111	8.8	977	0	1 Exhaust with BAS/Manual Switch		
1	K.01	Kitchen	484	8.2	3969	4	2 SA, Hood 2 Freezers		
1	K.01A	Kitchen Office	78	8.2	640	1	1 SA		
1	K.01B	Serving Line	444	8.2	3641	15	4 SA		
1	K.02	Kitchen Toilet	51	8.2	418	1			
1	K.03	Receiving	248	8.7	2158	1	1 SA		

Project Name:	**Fairfield Public Schools RCx**
Project Number:	*2020102.00.07*
Scope	**Room Take-Off Data**
Date	**April 20, 2022**
	Roger Sherman Elementary School

RCM, RA, JRK

Zone Identification

Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
1	K.03A	Refr	87	7	609	0			
1	G.01	Gymnasium	4038	23	92874	60	RTU 2 SA in Storage		
1	G.01A	Gym Office	245	12	2940	1	1 RA		
1	G.01B	Gym Storage	278	12	3336	0	1 RA		
1	G.02	Boys	56	8.8	493	1			
1	G.03	Girls	56	8.8	493	1			
1	G.04	Equipment Storage	210	12	2520	0			
1	A1	Classroom	759	7.8	5920	21	t'stat, 10 Registers		
1	A2	Classroom	742	7.8	5788	24	t'stat set 69 and 59 in spce		
1	A3	Classroom	702	7.8	5476	22	1 Registers , Room Cold	No display on Thermostat	
1	A3.1	Boys	165	7.8	1287	1			
1	A3.2	Toilet	45	7.8	351	1			
1	A3.3	Custodian	20	7.8	156	1			
1	A3.4	Girls	140	7.8	1092	1			
1	A4	Classroom	775	7.8	6045	14	10 ceiling Registers		
1	A4.1	Mech	64	7.8	499	0			
1	A5	Classroom	686	7.8	5351	24	10 ceiling Registers		
1	A6	Classroom	744	7.8	5803	22	10 ceiling Registers		
1	A7	Modular Classroom	734	7.6	5578	24	Currently Storage		

PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET

Unit Tag	**DOAS-1**	**Addition comments descriptions**
Location	Main Roof	
Serving	Classrooms 1-2	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22564	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA almost cracked open
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust running with ERW was bypass open, ODA closed. Low to No outside air being introduced	

PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET

Photos

PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET





PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET

PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET

PROJECT: 2020102.07 FAIRFIELD PUBLIC SCHOOLS – ROGER SHERMAN ELEMENTARY SCHOOL
EQUIPMENT DATA SHEET

Unit Tag	**DOAS-2**	**Addition comments descriptions**
Location	Main Roof Front	
Serving	Classrooms 4-5	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22561	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA almost cracked open
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust off with ERW off and bypass open, ODA closed. Low to no outside air being introduced	

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Unit Tag	**DOAS-3**	**Addition comments descriptions**
Location	Main Roof Front	
Serving	Classrooms 6	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22565	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 with A48 Belt	Fan section and motor very dirty
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA almost cracked open
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust off with ERW off and bypass open, ODA closed. Low to no outside air being introduced	

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Unit Tag	**DOAS-4**	**Addition comments descriptions**
Location	Main Roof Middle Left	
Serving	Classroom 9	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22563	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 with A48 Belt	Fan section and motor very dirty
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA almost cracked open
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust off with ERW off and bypass open, ODA closed. Low to no outside air being introduced	Unit rumbles upon start-up, possible bearing issue

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Unit Tag	**DOAS-5**	**Addition comments descriptions**
Location	Main Roof Front Left	
Serving	Classroom 7-8	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RQ-004-8-V-0000-359	
Serial #	201205-AYGJD03324	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 HP Direct Drive	
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 with BX 46 Belt	Fan section and motor very dirty
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 16 X 2 Pre, (2) 20 X 20 X 4	
Filter Status	Clean 4-25-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA almost cracked open
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	113.4 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust off with ERW off and bypass open, ODA closed. Low to no outside air being introduced	

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Unit Tag	**DOAS-6**	**Addition comments descriptions**
Location	Main Roof Back Left	
Serving	Classrooms 10-11	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22560	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1HP Very dirty motor/fan	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	Piping Rusty
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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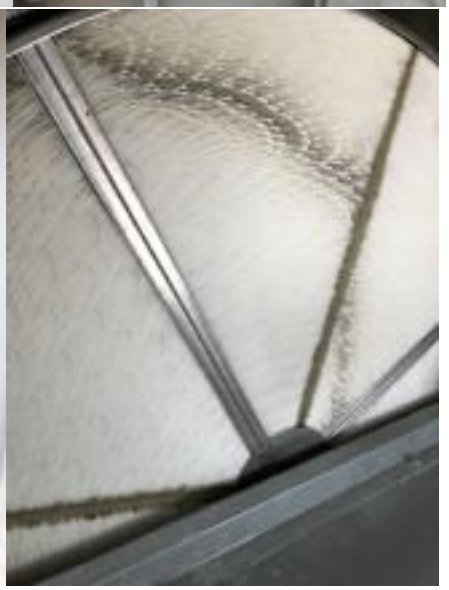

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Unit Tag	**DOAS-7**	**Addition comments descriptions**
Location	Main Roof Back Center	
Serving	Classrooms 12	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22567	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 Hp	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	Piping Rusty
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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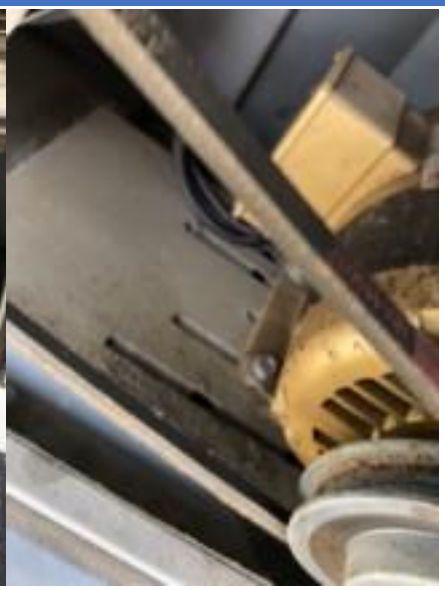

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Unit Tag	**DOAS-8**	**Addition comments descriptions**
Location	Main Roof Back Left	
Serving	Classrooms 13-14	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22559	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 Hp	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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Unit Tag	**DOAS-9**	**Addition comments descriptions**
Location	Main Roof Back Right	
Serving	Classrooms 17-18	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22566	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 Hp	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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Unit Tag	**DOAS-10**	**Addition comments descriptions**
Location	Main Roof Back Right	
Serving	Kitchen Serveries	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3L9	
Serial #	201205-ANGJ22562	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 Hp	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	168 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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Unit Tag	**DOAS-11**	**Addition comments descriptions**
Location	Main Roof Right	
Serving	Kitchen	
Config/Style	Packaged Heating DOAS with ERW	
Mfr.	AAON	
Model #	RN-010 -8-0-0000-3K9	
Serial #	201203-ANGJ21334	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	2 hp Direct Drive	Behind Door with Duct Smoke on Panel. Did not open for concern of DSD trip
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1 Hp	A-48 Belt
RF VFD Data		
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	ODA Closed
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	120 MBH
Heating Coil Condition	Burners Clean but header showing age	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust Off with ERW and bypass open, ODA closed. Low to No outside air being introduced. ERW Dirty	

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Unit Tag	**RTU-1**	**Addition comments descriptions**
Location	Main Roof	
Serving	Central Offices	
Config/Style	Packaged Heating and Cooling VFD ERW	
Mfr.	AAON	
Model #	RN010 -8-0-EA09-3L9	
Serial #	Not readable	
Age (years)	2012	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	3 hp Belt Drive	Behind Door, may be 2 HP per handwriting
SF VFD Data	YASKAAWA J1000 Series	
RF Qty/HP	1	
RF VFD Data	YASKAAWA J1000 Series	
Filter Data (Size Quantity)	(1) 16 X 25 X 4 Pre, (4) 20 X 16 X 4	
Filter Status	Clean 4-26-22 changed	
Controls Type	JCI FX Explorer	
Controls Mfr.	JCI	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	
Damper Status	Need Cleaning and Lubrication	
Heating Type	Natural Gas	
Heating Coil Condition	Burners Clean	
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	Should be cleaned	
Notes:	Power Exhaust running yet ERW was Off and Bypass Closed. No outside air being introduced	

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Unit Tag	**RTU-2**	**Addition comments descriptions**
Location	Gym Roof	
Serving	Gym	
Config/Style	Packaged Heating and Cooling	
Mfr.	Daikin	
Model #	MPS030FG2FV1CYBVDM	
Serial #	FB0U200602439	
Age (years)	2021	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	10 Hp	
SF VFD Data	HVAC VFD	
RF Qty/HP	1	
RF VFD Data	HVAC VFD	
Filter Data (Size Quantity)	(8) 24 X 24 X 2	New filters being sucked in due to Pressure Drop
Filter Status	Clean 4-25-22 changed	
Controls Type	Packaged MicroTech III BACnet	
Controls Mfr.	Daikin	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	
Damper Status	Good	
Heating Type	Natural Gas Dual Modulating Burners Hi/Lo	
Heating Coil Condition	Burners Clean	
Cooling Type	DX 3 Compressors	
Cooling Coil Condition		
Drain Pan Status	Clean	
Notes:	Unit as new condition	

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Unit Tag	**RTU-3**	**Addition comments descriptions**
Location	Central Rear Roof	
Serving	Cafe	
Config/Style	Packaged Heating and Cooling	
Mfr.	Daikin	
Model #	MPSH15BGCS35V	
Serial #	F182000185	
Age (years)	2020	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	5 Hp	5L 770 or B74 Single belt
SF VFD Data	Schneider HVAC VFD	
RF Qty/HP	1	
RF VFD Data	Schneider HVAC VFD	
Filter Data (Size Quantity)	(8) 20 X 25 X 2	
Filter Status	Clean 4-25-22 changed	
Controls Type	Packaged RTU-C	Do not see JCI FX or BACnet controller
Controls Mfr.	Daikin	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	
Damper Status	Good	
Heating Type	Natural Gas Dual Modulating Burner	284,000 BTY/Hr
Heating Coil Condition	Burners Clean	
Cooling Type	DX 2 Compressors	
Cooling Coil Condition		
Drain Pan Status	Clean	
Notes:	Unit as new condition	

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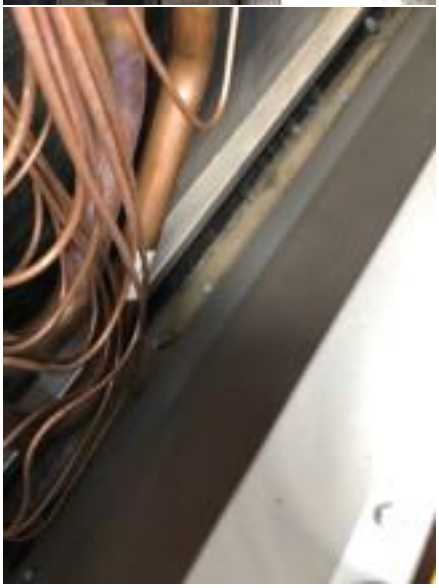

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Unit Tag	**RTU-4**	**Addition comments descriptions**
Location	South Main Roof	
Serving	Media Center	
Config/Style	Packaged Heating and Cooling	
Mfr.	Daikin	
Model #	DPS007AAHMG2DW-3	
Serial #	FB0U200700616	
Age (years)	2021	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	4 Hp 300 Watt EBM Pabst RG3400-AQ29-16	
SF VFD Data	Integral	
RF Qty/HP	2	
RF VFD Data	Integral	
Filter Data (Size Quantity)	(6) 18 X 25 X 2, (4) 26 X 22 X 2	New filters being sucked in due to Pressure Drop
Filter Status	Clean 4-26-22 changed	
Controls Type	Packaged MicroTech III BACnet	
Controls Mfr.	Daikin	
Economizer	Packaged with Power Exhaust	
CO_2 DCV	NA	
Damper Styles	Opposed	
Damper Status	Good	
Heating Type	Natural Gas	
Heating Coil Condition	Burners Clean	
Cooling Type	DX 2 Compressors	
Cooling Coil Condition		
Drain Pan Status	Clean	
Notes:	Unit as new condition	

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Unit Tag	**RTU-A**	**Addition comments descriptions**
Location	Modular	
Serving	A6	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B6HX036A25A	
Serial #	W1G4871848	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	3/4 Hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat not?
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Dirty	
Drain Pan Status	Should be cleaned	
Notes:		

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Unit Tag	**RTU-B**	**Addition comments descriptions**
Location	Modular	
Serving	A1	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B6HX036A25A	
Serial #	W1G4871852	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat ?
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Dirty	
Drain Pan Status	Should be cleaned	
Notes:		

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Unit Tag	**RTU-C**	**Addition comments descriptions**
Location	Modular	
Serving	A5	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B6HX036A25A	
Serial #	W1G4871850	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ Hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat ?
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Dirty	
Drain Pan Status	Should be cleaned	
Notes:		

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Unit Tag	**RTU-D**	**Addition comments descriptions**
Location	Modular	
Serving	A2	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B6HX036A25A	
Serial #	W1G4871854	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ Hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat ?
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Very Dirty	
Drain Pan Status	Should be cleaned	
Notes:		

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Unit Tag	**RTU-E**	**Addition comments descriptions**
Location	Modular	
Serving	A4	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B6HX036A25A	
Serial #	W1A4338021	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ Hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat 7
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Dirty	
Drain Pan Status	Should be cleaned	
Notes:		

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Unit Tag	**RTU-F**	**Addition comments descriptions**
Location	Modular	
Serving	A3	
Config/Style	Packaged Heat Pump	
Mfr.	York ??	
Model #	XN036C00A2A1AAA1A1	
Serial #	N2B2029002	
Age (years)	2022	
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ HP	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(1)20 X 30 X 1, (1) 14 X 25 X 1	
Filter Status	Clean 4-26-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	NA	
CO_2 DCV	NA	
Damper Styles	Not Provided	
Damper Status		
Heating Type	Heat Pump	Emergency Electric Heat not!
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition		
Drain Pan Status	No Condensate Trap Installed	
Notes:		

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Unit Tag	**RTU-G**	**Addition comments descriptions**
Location	Modular	
Serving	Restrooms	
Config/Style	Packaged Heat Pump	
Mfr.	York ?	
Model #	B1HX048A25A	
Serial #	N0C9658549	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208 / 60 /3	
SF Qty/HP	¾ Hp	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(2)14 X 22 X 1	Change access restricted with electrical conduit
Filter Status	Clean 4-25-22 changed	
Controls Type	Local Programmable Thermostat	
Controls Mfr.		
Economizer	Packaged Minimum ODA only	
CO_2 DCV	NA	
Damper Styles	Flapper Blades	ODA Closed
Damper Status	Need Cleaning and Lubrication	Poor condition
Heating Type	Heat Pump	Emergency Electric Heat 7
Heating Coil Condition		
Cooling Type	DX 1 Compressors	
Cooling Coil Condition	Dirty	
Drain Pan Status	Should be cleaned	
Notes:	Overall unit shows signs of age and is very dirty internally	

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