

# Tomlinson Middle School

200 Unquowa Rd  
Fairfield, CT 06824



**FAIRFIELD PUBLIC SCHOOLS**

**T TOMLINSON MIDDLE**



## **Fairfield Public Schools Recommissioning (RCx) and Testing, Adjusting, & Balancing (TAB) Study** van Zelm Project # 2020102.00 (04-TMS) July 06, 2022

VAN ZELM HEYWOOD & SHADFORD, INC.

1200 CONVERSE STREET  
LONGMEADOW, MA 01106  
P: 617.218.9976

10 TALCOTT NOTCH  
FARMINGTON, CT 06032  
P: 860.284.5064  
[www.vanzelm.com](http://www.vanzelm.com)

862 BRAWLEY SCHOOL ROAD, SUITE 207  
MOORESVILLE, NC 28117  
P: 704-799-7275





## **TABLE OF CONTENTS**

EXECUTIVE SUMMARY .....	1
EVALUATION.....	3
2015 International Mechanical Code (IMC) Compliance.....	3
Outside Air Flow and Air Change Rate Findings .....	4
Outside Air Flow Improvement Recommendations .....	8
Control Sequence Update Recommendations.....	9
Equipment Upgrade or Replacement Recommendations .....	10
CONCLUSIONS.....	13

### APPENDICES

APPENDIX 1 – Issues List

APPENDIX 2 – Ventilation Data Calculations

APPENDIX 3 – Roof Map

APPENDIX 4 – TAB Airflow Survey Data

APPENDIX 5 – RCx Unit and Room Take-Off Data

## **Tomlinson Middle School**

### **FAIRFIELD PUBLIC SCHOOLS RECOMMISSIONING (RCx) AND TESTING, ADJUSTING, & BALANCING (TAB) STUDY**

#### **EXECUTIVE SUMMARY**

Tomlinson Middle School was deemed to be school priority number four by Fairfield Public Schools behind the nearby Fairfield Ludlowe High, Roger Ludlowe Middle, and Timothy Dwight Elementary 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.

Tomlinson Middle School is located at 200 Unquowa Rd., Fairfield and serves as an educational facility for 613 students as of the May 2022 census and up to 183 faculty and staff. In 1914, up to 78 students from Fairfield were attending schools in nearby Bridgeport and Westport since Fairfield did not offer educational services beyond grade 8. Provisions were made at the time to accommodate up to 46 students in the basement of Sherman Elementary until 1916 when Ms. Annie Burr Jennings, first lady of Fairfield at the time, purchased and then donated the “Brown Estate” property on Unquowa Road to Fairfield to be used as a high school for up to grade 10. This original building was constructed of wood and had only twelve rooms. This building was known colloquially as the “Little Red Schoolhouse” and by 1917 had acquired all four grades associated with a high school, 9-12.

Under the leadership of then School President William E. Smith, two portables were constructed in the back of the school to take care of the increasing student body. These portables were eventually moved to Holland Hill School but they would be returned out of necessity and used in the 1960s as an annex. In March 1924, ground was broken for the south wing of the school, the first of many additions and renovations, attached to the original wooden building and included the original gymnasium (presently the Tomlinson Library). The next addition comprised six large rooms: the principal's office and teachers' rooms with corridors that led to the old building in the rear and to the gymnasium wing. The second floor housed biology, history and science departments. The basement held the Sewing and Domestic Science rooms and a cafeteria.

On September 3, 1925, the building was rededicated as Roger Ludlowe High School (named after Fairfield's founder). Starting in the spring of 1930, construction of the north wing began. Once completed, this addition consisted of the auditorium, new cafeteria, and ten classrooms plus additional basement rooms. The auditorium was named after William E. Smith, the Superintendent of Schools and the first principal of the high school. The north wing addition was completed in 1931, adding ten classrooms on two floors, each with a main corridor which was at right angles to a corridor that extends from the main building to the old wooden building at the south end. The school at this point had a capacity of 850 students, the projected enrollment for the years 1932-33.

By 1938, the school again was overcrowded and it became necessary to send members of some classes to the old Sherman School downtown. Three classrooms were reserved for the high school. In the spring of 1942, the 'Little Red Schoolhouse' portion was demolished and the east wing completed with shops, a library, and additional classrooms. This addition included three floors on the north and south sections, but no second and third floors in the center. First and second floor connecting corridors were added. In 1944 a second floor was built on the west center section. This addition included the Health Department and the Electrical Shop with new corridors connecting east and west wings. Once again overcrowding became a

concern so, in 1952, it was necessary to hold two sessions of school. This arrangement continued until June 1956 when a second high school, Andrew Warde Senior High (now Fairfield Warde High School) was opened. Sometime in the late 1950s, the second and third floor center section was completed.

1962 marked the last year Roger Ludlowe High School existed as a high school. The Mill Plain School down the road was converted to a Senior High School, retaining the name of Roger Ludlowe High School (Now Fairfield Ludlowe High School) while this school transitioned to Tomlinson Junior High School, named after Gideon Tomlinson, a prominent resident of Fairfield that served as a member of Congress, 25th Governor of Connecticut, and as a U.S. Senator. In 1977, the south wing was completely renovated—the gymnasium became the library and a new gymnasium and more classrooms below the original basement level were added. In 1984, the sixth grades from several of the surrounding schools were added to the school and building was renamed Tomlinson Middle School. On January 26, 2004, the district approved the latest renovation of the school, which began in June 2004.

Since the 2004 renovations, the building has only undergone minor improvements or regular maintenance. The school ventilation systems comprise ten (10) Rooftop Air Handling Units the majority of which with Energy Recovery Wheels (RTU-1 – 10) and inoperative UV systems, one rooftop Energy Recovery Unit with Cross-Flow Heat Exchanger (HX-1), one combustion Makeup Air Unit (MAU-1), and four Air Handling Units (AH/HV-1 & 2, AHU-11, AHU-12). Exhaust fans are utilized for various purposes including, but not limited to, toilet exhaust, kitchen exhaust, mechanical/electrical space ventilation, etc.. Some spaces 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, particularly because all occupied spaces are served by units that should be maintaining a positive building pressure relative to the outside and would prevent air from entering through any open windows. The Building Automation (BAS) control system had consisted of the original legacy Johnson Controls (JCI) Metasys from the 2004 renovation at the time of our field findings study, with a current upgrade project in process to upgrade all DDC controllers, control logic and server-based graphical user interface Automated Logic (ALC) system being installed as a component of the selected control upgrades for six of the schools in the district. Most of the air handling units have Factory Trane DDC electronic controls packages with limited interoperability integration with the ALC system, however the functionality of this setup is lacking in many regards. At this time, it remains unclear as to the proposed ALC sequences of operations and when the legacy systems input/output (IO) devices, many of which are failed will be replaced. VanZelm Engineers would strongly suggest that the HVAC systems and controls be recommissioned along with a building-wide rebalancing effort for airside equipment.

van Zelm began our on-site RCx field inspection starting on March 30, 2022, and TAB review starting on April 28, 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 considered unoccupied zones. Improper levels of exhaust would drive a negative building pressure situation further negative.. 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 subpar and, in some cases, clusters of rooms were not provided with any outside air. This is not surprising since this is one of the older buildings in use by the district for educational purposes, has had many additions and changes throughout its many years of service, and mechanical equipment seems to have been neglected for many years. 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), not least of which is an overhaul of the mostly non-functional control system and immediate repair of mechanical devices like outside air dampers. Fairfield Public Schools is already somewhat aware of these concerns since the controls upgrade is in progress, but the extent of the problems might not have been known prior. As it is, the building has been operating in its current state for years so the success of this initiative is highly dependent on appropriate follow-through with commissioning, preventative maintenance, and a full review of the building to uncover any other concerns or deficiencies.

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, approximately half 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 would be considered a worst-case scenario only, and even as such, there are some areas within the building that do meet and exceed these ventilation requirements by a significant amount. However, the control system and operational condition of all unit control dampers functionality is questionable at best, impacting the results of outdoor air flow control and TAB measurements. Many units are plagued with operational issues and cleanliness concerns so their current use is not within ideal parameters.

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.

Although this is not a method that this building appears to be designed for, 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, this building has air handling units with outside air dampers that feed all occupied spaces and no rooms that rely exclusively on window operation for ventilation.

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, bacterial, and airborne 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 36,297 CFM. The TAB process revealed that only 37,368 CFM of outside air is delivered to the spaces, resulting in a 1,737 CFM surplus or 103.0% of the required minimum flow. However, the ventilation calculations reveal that only 51.1% of the occupied zones (70 of 137) actually met the requirements. This means there is a huge disparity in zones either receiving far too little ventilation or far too much. For example, the combustion makeup air unit MAU-1, which serves the unoccupied boiler room, provides 6,222 CFM outside air, which inflates the total building ventilation number. This unit primarily runs to cool the space and is interlocked with boiler run operation if starter is left in Auto Mode. Accounting for this would adjust the outcome to a measured outside air of 31,146 CFM: a 4,485 CFM deficit and 85.8% of required ventilation. A significant quantity of spaces received little ventilation, largely due to a malfunctioning control system and inoperable outside air dampers. 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. A summary of those findings can be found below and outlines as issues for correction in the appendices:

- AH-1/HV-1 serves the main gymnasium. The ventilation calculations reveal that the main gym is severely under ventilated, being provided with 18.9% of the required outside air flow (420 CFM of the required 2,219 CFM). This unit has a total airflow of 6,968, so there is potentially room to increase the OA percentage but there are issues with the damper in this unit like many others. Even if the total OA flow is corrected, the gym is not in constant use so this unit would benefit

greatly from a demand control ventilation reset protocol to only bring outside air in when space CO<sub>2</sub> increases while otherwise handling thermal loads as normal.

- AH-2/HV-2 serves the Project Adventure space. Like with the main gym, this space is severely under ventilated, receiving only 20% of the required airflow (136 CFM of 681 CFM minimum required). However, the total unit capacity is below the calculated ventilation requirement (only 558 CFM), so a change to the unit would need to be considered. Demand control ventilation would also be helpful in this space.
- AHU-11 serves the band/music education spaces in the Field level basement area. This unit fails to provide any outside air to the spaces. It is suspected that a fire damper might be closed preventing this airflow, as well as damper linkages found broken/need adjustment on the RA/OA dampers.. These spaces have fluctuating periods of high occupancy, so a lot of ventilation is required for relatively small periods throughout the day. This should be investigated further and corrected quickly.
- AHU-12 is a makeup air unit that feeds the kitchen and server. While this unit was providing the correct quantities of ventilation when enabled, this unit was electrically turned off and we were informed the unit is left in the off position for operational reasons for many years. The location of the unit makes service and maintenance incredibly difficult since it is above the dry storage shelves of the kitchen. This access points for this unit should remain clear, or other appropriate means of access should be provided. This unit does have a significant effect on the building performance regarding ventilation.
- MAU-1 serves the boiler room as a combustion air makeup unit. This unit does not directly affect the occupied spaces of the building, but it does send over 6,000 CFM of outside air into the boiler room as makeup. It is not clear if this quantity of air is necessary, and the unit could be turned down to only supply what is actually needed for interlocked combustion and room cooling.
- HX-1 serves the fan coil units (FCUs) that feed the tech education spaces in the Field level basement area. This unit uses a crossflow heat exchanger as opposed to the other rooftop units which generally utilize an energy recovery wheel. HX-1 was originally not found running but it was enabled when readings were taken..
- RTU-1 serves classrooms spanning all three floors in the north corner section of the building. This unit is presumably capable of 100% outside air operation and has an energy recovery wheel, steam heating coil, and DX cooling. While many of the spaces served by this unit did meet code, clusters of rooms were not satisfied and generally the system was found imbalanced. A common theme among the RTUs, including this one, is that many interior components are dirty, mechanical equipment like the dampers do not move, and UV lights installed during a previous project interfere with unit functionality. While these items won't be repeated for each unit here, each of these concerns are broken out in the Issues List appendix and should be corrected.
- RTU-2 serves classrooms spanning all three floors in the east section of the building. This unit is presumably capable of 100% outside air operation and has an energy recovery wheel, steam heating coil, and DX cooling. None of the occupied spaces served by this unit received



appropriate ventilation, falling short by almost 1/3 of the minimum requirement. The damper minimum position was only a 20% command resulting in 14.6% of the air delivered as outside air. The minimum for this unit should be increased considerably.

- RTU-3 serves new Science wing classrooms spanning all three floors in the southeastern section of the building. This unit is presumably capable of 100% outside air operation and has an energy recovery wheel, steam heating coil, and DX cooling. The unit sections were separated such that the outside air was bypassing the energy recovery wheel section into the RA/EA section. Despite that, this unit provided the correct amount of ventilation except for two anomalous spaces where no airflow was provided at all. Much like RTU-1, this system needs to be rebalanced and investigations into the missing supply air for Classroom 233 and 322 should be performed.
- RTU-4 serves the Media Center. This unit has mixing dampers, a steam heating coil with coil bypass, and DX cooling. This unit met code requirements and could be turned down some, since the associated spaces were slightly overventilated. Additionally, Media Centers are generally good candidate zones for Demand Control Ventilation, much like the gyms. Implementing this would result in some energy savings without sacrificing performance.
- RTU-5 serves the Cafeteria. This unit is presumably capable of 100% outside air operation and has an energy recovery wheel, steam heating coil, and DX cooling. However, this unit was not operational at the time of the visit and had not run for at least many months. This unit will need to be reviewed for performance after all necessary repairs have been completed.
- RTU-6 serves classrooms, including a food lab and faculty room, and the administration area. These rooms span all three floors in the northwestern section of the building. This unit has mixing dampers, a steam heating coil with coil bypass, and DX cooling. The spaces served by this unit all met code but all of them received almost double the required ventilation, which means the outside air component of this unit could be turned down to save energy. This might not be easy to do though since there appears to be a communication issue where the damper command is only 15% but outside air comprised 73% of the total unit airflow. This outside air damper is not operational though the UV light installation for this unit specifically interferes with the return air dampers.
- RTU-7 serves classrooms spanning all three floors in the center west section of the building. This unit has mixing dampers, a steam heating coil with coil bypass, and DX cooling. This unit largely met code requirements, providing about half of its total airflow as outside air. Only 4 of the 22 spaces served by this unit did not meet code, three of which were only shy about 10 CFM and one other space that received no supply air, though the cause for that is unknown. As with other units that tend to meet code, the system is imbalanced with some spaces just barely passing and other being overventilated by 800%.
- RTU-8 serves the Auxiliary Gym. This unit operates at constant volume, has mixing dampers, a steam heating coil with coil bypass, and DX cooling. This unit needs to just about double its outside air delivery to meet code. The unit, like most, was not communicating with the BAS so the exact damper command could not be determined but the output was only 8.4% of total airflow, which means there is likely room for improvement. Control and mechanical issues exist

for this unit as well including access issues to the duct-mounted heating coil, so these need to be resolved.

- RTU-9 serves the auditorium including the stage and balcony. This unit is presumably capable of 100% outside air operation and has an energy recovery wheel, steam heating coil, and DX cooling. The Auditorium was severely under ventilated but is also not in constant use. The lack of DCV sequences in this building seems to indicate that there isn't an automatic outside air turndown for when the space is empty, nor will it increase when in full occupancy (approximately 760 by chair count). There were many physical issues with the unit as well, including mismatched fan belts, dirty interior, blocked dampers, etc.. The Auditorium is possibly the best case use for a DCV sequence since it might only be used once or twice monthly
- RTU-10 serves the Locker Rooms, though these spaces are currently used as storage rooms, and some gym offices. This unit uses a crossflow heat exchanger with bypass as opposed to the other rooftop units which generally utilize an energy recovery wheel, and the unit has a steam heating with bypass but no cooling coil. The spaces this unit serves are drastically overventilated, made worse by the fact that both locker rooms are not in use for their original purpose anymore. These spaces are mostly converted into extra storage space, possibly considering the reduced use of locker room spaces in a middle school environment. The unit was also running at 100% outside air with no recirculation. The only non-locker room spaces fed by this unit are the gym offices, both of which might have at most two people in either one at any particular time. This unit could potentially be turned down to minimum fan power and airflow entirely unless the locker rooms are repurposed or put back into use.

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<sup>2</sup> room with 10 ft ceilings will have a volume of 10,000 ft<sup>3</sup>. If 250 CFM is delivered to this space, that results in 15,000 ft<sup>3</sup> 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 4.896 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 and reduce total airflow to save on energy.

When considering the OACH, the building received 1.543 outside air changes. This can be further broken out by spaces that meet or fail to meet code. Among the spaces that failed to meet code, the OACH was 0.385; for spaces that at least met or exceeded code, the OACH was 3.619. The large disparity in these numbers indicates poor control and high system imbalance, as there were numerous inoperable dampers and adjacent zones with wildly different measured flows. 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 met in this building. The nurse office and

exam spaces met all airflow requirements and achieved 3.066 and 5.585 OACH respectively, while both received 6.250 total ACH.

<b>Total ACH (RA + OA)</b>	<b>Total OACH (OA/EA)</b>	<b>OACH for zones that do <u>not</u> meet code</b>	<b>OACH for zones that meet code</b>
4.896	1.543	0.385	3.619

### **Outside Air Flow Improvement Recommendations**

Immediately address the units delivering insufficient outside air. Any unit with malfunctioning or broken dampers should be repaired for smooth operation and tight closures, followed up with the assistance of a control technician and TAB Contractor to confirm proper control operation and positioning of the dampers for meeting code ventilation requirements in the spaces. This alone will bring some quantity of outside air to spaces that currently have none and will necessarily improve building performance as a result. The HVAC systems should holistically be rebalanced to current design requirements after the BAS control system has been upgraded with new end devices where needed. Any malfunctioning UV lights or lights that obstruct damper operation should be removed or relocated.

All unit and ductwork interiors including components should be cleaned, and moving parts should be lubricated and checked for full-range operation. Filter change frequencies should be increased, adjusted by unit based on loading. More frequent reviews of the units should be performed to catch malfunctioning of broken equipment such as fans, energy recovery wheels, dampers, and control valves to maintain good, continual operability of the systems providing ventilation.

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 of previous district 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:

- 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. Generally, more is 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 scheduled to be changed at the time of inspection as the last change recorded was October 2021, and almost all of them were very dirty, which 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.
- 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, any units with MERV 13 filters in both final and pre-filter slots should be changed so that MERV 8 filters are the pre-filters. Having two of the same efficiency filters in series does not significantly improve the filtration efficiency and mostly just reduces total airflow. MERV 8s in the pre-filter bank act as an inexpensive shield for the more expensive MERV 13 or 14 filters.
- Provide humidification to maintain 40% RH during the heating seasons, if possible.
- Provide 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**

At the time of our study and TAB there was no BAS control as the JCI system was removed and all HVAC Systems were either operating in manual or in whatever control state that the Trane packaged controls allowed.

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:

- Immediately address the lack of visibility and the inoperability of dampers, since the current arrangement provides the school with little means to manage airflow to address thermal control, never mind adjustments required to meet ventilation requirements prescribed by code.
- Confirm the proper operation of all equipment controllers through a commissioning process and repair or replace all faulty end Input/Output devices. The controls system upgrade should be completed at this time though the revised Sequences of Operations have not been submitted.
- Look to program units to provide a pre and post occupancy purge for all occupied spaces.

- Generally, increase airflow to each space or decrease if the supplied air is significantly beyond necessary levels. Decreasing air to some locations might seem counterintuitive but some zones are being supplied with significantly more than 100% of what is required, so backing these down will help move air to where it needs to go. This item should not be addressed without a certified TAB contractor to verify flow adjustments are correct.
- Increase the minimum OA damper position for each unit, where possible if DCV is not implemented (see final bullet point)
- 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 Supply Air Temperature (SAT) Reset regulation for air handling units
- Adjust unit operational schedules to match actual occupancy times and adjust airflow levels based on use.
- Implement CO<sub>2</sub> 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 previous installation of UV lights meant to help address indoor air quality has resulted in an improper placement of said units. These lights and brackets often interfere with the internal unit dampers, forcing a system that already has issues with control to have further reduced capabilities when it is functioning. Additionally, some of the UV lights were found disconnected, broken, or abandoned in place, so not only is the air not necessarily being sterilized but this damper interference does not have any positive side. The immediate relocation of the UV lights or removal in such cases where they cannot be relocated should be performed. This system would need to be commissioned properly if it is intended to be used as it is unclear if any services have been completed post-installation.

Where any building areas are not meeting ventilation requirements due to a lack of mechanical ventilation, if any units are determined to be undersized, a unit is otherwise in a state of disrepair, or for any units that need to be replaced, we recommend considering Energy Recovery Ventilators (ERV). Energy Recovery Ventilators are packaged heat recovery units that mostly utilize an air to air heat exchanger to recover waste heat from the exhaust air and transfer it to the outside air, powered by supply and exhaust air fans. This school already has many units equipped with this capability, though their operation and control are in various conditions. ERVs require ducted outside and exhaust air to the outside of the building; the inlet and exhaust air openings should be at least 10 feet apart to comply with the Building Code. Depending on the location, general exhaust fan ductwork could be repurposed for these units. There are two main types of air-to-air energy recovery units: energy wheel and cross-flow heat exchangers. Energy wheel units tend to be more expensive and have some additional operating costs due to the wheel motor, but they have higher heat transfer efficiency than cross-flow units. Both styles of units require filters to protect the heat exchanger media and operate best during peak load conditions.

Sometimes an existing unit can be retro-fit with some form of heat recovery system, but it is highly dependent on the unit configuration and requires engineering calculations to determine sizing, including if the current unit fans can accommodate the increased static pressure losses that would be incurred.

Generally, the more outside air that can be supplied to occupied areas, the better. 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.

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 Recommissioning of this school. 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. Where any of these units need to be replaced, we recommend considering a unit with some form of energy recovery (either a wheel or cross-flow heat exchanger). This will conserve additional energy and will still allow for systems to operate with more outside air.

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

- Where any unit only has a 4" filter, upgrade the air filters to 4" MERV 13 and add in a 2" pre-filter rack with MERV 8 pre-filters.
- 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.
- All existing filters should be replaced with the new filters of the same style. None of the currently installed filters were identified in acceptable condition during the time of the evaluation.



- 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.
- 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.
- For any defunct units or disabled units needing serious repair or replacement, consider replacing with a unit that has energy recovery (either a wheel or cross-flow heat exchanger). This might require changes to the ductwork or balance of the air system since replacing a mixed air unit with a 100% OA unit might result in less total airflow required.
- 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. 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: 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.

## **CONCLUSIONS**

While Fairfield Public Schools may have taken measures in the past to address previous identified deficiencies regarding the recommended proper filtration upgrades for indoor air quality (IAQ) improvements, this study found that the Tomlinson Middle School is challenged due the operational condition of systems to fully meet the current minimum ventilation requirements per 2015 IMC. 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, fully correcting all malfunctioning controls, and generally increasing outside airflow throughout the building.

We highly recommend further evaluation to be performed including whole-building Recommissioning, BAS controls upgrade and rebalancing, possibly including engineered ventilation calculations/modifications aid in code compliance and generally better working order.

T:\2020\2020102.00\z\_CX\_Department\Schools Working Folder\04 Tomlinson MS\07 Report\Report Pieces\04 - TMS RCx & TAB Report Narrative.docx

## **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 RCx inspections we performed as part of this study were undertaken on March 30, 2022, and TAB inspections were undertaken on April 28, 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. One specific issue that might have been addressed is filter changes within the air handling equipment. 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 (98)
	Open	001 Music Classroom	Airflow	Outside air for this space is normally provided by HX-1, but this unit was not running at the time of inspection
	Open	002 Art Classroom	Airflow	Outside air for this space is normally provided by HX-1, but this unit was not running at the time of inspection
	Open	003 Storage	Airflow	Outside air for this space is normally provided by HX-1, but this unit was not running at the time of inspection
	Open	031 Band Room	Airflow	It appears that a fire damper might be closed, restricting airflow to this space
	Open	103 Cust	Airflow	No supply air from or return air to RTU-1 was provided to this space.
	Open	130 Fitness Center	Odor	There is an odor in this room that smells like hydraulic oil
	Open	203 Cust	Airflow	No supply air from or return air to RTU-1 was provided to this space.
	Open	229 Storage/Office	Airflow	No supply air from or return air to RTU-3 was provided to this space.
	Open	230 Men	Airflow	The unit associated with this space was not running
	Open	233 Classroom	Airflow	This space was measured as receiving no airflow at all even though nearby rooms from the same unit (RTU-3) were and were meeting code.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	245 Classroom OT/PT	Airflow	This space was measured as receiving no airflow at all even though nearby rooms from the same unit (RTU-7) were and were mostly meeting code.
	Open	247 Aux Gym	Airflow	The damper for this associated unit was observed closed
	Open	265 Office	Occupant Comfort	Occupant complained about lack of air
	Open	294 Lobby	Airflow	No mechanical ventilation is provided to this space
	Open	344 Classroom	Installation	One of the RGDs required for proper space circulation was observed not installed.
	Open	Air Handling Equipment	Cleanliness	At the time of the survey, we found most of the coils and energy recovery wheels on many units were dirty and in need of professional cleaning.
	Open	Air Handling Equipment	Dampers	Air handling equipment dampers were found in various conditions. All dampers should be checked to be cleaned, lubricated, and repaired.
	Open	Air Handling Equipment	Filters	At the time of the survey, all unit filters were dirty and needed to be changed. It is our understanding that the PM company in charge of filter changes would be coming around to all schools soon, but filter change frequency updates should be considered
	Open	Air Handling Equipment	UV Lights	UV lights were installed in many of the units but it was observed that the installation process did not take into account the swing ranges of the outside air dampers. As such, many of these dampers cannot move as they become jammed on the UV light hardware. UV lights that interfere with the unit operation in any way need to be adjusted to allow for full operation, or removed if such adjustment is not possible.
	Open	Air Handling Equipment	UV Lights	Most instances of UV light installations were found unplugged or coming loose from the

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
				supports due to poor fasteners. If the intent was to utilize these for air cleaning, then they are currently only getting in the way
	Open	AH-1/HV-1	Main Gym	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	AH-1/HV-1	Main Gym	The heating coil for this unit is dirty and needs to be cleaned.
	Open	AH-1/HV-1	Main Gym	The Gymnasium was significantly under ventilated, being provided with less than 20% of what is required. Gym spaces have ventilation requirements based on floor area alone instead of a combination of population and floor area. The unit had a total airflow of 6968 CFM, min required OA flow of 2219 CFM, and was found only providing 420 CFM outside air.
	Open	AH-2/HV-2	Project Adventure	The heating coil for this unit is dirty and needs to be cleaned.
	Open	AH-2/HV-2	Project Adventure	Project Adventure was significantly under ventilated, being provided with only 20% of what is required. Gym spaces have ventilation requirements based on floor area alone instead of a combination of population and floor area. The unit had a total airflow of 558 CFM, min required OA flow of 681 CFM, and was found only providing 136 CFM outside air. In light of these numbers, it appears that this unit could never meet the requirements of this space unless the total unit airflow could be increased significantly.
Corrected 03/30/22	Closed	AHU-11	Band	During the survey, this unit was found operating but had damper linkages disconnected with all dampers closed. However, we were with maintenance staff at the time and they were able to correct this immediately.
	Open	AHU-11	Band	At the time of inspection, the filters for this unit were dirty and needed to be changed.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	AHU-11	Band	Filter racks were missing the end plates used to prevent filter bypass.
	Open	AHU-11	Band	The heating coil for this unit is dirty and needs to be cleaned.
	Open	AHU-11	Band	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	AHU-11	Field Level Rooms	This unit feeds a number of FCUs that, in turn, supply the associated band/music spaces. None of these spaces met code and most of them did not receive any outside airflow despite the unit running. This should be investigated as subterranean spaces are more difficult to make equipment adjustments for.
	Open	AHU-12	Kitchen/Servery	The filters were cleaner than expected, indicating the unit does not appear to run as frequently as expected for this space.
	Open	AHU-12	Kitchen/Servery	The unit was not running and not providing ventilation to Cafeteria and Kitchen to offset KEF operation.
	Open	AHU-12/KEF-1	Kitchen/Servery	The KEF was not running during school lunch period during the time of inspection
	Open	FCU-F8, Typical of 13	Orchestra 020	Typical of 13: At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	FCU-F8, Typical of 13	Orchestra 020	Typical of 13: The heating coil for this unit is dirty and needs to be cleaned.
	Open	FCU-F8, Typical of 13	Orchestra 020	Typical of 13: The cooling coil for this unit is dirty and needs to be cleaned.
	Open	FCU-FX, Typical of 13	Field Level Rooms	Rooms in the "Field" level served by FCUs generally do not meet code and in most cases provide no measured outside air to the spaces. Some of these spaces are served by AHU-11, which was also not delivering outside air to the spaces.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	HX-1	Tech Shop	This unit was not operating during the survey and necessarily provided no ventilation to the FCUs serving the Tech Shop area.
	Open	HX-1	Tech Shop	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	MAU-1	Boiler Room	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	MAU-1	Boiler Room	Access to the heating coil was not possible at this time. If this is dirty or in need of repair we could not observe it at this time, but based on filter condition it likely needs to be cleaned.
	Open	RTU-1	RTU-1 Rooms	Clusters of rooms served by this unit did not meet code. The unit total OA flow was greater than the combined minimum, however, so this unit could deliver the appropriate flow if it were rebalanced by a certified TAB contractor
	Open	RTU-1	Science Classrooms	At the time of inspection, all of the filters for this unit were extremely dirty and needed to be changed.
	Open	RTU-1	Science Classrooms	The energy recovery wheel for this unit was very dirty and needs to be cleaned
	Open	RTU-1	Science Classrooms	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-1	Science Classrooms	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-1	Science Classrooms	The UV light door switch and lamp operation is questionable. The UV switch at the panel was off.
	Open	RTU-2	Classrooms	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	RTU-2	Classrooms	Damper operation and functionality is unclear
	Open	RTU-2	Classrooms	UV lights brackets appear to interfere with damper operation



Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	RTU-2	Classrooms	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-2	Classrooms	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-2	Classrooms	The energy recovery wheel belt is broken and needs to be replaced
	Open	RTU-2	Classrooms	The UV lights were off with wires unattached, so operability is unknown but they are not currently in use
	Open	RTU-2	RTU-2 Rooms	Many of the rooms served by this unit did not meet code. The unit total OA flow significantly less than the combined minimum so it is unclear if this unit could deliver the appropriate flow without changes to the controls or equipment
	Open	RTU-3	New Science Wing	The energy recovery wheel for this unit was very dirty and needs to be cleaned
	Open	RTU-3	New Science Wing	At the time of inspection, the filters for this unit including the mesh OA filters were dirty and needed to be changed.
	Open	RTU-3	New Science Wing	The energy recovery wheel belt is broken and needs to be replaced
	Open	RTU-3	New Science Wing	The dampers were dirty and need to be cleaned
	Open	RTU-3	New Science Wing	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-3	New Science Wing	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-3	New Science Wing	UV Lights were found disconnected and non-operational.
	Open	RTU-3	New Science Wing	Unit sections between the ERW and RF section has 2" gap bypassing OA air into RF section.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	RTU-4	Media Center	The fan blades are noticeably dirty
	Open	RTU-4	Media Center	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	RTU-4	Media Center	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-5	Cafeteria	This unit was not capable of operating during the survey and necessarily provided no ventilation to the Cafeteria.
	Open	RTU-5	Cafeteria	Filters were like new due to the unit not running however the factory end plates were missing. The end plates that were installed are made up from Stud material with no seals on ends, which would allow some amount of air to bypass the filters.'
	Open	RTU-5	Cafeteria	Energy recovery wheel O.A. intake filter is in poor condition
	Open	RTU-5	Cafeteria	The economizer for this unit is not functional at this time
	Open	RTU-5	Cafeteria	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-5	Cafeteria	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-5	Cafeteria	The UV light power panel was found off and did not function when switched on. Loose wires were found inside the cabinet.
	Open	RTU-6	Administration	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	RTU-6	Administration	The outside air dampers were stuck at 25% open and did not appear to operate
	Open	RTU-6	Administration	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-6	Administration	The cooling coil for this unit is dirty and needs to be cleaned.

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	RTU-6	Administration	UV Lights were found disconnected
	Open	RTU-7	Classrooms	At the time of inspection, the filters for this unit were dirty and needed to be changed.
	Open	RTU-7	Classrooms	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-7	Classrooms	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-7	Classrooms	UV Lights were found disconnected with loose wires inside the control cabinet
	Open	RTU-8	Auxiliary Gym	The outside air damper for this unit was closed and was not able to be opened, providing only leak-through ventilation.
	Open	RTU-8	Auxiliary Gym	The outside air dampers were stuck at 10% open and did not appear to operate
	Open	RTU-8	Auxiliary Gym	This unit was delivering significantly less outside air to the space as required to meet minimum ventilation requirements. It is unclear if this unit could deliver the appropriate flow without changes to the controls or equipment
	Open	RTU-9	Auditorium	The Return Air damper linkage for this unit was disconnected and needs to be repaired.
	Open	RTU-9	Auditorium	At the time of inspection, all filters for this unit were dirty and needed to be changed.
	Open	RTU-9	Auditorium	The energy recovery wheel for this unit was very dirty and needs to be cleaned
	Open	RTU-9	Auditorium	UV Lights were found disconnected and non-operational.
	Open	RTU-9	Auditorium	Unit outside air damper actuator was disconnected
	Open	RTU-9	Auditorium	The dampers need to be cleaned and lubricated

Action Taken	Status	Unit/Zone	Serving/Room Name	Indoor Air Quality And Ventilation Issue (98)
	Open	RTU-9	Auditorium	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-9	Auditorium	The cooling coil for this unit is dirty and needs to be cleaned.
	Open	RTU-9	Auditorium	This unit was delivering significantly less outside air to the space as required to meet minimum ventilation requirements. It is unclear if this unit could deliver the appropriate flow without changes to the controls or equipment
	Open	RTU-10	Locker Rooms	At the time of inspection, all filters for this unit were dirty and needed to be changed.
	Open	RTU-10	Locker Rooms	The heating coil for this unit is dirty and needs to be cleaned.
	Open	RTU-10	Locker Rooms	Heat exchanger needs to be cleaned

## 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 (48)
	Open	120 Office	Occupant Comfort	The air was noticeably warm and stuffy in this space
	Open	120C MDF	Access	The diffuser in this space was not accessible for measurement of verification
	Open	120C MDF	Thermal Control	Room was noticeably warm and some of the 9' Ceiling Tiles were open to allow additional heat transfer out.
	Open	142 Storage	Access	No access to diffuser. System status is unknown and an access door was observed open.
	Open	145 Storage	Access	Ductwork was inaccessible for verification
	Open	167 Classroom	Occupant Comfort	The air was noticeably warm and stuffy in this space
	Open	170 Mechanical	Thermal Control	Room gets hot and needs added space ventilation to protect Electronics
	Open	172 Boiler Room	Thermal Control	This space likely needs additional exhaust since the room gets hot
	Open	256 Principal	Occupant Comfort	The air was noticeably warm and stuffy in this space
	Open	321 Prep	Access	The diffuser in this space was not accessible for measurement of verification
	Open	AH-1/HV-1	Main Gym	The supply fan belts are loose and should be replaced
	Open	AH-1/HV-1	Main Gym	There is a bad bearing or improper belt alignment causing the fan to rumble. Excessive

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (48)
				grease has been applied and makes exact determinations difficult.
	Open	AHU-11	Band	The drain pan was dirty and should be cleaned after both coils have been cleaned
	Open	AHU-12	Kitchen/Servery	Dampers should be lubricated
	Open	AHU-12	Kitchen/Servery	Access to this unit is restricted, which makes addressing service and maintenance concerns more difficult or costly. The direct access point is above dry food storage shelves. This should be kept clear or alternative means of access should be provided.
	Open	FCU-F8, Typical of 13	Orchestra 020	Typical of 13: Filters are inaccessible for proper service
	Open	HX-1	Tech Shop	The condensate drain pan discharge was restricted and needs to be cleaned out
	Open	HX-1	Tech Shop	Access to the duct-mounted heating coil is difficult. If this is dirty or in need of repair we could not observe it at this time. Access locations that provide for easy service and maintenance should be installed.
	Open	MAU-1	Boiler Room	Although access to the unit motor and belt on back wall side of suspended unit with no ladder setup possible, you must climb upon condensate pumps, cond. tank, and hand valve wheel to access. Alternative means of access should be considered for better service and maintenance access. The current arrangement is unsafe and the level of filter loading observed at this unit indicates changes should be done approximately four times per year.
	Open	MAU-1	Boiler Room	The outside air and Face & Bypass dampers for this unit require cleaning, adjustment, and lubrication
	Open	RTU-1	Science Classrooms	The drain pan was dirty and should be cleaned after both coils have been cleaned

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (48)
	Open	RTU-1	Science Classrooms	Rust and corrosion was observed on the coil section.
	Open	RTU-1	Science Classrooms	The UV Lamp bracket is in contact with dampers, installation needs attention to allow for full range damper operation
	Open	RTU-1	Science Classrooms	Door hardware is failing, most of the fasteners are rusted, free spin or both.
	Open	RTU-1	Science Classrooms	Condensate traps are missing or broken
	Open	RTU-2	Classrooms	The filters were missing the end safing
	Open	RTU-2	Classrooms	Damper seals were falling off and need to be reattached
	Open	RTU-2	Classrooms	The drain pan was dirty and should be cleaned after both coils have been cleaned
	Open	RTU-3	New Science Wing	The UV Lamp bracket is in contact with dampers, installation needs attention to allow for full range damper operation
	Open	RTU-3	New Science Wing	Damper seals were falling off and need to be reattached
	Open	RTU-4	Media Center	Damper seals were falling off and need to be reattached
	Open	RTU-4	Media Center	The dampers are in need of adjustment and lubrication
	Open	RTU-5	Cafeteria	Roof pipe penetrations under the unit were found missing insulation
	Open	RTU-5	Cafeteria	The UV lamp brackets are installed such that they interfere with damper operation. These need to be adjusted, relocated, or removed.
	Open	RTU-5	Cafeteria	Damper seals are coming unattached from the blades
	Open	RTU-5	Cafeteria	The energy recovery wheel belts are loose

Action Taken	Status	Unit/Zone	Serving/Room Name	Maintenance Issue (48)
	Open	RTU-5	Cafeteria	The energy recovery wheel is falling apart and needs to be replaced
	Open	RTU-6	Administration	The UV Lamp bracket is in contact with dampers, installation needs attention to allow for full range damper operation
	Open	RTU-6	Administration	The drain pan was dirty with visible scaling on the surface. This should be cleaned after both coils have been cleaned
	Open	RTU-7	Classrooms	Damper seals were falling off and need to be reattached
	Open	RTU-7	Classrooms	The insulation underneath of the unit is in need of repair
	Open	RTU-7	Classrooms	The drain pan was dirty with visible scaling on the surface. This should be cleaned after both coils have been cleaned
	Open	RTU-8	Auxiliary Gym	The dampers are in need of cleaning, adjustment, and lubrication
	Open	RTU-9	Auditorium	The supply fan belts are mismatched, resulting in one significantly looser than the other. This should be corrected
	Open	RTU-9	Auditorium	The UV Lamp bracket is in contact with dampers, installation needs attention to allow for full range damper operation
	Open	RTU-9	Auditorium	The drain pan traps are broken and need to be replaced
	Open	RTU-9	Auditorium	System Static Pressure housing was broken with the air tube dangling loose
	Open	RTU-10	Locker Rooms	The drain pan is dirty and should be cleaned after the heating coil cleaning is complete



## 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 (22)
	Open	008 Art Classroom	Communication	The unit associated with this space was not running and there was no communication to it
	Open	140 Project Adventure	Communication	There is no communication to this space through the BAS
	Open	144 Gymnasium	Communication	There is no communication to this space through the BAS
	Open	Air Handling Equipment	Communication	During the TAB process, it was discovered that the control system had limited or no communication with most of the air handling systems. These communication issues need to be rectified.
	Open	Air Handling Equipment	Communication	Due to the communication issues, the actual outside air damper commands and positions could not be accurately verified through the BAS. Airflow measurements used the best estimations possible if flow rates were not able to be measured directly, and these would be indicated in the report. Damper commands listed in the survey spreadsheet are the pre-programmed settings in the standalone IntelliPak controller
	Open	Air Handling Equipment	General	The functionality of the control system in general is questionable. The previous control upgrade was performed in 2004 by Johnson Controls. There is a new controls upgrade project in the works utilizing Automated Logic and we highly advise Commissioning input given the condition of the system. This project is slated to involve the replacement of I/O

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (22)
				devices and it is not clear how ALC will take over control of the existing equipment.
	Open	Air Handling Equipment	Schedules	Air Handling unit schedules are not optimized for current building use and should be reviewed.
	Open	MAU-1	Boiler Room	The outside air damper did not appear to close when unit was shut down.
	Open	RTU-1	Science Classrooms	The status of the controls for this unit are generally questionable and a thorough review should be conducted
	Open	RTU-1	Science Classrooms	The economizer functionality could not be verified
	Open	RTU-2	Classrooms	The starter for the unit was found in the off position
	Open	RTU-2	Classrooms	The unit dampers did not close upon unit shutdown
	Open	RTU-3	New Science Wing	The economizer for this unit is not functional at this time
	Open	RTU-3	New Science Wing	The dampers were not operational
	Open	RTU-4	Media Center	The outside air dampers were stuck at 70% open and did not appear to operate
	Open	RTU-5	Cafeteria	The fan was observed off and it is clear that the unit has not run for a long time, at least since the previous filter change in October 2021.
	Open	RTU-5	Cafeteria	The damper linkage was found unhooked and needs to be reattached. The damper is not controllable.
	Open	RTU-6	Administration	UV Lights were hitting the RA Damper Blade.
	Open	RTU-6	Administration	The outside air static pressure pickup device was found failed with sensing tube disconnected
	Open	RTU-7	Classrooms	When the unit was shut off, the dampers did not close

Action Taken	Status	Unit/Zone	Serving/Room Name	Control Issue (22)
	Open	RTU-8	Auxiliary Gym	There is no external Electrical Disconnect, rather only a fan EPO.
	Open	RTU-8	Auxiliary Gym	The return fan EPO switch is broken-off

## 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 (23)
	Open	016 Storage	Airflow	No supply air is provided to this space
	Open	034 Storage	Airflow	No supply air is provided to this space
	Open	106 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	111A Storage	Airflow	No mechanical ventilation is provided to this space
	Open	111B Storage	Airflow	No supply air from or return air to RTU-2 was provided to this space.
	Open	125 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	150 Boys Locker Room	Circulation	Area not used and does not seem to have much air circulation, if any
	Open	156 Girls Locker Room	Circulation	Area not used and does not seem to have much air circulation, if any
	Open	211 IT Room	Airflow	No supply air from or return air to RTU-2 was provided to this space.
	Open	224 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	242 Mechanical	Airflow	No mechanical ventilation is provided to this space
	Open	244 Storage	Airflow	No supply air from or return air to RTU-7 was provided to this space.

Action Taken	Status	Unit/Zone	Serving/Room Name	Information Only Findings (23)
	Open	282A Storage	Airflow	No mechanical ventilation is provided to this space
	Open	284A Storage	Airflow	No mechanical ventilation is provided to this space
	Open	314A Storage	Airflow	No mechanical ventilation is provided to this space
	Open	314B Storage	Airflow	No mechanical ventilation is provided to this space
	Open	341 Mech	Airflow	No mechanical ventilation is provided to this space
	Open	371 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	372 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	373 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	374 Mech	Airflow	No mechanical ventilation is provided to this space
	Open	375 Storage	Airflow	No mechanical ventilation is provided to this space
	Open	RTU-3	New Science Wing	Unit support mounting might not be level.



## APPENDIX 2 – Ventilation Data Calculations





Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Field	001	Music Classroom	Education	Music/theater/dance	1049	---	Unknown	FCU-F1	979	10	9790	9	10.0	0.06	35	149	0	-149	-100.0%	Fails	0.000
Field	002	Art Classroom	Education	Art Classroom	1657	---	Unknown	Unknown FCU	1312	9.8	12858	16	10.0	0.18	20	396	0	-396	-100.0%	Fails	0.000
Field	003	Storage	Storage	Warehouses	175	---	Unknown	Unknown FCU	213	9.7	2066	0	0.0	0.06	0	13	---	N/A		N/A	
Field	005	Men	Public Spaces	Toilet rooms - public	0	---	---	EF	138	9.7	1339	4	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	006	Women	Public Spaces	Toilet rooms - public	0	---	---	EF	138	9.7	1339	4	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	007	Kiln	Storage	Warehouses	-27	---	---	---	112	13.4	1501	0	0.0	0.06	0	7	0	-7	-100.0%	Fails	0.000
Field	008	Art Classroom	Education	Art Classroom	0	---	---	FCU-6	1138	9.8	11152	18	10.0	0.18	20	385	0	-385	-100.0%	Fails	0.000
Field	009	Storage	Storage	Warehouses	---	---	Unknown	Unknown	48	9.8	470	0	0.0	0.06	0	3	---	N/A		N/A	
Field	010	Office	Offices	Office spaces	0	---	Unknown	Unknown	170	9.8	1666	2	5.0	0.06	5	20	0	-20	-100.0%	Fails	0.000
Field	011	Keyboard Lab	Education	Computer lab	0	---	Unknown	Unknown	711	9.8	6968	24	10.0	0.12	25	325	0	-325	-100.0%	Fails	0.000
Field	012	Main Electrical	None	None	---	---	Unknown	Unknown	285	13.4	3819	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	013	Transportation/Communication	Education	Classroom (ages 9+)	1999	---	Unknown	FCU-F-7	1224	9.8	11995	30	10.0	0.12	35	447	0	-447	-100.0%	Fails	0.000
Field	014	Computer	Education	Computer lab	689	---	Unknown	FCU-F-7	276	9.8	2705	7	10.0	0.12	25	103	0	-103	-100.0%	Fails	0.000
Field	016	Storage	Storage	Warehouses	---	---	---	---	177	13.4	2372	0	0.0	0.06	0	11	---	N/A		N/A	
Field	017	Applied Technology	Education	Classroom (ages 9+)	2052	---	Unknown	FCU-F-10	1482	10	14820	25	10.0	0.12	35	428	0	-428	-100.0%	Fails	0.000
Field	018	Office	Offices	Office spaces	145	---	Unknown	FCU-F-10	121	8	968	1	5.0	0.06	5	12	0	-12	-100.0%	Fails	0.000
Field	019	Storage	Storage	Warehouses	---	---	---	---	166	13.4	2224	0	0.0	0.06	0	10	---	N/A		N/A	
Field	020	Orchestra Room	Education	Music/theater/dance	1414	---	Unknown	AHU-11	1147	9.3 11.4	12290	40	10.0	0.06	35	469	0	-469	-100.0%	Fails	0.000
Field	022	Band Room	Education	Music/theater/dance	0	---	Unknown	AHU-11	1326	10	13260	56	10.0	0.06	35	640	0	-640	-100.0%	Fails	0.000
Field	035	Elec	None	None	---	---	---	---	60	13.4	804	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	031	Band Room	Education	Music/theater/dance	3131	---	---	AHU-11	2160	12.8	27648	75	10.0	0.06	35	880	0	-880	-100.0%	Fails	0.000

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Field	032	Practice	Education	Music/theater/dance	729	---	---	AHU-11	349	9.3	3246	7	10.0	0.06	35	91	0	-91	-100.0%	Fails	0.000
Field	033	Office	Offices	Office spaces	374	---	---	AHU-11	142	9.3	1321	2	5.0	0.06	5	19	0	-19	-100.0%	Fails	0.000
Field	034	Storage	Storage	Warehouses	---	---	---	Unknown	155	9.3	1442	0	0.0	0.06	0	9	---	N/A		N/A	
Field	036	Storage	Storage	Warehouses	---	---	---	Unknown	104	9.3	967	0	0.0	0.06	0	6	---	N/A		N/A	
Field	037	Toilet	Public Spaces	Toilet rooms - public	---	---	---	Unknown	37	9.3	344	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	038	Elev Mech	None	None	---	---	---	Unknown	68	13.4	911	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Field	050	Grounds Equipment	Storage	Warehouses	---	---	---	Unknown	165	13.4	2211	0	0.0	0.06	0	10	---	N/A		N/A	
Field	051	Exterior Storage	Storage	Warehouses	---	---	---	Unknown	75	13.4	1005	0	0.0	0.06	0	5	---	N/A		N/A	
Ground	101	Science Classroom	Education	Classroom (ages 9+)	1553	22.7%	15%	RTU-1	1026	9.5	9747	26	10.0	0.12	35	383	353	-30	-7.9%	Fails	2.173
Ground	102	Prep	Education	Classroom (ages 9+)	268	22.7%	15%	RTU-1	182	9.5	1729	3	10.0	0.12	35	52	61	9	17.7%	Meets	2.117
Ground	103	Cust	Storage	Warehouses	0	---	---	RTU-1	90	13.5	1215	1	0.0	0.06	0	5	0	-5	-100.0%	Fails	0.000
Ground	104	Classroom	Education	Classroom (ages 9+)	473	22.7%	15%	RTU-1	588	7.5	4410	16	10.0	0.12	35	231	107	-124	-53.6%	Fails	1.456
Ground	106	Storage	Storage	Warehouses	---	---	---	---	91	8.3	755	0	0.0	0.06	0	5	---	N/A		N/A	
Ground	107	Classroom	Education	Classroom (ages 9+)	957	22.7%	15%	RTU-1	667	8.3	5536	26	10.0	0.12	35	340	217	-123	-36.2%	Fails	2.352
Ground	108	Faculty Room	Offices	Office spaces	427	22.7%	15%	RTU-2	561	8.3	4656	13	5.0	0.06	5	99	97	-2	-1.7%	Fails	1.250
Ground	109	Classroom	Education	Classroom (ages 9+)	1135	22.7%	15%	RTU-3	655	8.3	5437	25	10.0	0.12	35	329	258	-71	-21.5%	Fails	2.847
Ground	110	Women	Public Spaces	Toilet rooms - public	285	---	---	EF-6	221	8	1768	3	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	111	Exterior Storage	Storage	Warehouses	---	---	---	---	84	13.5	1134	0	0.0	0.06	0	5	---	N/A		N/A	
Ground	111A	Storage	Storage	Warehouses	---	---	---	---	53	13.5	716	0	0.0	0.06	0	3	---	N/A		N/A	
Ground	111B	Storage	Storage	Warehouses	---	---	---	RTU-2	44	13.5	594	0	0.0	0.06	0	3	---	N/A		N/A	
Ground	112	Storage	Storage	Warehouses	102	14.6%	20%	RTU-2	200	10	2000	0	0.0	0.06	0	12	15	3	25.0%	Meets	0.450

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Ground	113	Science Classroom	Education	Classroom (ages 9+)	594	14.6%	20%	RTU-2	1034	9.3	9616	26	10.0	0.12	35	384	87	-297	-77.3%	Fails	0.543
Ground	114	Classroom	Education	Classroom (ages 9+)	468	14.6%	20%	RTU-2	675	9.2	6210	26	10.0	0.12	35	341	68	-273	-80.1%	Fails	0.657
Ground	115	Classroom	Education	Classroom (ages 9+)	522	14.6%	20%	RTU-2	703	9.2	6468	23	10.0	0.12	35	314	76	-238	-75.8%	Fails	0.705
Ground	116	Classroom	Education	Classroom (ages 9+)	423	14.6%	20%	RTU-2	561	9.2	5161	12	10.0	0.12	35	187	62	-125	-66.9%	Fails	0.721
Ground	118	Men	Public Spaces	Toilet rooms - public	332	---	---	EF-7	228	8.3	1892	3	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	119	Classroom	Education	Classroom (ages 9+)	412	14.6%	20%	RTU-2	697	9.3	6482	10	10.0	0.12	35	184	60	-124	-67.3%	Fails	0.555
Ground	120	Office	Offices	Office spaces	116	14.6%	20%	RTU-2	182	9	1638	5	5.0	0.06	5	36	17	-19	-52.7%	Fails	0.623
Ground	120C	MDF	None	None	---	14.6%	20%	RTU-2	129	13	1677	2	0.0	0.00	0	0	---	N/A	0.0%	N/A	
Ground	121	Computer Lab	Education	Computer lab	902	14.6%	20%	RTU-2	898	9.3	8351	27	10.0	0.12	25	378	132	-246	-65.1%	Fails	0.948
Ground	125	Storage	Storage	Warehouses	---	---	---	---	99	8	792	0	0.0	0.06	0	6	---	N/A		N/A	
Ground	126	Classroom	Education	Classroom (ages 9+)	1381	66%	15%	RTU-3	871	9.3	8100	26	10.0	0.12	35	365	911	546	149.9%	Meets	6.748
Ground	127	Classroom	Education	Classroom (ages 9+)	651	66%	15%	RTU-3	736	9.3	6845	26	10.0	0.12	35	348	430	82	23.4%	Meets	3.769
Ground	128	Science Classroom	Education	Classroom (ages 9+)	1097	66%	15%	RTU-3	973	9.3	9049	26	10.0	0.12	35	377	724	347	92.2%	Meets	4.801
Ground	129	Storage	Storage	Warehouses	73	66%	15%	RTU-3	183	9	1647	0	0.0	0.06	0	11	48	37	337.2%	Meets	1.749
Ground	130	Fitness Center	Sports and amusement	Health club/weight room	774	66%	15%	RTU-3	934	9.8	9153	20	20.0	0.06	10	456	511	55	12.1%	Meets	3.350
Ground	140	Project Adventure	Sports and amusement	Gym, stadium, arena (play area)	558	23%	Unknown	AH-2	2270	27.6	62652	15	0.0	0.30	0	681	136	-545	-80.0%	Fails	0.130
Ground	142	Storage	Storage	Warehouses	---	---	---	---	280	27.6	7728	0	0.0	0.06	0	17	'---	N/A		N/A	
Ground	144	Gymnasium	Sports and amusement	Gym, stadium, arena (play area)	6968	6%	Unknown	AH-1	7397	27.6	204157	60	0.0	0.30	0	2219	420	-1799	-81.1%	Fails	0.123
Ground	145	Storage	Storage	Warehouses	---	---	---	AH-1 / AH-2	56	11	616	0	0.0	0.06	0	3	---	N/A		N/A	
Ground	146	Elec	None	None	---	---	---		96	11	1056	0	0.0	0.00	0	0	---	N/A	0.0%	N/A	
Ground	148	Storage	Storage	Warehouses	244	100%	100%	RTU-10	211	11	2321	0	0.0	0.06	0	13	244	231	1827.3%	Meets	6.308

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Ground	150	Boys Locker Room	Education	Locker/dressing room	593	100%	100%	RTU-10	1327	9.5	12607	25	0.0	0.00	0	0	593	593	0.0%	N/A	2.822
Ground	153	Office	Offices	Office spaces	150	100%	100%	RTU-10	260	8	2080	4	5.0	0.06	5	36	150	114	321.3%	Meets	4.327
Ground	156	Girls Locker Room	Education	Locker/dressing room	588	100%	100%	RTU-10	1374	10.7	14702	25	0.0	0.00	0	0	588	588	0.0%	N/A	2.400
Ground	157	Office	Offices	Office spaces	263	100%	100%	RTU-10	268	8	2144	5	5.0	0.06	5	41	263	222	540.2%	Meets	7.360
Ground	164B	Storage	Storage	Warehouses	---	---	---	---	74	10	740	0	0.0	0.06	0	4	---	N/A		N/A	
Ground	164A	Women	Public Spaces	Toilet rooms - public	159	---	---	EF-6	100	7.7	770	2	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	165A	Storage	Storage	Warehouses	---	---	---	---	31	10	310	0	0.0	0.06	0	2	---	N/A		N/A	
Ground	165B	Data	None	None	---	---	---	---	28	10.7	300	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	164A	Storage	Storage	Warehouses	---	---	---	---	73	10.8	788	0	0.0	0.06	0	4	---	N/A		N/A	
Ground	166	Textile Lab	Education	Classroom (ages 9+)	1411	49%	15%	RTU-7	1191	9	10719	26	10.0	0.12	35	403	691	288	71.5%	Meets	3.868
Ground	162	Men Faculty	Public Spaces	Toilet rooms - public	0			EF-6	142	8	1136	2	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	167	Classroom	Education	Classroom (ages 9+)	587	49%	15%	RTU-7	597	8.6	5134	23	10.0	0.12	35	302	288	-14	-4.5%	Fails	3.366
Ground	169	Classroom	Education	Classroom (ages 9+)	808	49%	15%	RTU-7	601	8.6	5169	23	10.0	0.12	35	302	396	94	31.1%	Meets	4.597
Ground	171	Cust Office	Offices	Office spaces	164	49%	15%	RTU-7	212	13	2756	8	5.0	0.06	5	53	80	27	51.7%	Meets	1.742
Ground	170	Mech	None	None	---	---	---	EF-12	237	13	3081	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Ground	171	Food Lab	Education	Classroom (ages 9+)	1214	73%	15%	RTU-6	1128	8.6	9701	23	10.0	0.12	35	365	886	521	142.5%	Meets	5.480
Ground	172	Boiler Room	None	None	6222	100%	100%	MAU-1	940	16	15040	0	0.0	0.00	0	0	6222	6222	0.0%	N/A	24.822
Ground	175	Storage	Storage	Warehouses	---	---	---	---	100	9.2	920	0	0.0	0.06	0	6	---	N/A		N/A	
Ground	181	Cafeteria	Food and beverage service	Cafeteria, fast food	0	---	15%	RTU-5	4181	9.6	40138	226	7.5	0.18	100	2448	0	-2448	-100.0%	Fails	0.000
Ground	182	Faculty Dining	Food and beverage service	Dining Rooms	0	---	15%	RTU-5	270	9	2430	6	7.5	0.18	70	94	0	-94	-100.0%	Fails	0.000
Ground	183	Storage	Storage	Warehouses	---	---	15%	RTU-5	61	9	549	0	0.0	0.06	0	4	---	N/A		N/A	

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Ground	184A	Cust	Storage	Warehouses	49	---	---	EF-6	48	9.1	437	1	0.0	0.06	0	3	0	-3	-100.0%	Fails	0.000
Ground	186	Dishwashing	Storage	Warehouses	301	100%	Unknown	AH-12	307	10	3070	3	0.0	0.06	0	18	301	283	1534.1%	Meets	5.883
Ground	187	Kitchen	Food and beverage service	Kitchens (cooking)	2291	100%	Unknown	AH-12	1366	10	13660	8	0.0	0.00	0	0	2291	2291	0.0%	N/A	10.063
Ground	188	Storage	Storage	Warehouses	200	100%	Unknown	AH-12	207	9	1863	0	0.0	0.06	0	12	200	188	1510.3%	Meets	6.441
Ground	189	Office	Offices	Office spaces	57	100%	Unknown	AH-12	82	8.6	705	1	5.0	0.06	5	10	57	47	474.6%	Meets	4.850
Ground	190	Storage	Storage	Warehouses	---	4.5%	10%	RTU-0	100	9.2	920	0	0.0	0.06	0	6	---	N/A		N/A	
Ground	193	Water Room	None	None	---	---	---	---	167	9.3	1553	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	201	Science Classroom	Education	Classroom (ages 9+)	1426	22.7%	15%	RTU-1	998	9.6	9581	25	10.0	0.12	35	370	324	-46	-12.4%	Fails	2.029
Main	202	Prep	Education	Classroom (ages 9+)	280	22.7%	15%	RTU1	170	9.6	1632	2	10.0	0.12	35	40	64	24	58.4%	Meets	2.353
Main	185B	Servery	Food and beverage service	Cafeteria, fast food	493	100%	Unknown	AH-12	1000	10	10000	25	7.5	0.18	100	368	493	126	34.1%	Meets	2.958
Main	203	Cust	Storage	Warehouses	---	22.7%	15%	RTU-1	64	13.5	864	1	0.0	0.06	0	4	0	-4	-100.0%	Fails	0.000
Main	205	Classroom	Education	Classroom (ages 9+)	1107	22.7%	15%	RTU-1	666	9.6	6394	16	10.0	0.12	35	240	251	11	4.6%	Meets	2.355
Main	206	Classroom	Education	Classroom (ages 9+)	431	14.6%	20%	RTU-2	248	9.6	2381	25	10.0	0.12	35	280	63	-217	-77.5%	Fails	1.588
Main	207	Classroom	Education	Classroom (ages 9+)	902	22.7%	15%	RTU-1	642	9.6	6163	16	10.0	0.12	35	237	205	-32	-13.5%	Fails	1.996
Main	208	Classroom	Education	Classroom (ages 9+)	371	14.6%	20%	RTU-2	525	9.2	4830	9	10.0	0.12	35	153	54	-99	-64.7%	Fails	0.671
Main	212	Men	Public Spaces	Toilet rooms - public	281	---	---	EF-6	210	9.5	1995	4	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	213	Women	Public Spaces	Toilet rooms - public	275	---	---	EF-6	210	9.5	1995	4	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	214	Toilet	Public Spaces	Toilet rooms - public	299	---	---	EF-6	59	8	472	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	209	Science Classroom	Education	Classroom (ages 9+)	525	14.6%	20%	RTU-2	1038	9.6	9965	25	10.0	0.12	35	375	77	-298	-79.4%	Fails	0.464
Main	210	Prep	Education	Classroom (ages 9+)	116	14.6%	20%	RTU-2	167	9.6	1603	1	10.0	0.12	35	30	17	-13	-43.4%	Fails	0.636
Main	211	IT Room	Workrooms	Copy, printing rooms	---	14.6%	20%	RTU-2	73	12.7	927	0	5.0	0.06	4	6	0	-6	-100.0%	Fails	0.000



Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Main	215	Classroom	Education	Classroom (ages 9+)	419	14.6%	20%	RTU-2	687	9.6	6595	26	10.0	0.12	35	342	61	-281	-82.2%	Fails	0.555
Main	216	Science Classroom	Education	Classroom (ages 9+)	414	14.6%	20%	RTU-2	1062	10	10620	16	10.0	0.12	35	287	60	-227	-79.1%	Fails	0.339
Main	217	Prep	Education	Classroom (ages 9+)	78	14.6%	20%	RTU-2	130	8.6	1118	12	10.0	0.12	35	136	11	-125	-91.9%	Fails	0.590
Main	218	Computer Lab	Education	Computer lab	659	14.6%	20%	RTU-2	693	8.6	5960	15	10.0	0.12	25	233	96	-137	-58.8%	Fails	0.966
Main	220	Lobby/Lounge	Public Spaces	Corridors	---	14.6%	20%	RTU-2	925	9.6	8880	15	0.0	0.06	0	56	0	-56	-100.0%	Fails	0.000
Main	221	Science Classroom	Education	Classroom (ages 9+)	403	14.6%	20%	RTU-2	651	9.6	6250	25	10.0	0.12	35	328	59	-269	-82.0%	Fails	0.566
Main	224	Storage	Storage	Warehouses	---	14.6%	20%	RTU-2	101	7.3	737	0	0.0	0.06	0	6	---	N/A		N/A	
Main	225	Classroom	Education	Classroom (ages 9+)	1037	66%	15%	RTU-3	881	9.6	8458	26	10.0	0.12	35	366	684	318	87.0%	Meets	4.852
Main	226	Classroom	Education	Classroom (ages 9+)	1009	66%	15%	RTU-3	730	9.6	7008	25	10.0	0.12	35	338	666	328	97.3%	Meets	5.702
Main	227	Science Classroom	Education	Classroom (ages 9+)	1117	66%	15%	RTU-3	974	9.6	9350	25	10.0	0.12	35	367	737	370	100.9%	Meets	4.729
Main	228	Prep	Education	Classroom (ages 9+)	205	66%	15%	RTU-3	146	9.6	1402	1	10.0	0.12	35	28	135	107	390.6%	Meets	5.779
Main	229	Storage/Office	Storage	Warehouses	---	66%	15%	RTU-3	144	9.3	1339	3	0.0	0.06	0	9	---	N/A		N/A	
Main	230	Men	Public Spaces	Toilet rooms - public	213	66%	15%	RTU-3/EF-6	210	9.5	1995	3	0.0	0.00	0	0	141	141	0.0%	N/A	4.241
Main	232	Women	Public Spaces	Toilet rooms - public	205	66%	15%	RTU-3/EF-6	210	9.5	1995	3	0.0	0.00	0	0	135	135	0.0%	N/A	4.060
Main	231	Toilet	Public Spaces	Toilet rooms - public	0	---	---	EF-6	59	8	472	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	233	Classroom	Education	Classroom (ages 9+)	1083	66%	15%	RTU-3	866	9.6	8314	26	10.0	0.12	35	364	0	-364	-100.0%	Fails	0.000
Main	242	Mechanical	None	None	---	---	---	---	302	14.5	4379	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	244	Storage	Storage	Warehouses	---	49%	15%	RTU-7	43	16.7	718	0	0.0	0.06	0	3	---	N/A		N/A	
Main	245	Classroom OT/PT	Education	Classroom (ages 9+)	226	49%	15%	RTU-7	331	8.6	2847	5	10.0	0.12	35	90	0	-90	-100.0%	Fails	0.000
Main	246	Elec	None	None	---	---	---	EF-2	109	16.7	1820	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	247	Aux Gym	Sports and amusement	Gym, stadium, arena (play area)	4720	8.4%	Unknown	RTU-8	2722	24	65328	50	0.0	0.30	0	817	369	-448	-54.8%	Fails	0.339

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Main	251	Men	Public Spaces	Toilet rooms - public	280	---	---	EF-2-5	215	8.8	1892	3	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	254	Main Office	Offices	Office spaces	473	49%	15%	RTU-7	383	9.6	3677	5	5.0	0.06	5	48	232	184	383.5%	Meets	3.786
Main	256	Principal	Offices	Office spaces	276	49%	15%	RTU-7	257	9.6	2467	4	5.0	0.06	5	35	135	100	281.1%	Meets	3.283
Main	258	Office ("Coffee Room", Copy)	Workrooms	Copy, printing rooms	77	49%	15%	RTU-7	102	8.7	887	2	5.0	0.06	4	16	38	22	135.7%	Meets	2.569
Main	259	Office	Offices	Office spaces	159	49%	15%	RTU-7	114	9.5	1083	2	5.0	0.06	5	17	78	61	363.2%	Meets	4.321
Main	260	Assistant Principal	Offices	Conference rooms	394	49%	15%	RTU-7	276	9.6	2650	4	5.0	0.06	50	37	193	156	427.9%	Meets	4.370
Main	261	Nurse	Hospitals, nursing and convalescent homes	Patient rooms	268	49%	15%	RTU-7	267	9.6	2563	4	25.0	0.00	10	100	131	31	31.0%	Meets	3.066
Main	263	Men's Room	Public Spaces	Toilet rooms - public	171	---	---	EF-2-5	21	8	168	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	262	Women's Room	Public Spaces	Toilet rooms - public	169	---	---	EF-2-5	34	8	272	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	257	Principal Toilet	Public Spaces	Toilet rooms - public	74	---	---	EF-2-5	33	8	264	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	264	Exam	Hospitals, nursing and convalescent homes	Patient rooms	429	49%	15%	RTU-7	235	9.6	2256	3	25.0	0.00	10	75	210	135	180.0%	Meets	5.585
Main	265	Office	Offices	Office spaces	167	49%	15%	RTU-7	91	9.6	874	2	5.0	0.06	5	15	82	67	430.4%	Meets	5.632
Main	267	Classroom	Education	Classroom (ages 9+)	785	73%	15%	RTU-6	587	9.6	5635	24	10.0	0.12	35	310	573	263	84.6%	Meets	6.101
Main	268	Classroom	Education	Classroom (ages 9+)	834	73%	15%	RTU-6	587	9.6	5635	24	10.0	0.12	35	310	609	299	96.2%	Meets	6.484
Main	271	Storage	Storage	Warehouses	251	22.7%	15%	RTU-1	189	9.5	1796	0	0.0	0.06	0	11	57	46	402.6%	Meets	1.905
Main	272	Main Lobby	Offices	Main entry lobbies	496	49%	15%	RTU-7	2131	9.6	20458	20	5.0	0.06	10	228	243	15	6.6%	Meets	0.713
Main	274	Attendance	Offices	Office spaces	300	22.7%	15%	RTU-1	361	9.5	3430	3	5.0	0.06	5	37	68	31	85.5%	Meets	1.190
Main	275	Dean	Offices	Office spaces	270	22.7%	15%	RTU-1	203	9.2	1868	3	5.0	0.06	5	27	61	34	124.4%	Meets	1.960
Main	276	Office	Offices	Office spaces	86	22.7%	15%	RTU-1	100	8.6	860	2	5.0	0.06	5	16	20	4	25.0%	Meets	1.395
Main	277	Mail Room	Workrooms	Copy, printing rooms	138	22.7%	15%	RTU-1	162	8.9	1442	2	5.0	0.06	4	20	31	11	57.2%	Meets	1.290
Main	278	Storage	Storage	Warehouses	149	22.7%	15%	RTU-1	440	9	3960	0	0.0	0.06	0	26	34	8	28.8%	Meets	0.515

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Main	279	Office Supplies	Offices	Office spaces	77	22.7%	15%	RTU-1	119	13.5	1607	0	5.0	0.06	5	10	17	7	68.1%	Meets	0.635
Main	280	Attendance Toilet	Public Spaces	Toilet rooms - public	145	---	---	EF-6	54	8	432	1	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	281	Assistant Principal	Offices	Office spaces	210	22.7%	15%	RTU-1	285	8.9	2537	14	5.0	0.06	5	87	48	-39	-44.9%	Fails	1.135
Main	282	Office	Offices	Office spaces	369	22.7%	15%	RTU-1	180	13.8	2484	2	5.0	0.06	5	21	84	63	303.8%	Meets	2.029
Main	282A	Storage	Storage	Warehouses	---	---	---	---	47	9	423	0	0.0	0.06	0	3	---	N/A		N/A	
Main	283	Office	Offices	Office spaces	249	22.7%	15%	RTU-1	200	9.2	1840	2	5.0	0.06	5	22	57	35	159.1%	Meets	1.859
Main	284	Office	Offices	Office spaces	304	73%	15%	RTU-6	180	13.8	2484	2	5.0	0.06	5	21	222	201	967.3%	Meets	5.362
Main	284A	Storage	Storage	Warehouses	---	---	---	---	47	9	423	0	0.0	0.06	0	3	---	N/A		N/A	
Main	285	Office	Offices	Office spaces	431	22.7%	15%	RTU-1	87	9.2	800	2	5.0	0.06	5	15	98	83	543.9%	Meets	7.346
Main	286	Office	Offices	Office spaces	258	22.7%	15%	RTU-1	190	13.8	2622	2	5.0	0.06	5	21	59	38	175.7%	Meets	1.350
Main	286A	Storage	Storage	Warehouses	---	---	---	---	47	9	423	0	0.0	0.06	0	3	---	N/A		N/A	
Main	288	Guidance	Offices	Office spaces	890	22.7%	15%	RTU-1	536	9.4	5038	2	5.0	0.06	5	42	202	160	379.1%	Meets	2.406
Main	270	Women	Public Spaces	Toilet rooms - public	36	---	---	EF-2-4	245	8	1960	4	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Main	290	Conference	Offices	Conference rooms	456	22.7%	15%	RTU-1	280	9.4	2632	2	5.0	0.06	50	27	104	77	288.1%	Meets	2.371
Main	295	Auditorium	Education	Auditoriums	14607	4.5%		RTU-9	4635	25	115875	760	5.0	0.06	150	4078	669	-3409	-83.6%	Fails	0.346
Main	296	Stage	Theaters	Stages, studios	---	---	---	RTU-9	1695	36	61020	40	10.0	0.06	70	502	0	-502	-100.0%	Fails	0.000
Main	298	Counseling Center Workroom	Workrooms	Copy, printing rooms	---	---	---	---	184	9.5	1748	2	5.0	0.06	4	21	0	-21	-100.0%	Fails	0.000
Main	294	Lobby	Public Spaces	Corridors	---	---	---	---	428	16	6848	30	0.0	0.06	0	26	---	N/A		N/A	
Upper	301	Science Classroom	Education	Classroom (ages 9+)	1569	22.7%	15%	RTU-1	736	9.5	6992	9.5	10.0	0.12	35	183	356	173	94.2%	Meets	3.055
Upper	302	Prep	Education	Classroom (ages 9+)	250	22.7%	15%	RTU-1	187	9.5	1777	2	10.0	0.12	35	42	57	15	34.3%	Meets	1.925
Upper	303	Cust	Storage	Warehouses	82	22.7%	15%	RTU-1	63	18.3	1153	1	0.0	0.06	0	4	19	15	402.6%	Meets	0.989



Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Upper	305	Classroom	Education	Classroom (ages 9+)	462	22.7%	15%	RTU-1	646	9.5	6137	25	10.0	0.12	35	328	105	-223	-67.9%	Fails	1.027
Upper	306	Classroom	Education	Classroom (ages 9+)	591	14.6%	20%	RTU-2	699	9.5	6641	14	10.0	0.12	35	224	86	-138	-61.6%	Fails	0.777
Upper	307	Classroom	Education	Classroom (ages 9+)	735	22.7%	15%	RTU-1	617	9.5	5862	26	10.0	0.12	35	334	167	-167	-50.0%	Fails	1.709
Upper	308	Classroom	Education	Classroom (ages 9+)	568	14.6%	20%	RTU-2	544	9.6	5222	6	10.0	0.12	35	125	83	-42	-33.7%	Fails	0.954
Upper	309	Classroom	Education	Classroom (ages 9+)	740	14.6%	20%	RTU-2	671	9.6	6442	26	10.0	0.12	35	341	108	-233	-68.3%	Fails	1.006
Upper	313	Classroom	Education	Classroom (ages 9+)	751	14.6%	20%	RTU-2	620	9.6	5952	11	10.0	0.12	35	184	110	-74	-40.3%	Fails	1.109
Upper	310	Men's Room	Public Spaces	Toilet rooms - public	540	14.6%	20%	RTU-2	210	9.5	1995	4	0.0	0.00	0	0	173	173	0.0%	N/A	5.203
Upper	311	Toilet	Public Spaces	Toilet rooms - public	166	14.6%	20%	RTU-2	59	8	472	1	0.0	0.00	0	0	10	10	0.0%	N/A	1.271
Upper	312	Women's Room	Public Spaces	Toilet rooms - public	556	14.6%	20%	RTU-2	210	9.5	1995	4	0.0	0.00	0	0	19	19	0.0%	N/A	0.571
Upper	314	Computer Lab	Education	Computer lab	761	14.6%	20%	RTU-2	774	9.5	7353	30	10.0	0.12	25	393	111	-282	-71.7%	Fails	0.906
Upper	314A	Storage	Storage	Warehouses	---	---	---	---	72	18	1296	0	0.0	0.06	0	4	---	N/A		N/A	
Upper	314B	Storage	Storage	Warehouses	---	---	---	---	72	18	1296	0	0.0	0.06	0	4	---	N/A		N/A	
Upper	315	Classroom	Education	Classroom (ages 9+)	707	14.6%	20%	RTU-2	674	9.6	6470	26	10.0	0.12	35	341	103	-238	-69.8%	Fails	0.955
Upper	316	Classroom	Education	Classroom (ages 9+)	734	14.6%	20%	RTU-2	692	9.6	6643	25	10.0	0.12	35	333	107	-226	-67.9%	Fails	0.966
Upper	317	Lobby	Public Spaces	Corridors	---				745	9.6	7152	10	0.0	0.06	0	45	---	N/A		N/A	
Upper	318	Team Assembly	Education	Classroom (ages 9+)	1381	66%	15%	RTU-3	1030	15.6	16068	25	10.0	0.12	35	374	911	537	143.8%	Meets	3.402
Upper	319	Classroom	Education	Classroom (ages 9+)	1009	66%	15%	RTU-3	655	9.9	6485	25	10.0	0.12	35	329	666	337	102.7%	Meets	6.162
Upper	320	Science Classroom	Education	Classroom (ages 9+)	1033	66%	15%	RTU-3	1038	9.8	10172	25	10.0	0.12	35	375	628	253	67.7%	Meets	3.704
Upper	321	Prep	Education	Classroom (ages 9+)	0	66%	15%	RTU-3	172	8.9	1531	1	10.0	0.12	35	31	0	-31	-100.0%	Fails	0.000
Upper	322	Science Classroom	Education	Classroom (ages 9+)	985	66%	15%	RTU-3	1111	10	11110	25	10.0	0.12	35	383	650	267	69.6%	Meets	3.510
Upper	323	Prep	Education	Classroom (ages 9+)	277	66%	15%	RTU-3	233	8.9	2074	1	10.0	0.12	35	38	183	145	382.1%	Meets	5.295

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



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)
Upper	340	Book Storage	Storage	Warehouses	1058	49%	15%	RTU-7	890	9	8010	10	0.0	0.06	0	53	518	465	870.0%	Meets	3.880
Upper	341	Mech	None	None	---	---	---	---	58	9	522	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000
Upper	343	Classroom	Education	Classroom (ages 9+)	647	49%	15%	RTU-7	314	9.5	2983	8	10.0	0.12	35	118	317	199	169.4%	Meets	6.376
Upper	344	Classroom	Education	Classroom (ages 9+)	245	49%	15%	RTU-7	241	9.5	2290	5	10.0	0.12	35	79	120	41	52.1%	Meets	3.145
Upper	345	Classroom	Education	Classroom (ages 9+)	643	49%	15%	RTU-7	327	9.5	3107	8	10.0	0.12	35	119	227	108	90.4%	Meets	4.384
Upper	346	Classroom	Education	Classroom (ages 9+)	428	49%	15%	RTU-7	386	9.5	3667	10	10.0	0.12	35	146	210	64	43.5%	Meets	3.436
Upper	347	Classroom	Education	Classroom (ages 9+)	562	49%	15%	RTU-7	487	9.6	4675	23	10.0	0.12	35	288	275	-13	-4.7%	Fails	3.529
Upper	348	Classroom	Education	Classroom (ages 9+)	362	49%	15%	RTU-7	478	9.5	4541	12	10.0	0.12	35	177	177	0	-0.2%	Fails	2.339
Upper	349	Faculty	Offices	Office spaces	644	73%	15%	RTU-6	365	9.5	3468	10	5.0	0.06	5	72	470	398	553.7%	Meets	8.133
Upper	350	Classroom	Education	Classroom (ages 9+)	832	73%	15%	RTU-6	510	9.5	4845	25	10.0	0.12	35	311	607	296	95.1%	Meets	7.517
Upper	351	Classroom	Education	Classroom (ages 9+)	1053	73%	15%	RTU-6	599	9.5	5691	25	10.0	0.12	35	322	769	447	138.9%	Meets	8.108
Upper	362	Media Center	Education	Media Center	5070	30%	25%	RTU-4	4700	9.6 11.8	47320	56	10.0	0.12	25	1124	1518	394	35.1%	Meets	1.925
Upper	364	Seminar	Education	Lecture Classroom	627	30%	25%	RTU-4	546	9.4	5132	12	7.5	0.06	65	123	188	65	53.1%	Meets	2.198
Upper	365	A/V Storage	Storage	Warehouses	147	30%	25%	RTU-4	192	9.4	1805	2	0.0	0.06	0	12	44	32	281.9%	Meets	1.463
Upper	366	Work Room	Workrooms	Copy, printing rooms	502	30%	25%	RTU-4	314	9.4	2952	7	5.0	0.06	4	54	150	96	178.6%	Meets	3.049
Upper	366A	Office	Offices	Office spaces	98	30%	25%	RTU-4	141	9	1269	3	5.0	0.06	5	23	29	6	23.6%	Meets	1.371
Upper	369	Balcony	Education	Auditoriums	---	---	---	RTU-9	1561	11.6	18108	60	5.0	0.06	150	394	---	N/A		N/A	
Upper	371	Storage	Storage	Warehouses	---	---	---	---	170	9	1530	0	0.0	0.06	0	10	---	N/A		N/A	
Upper	372	Storage	Storage	Warehouses	---	---	---	---	108	7	756	0	0.0	0.06	0	6	---	N/A		N/A	
Upper	373	Storage	Storage	Warehouses	---	---	---	---	75	7	525	0	0.0	0.06	0	5	---	N/A		N/A	
Upper	374	Mech	None	None	---	---	---	---	162	9	1458	0	0.0	0.00	0	0	0	0	0.0%	N/A	0.000

Project Name:	Fairfield Public Schools RCx & TAB Study
Project Number:	2020102.00.04
Scope	Ventilation Calculation by Building
Date	June 21, 2022

Tomlinson Middle School



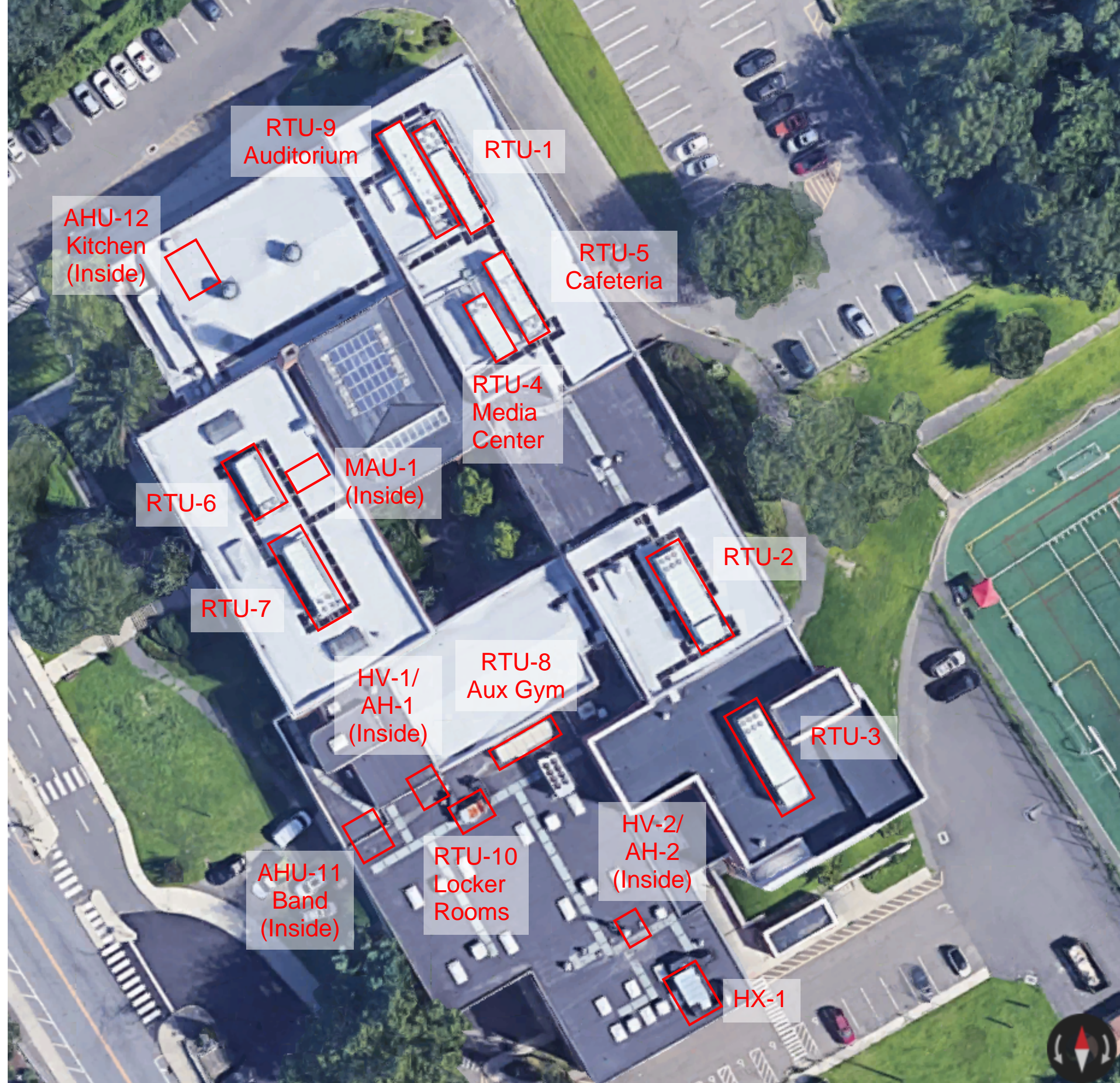
Zone Identification												IMC 2015 Ventilation Calculations									
Floor	Room#	Room Name	Occupancy Classification	Category	Total Airflow	Unit Actual OA %	BAS OA Damper Cond	Served By	Zone Area, Az, per space	Ceiling Height	Volume, per space	Zone Population , Pz, per space	People OA Rate in Breathing 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)
Upper	375	Storage	Storage	Warehouses	---	---	---	---	196	9	1764	0	0.0	0.06	0	12	---	N/A		N/A	



## APPENDIX 3 – Roof Map







RTU-9  
Auditorium

RTU-1

AHU-12  
Kitchen  
(Inside)

RTU-5  
Cafeteria

RTU-4  
Media  
Center

MAU-1  
(Inside)

RTU-6

RTU-7

RTU-2

HV-1/  
AH-1  
(Inside)

RTU-8  
Aux Gym

RTU-3

AHU-11  
Band  
(Inside)

RTU-10  
Locker  
Rooms

HV-2/  
AH-2  
(Inside)

HX-1







## APPENDIX 4 – TAB Airflow Survey Data





**WING'S** TESTING & BALANCING CO., INC.

---

# **Fairfield Public Schools**

## **Tomlinson Middle School**

### **Ventilation Survey**

\* \* \* \*

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

April 21<sup>st</sup>, 2022



# WING'S TESTING & BALANCING CO., INC.

April 21<sup>st</sup>, 2022

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

Re: Fairfield Public Schools – Tomlinson Middle School- Ventilation Survey

Dear Bill,

Wing's has completed the HVAC/Fresh Air Ventilation Survey at the above referenced location. Airflow readings of the requested rooms, as well as fan and outside air totals have been measured and noted. The results are as follows:

- The controls contractor ALC was not able to communicate with most systems.
- RTU-5 serving the cafeteria did not run.
- Actual O.A. damper commands and positions (ERV/Bypass) couldn't be verified.
  - Damper commands listed in the matrix are pre-programmed settings in the standalone Intellipac.
- Ductwork for FCUs serving the Field Level was not verified
  - No ventilation for those systems was present as HX-1 was not running.

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:*

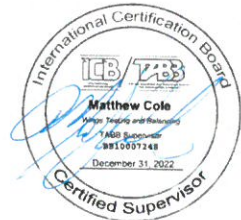
TABB—Commissioning—Fire/Life Safety L1&L2—Sound & Vibration

**John Flanagan**

Certified TABB Supervisor TB950107S

CT SM-2 License #771

MA Sheetmetal Journeyman License #6913



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

VELOCITY PRESSURE READINGS								
PROJECT:		Fairfield Public Schools - Tomlinson Middle School				DATE: 4/19/22		
AREA SERVED:		Various				TECH: JF, MS		
TRAVERSE LOCATIONS	DUCT SIZE "	AREA SQ.FT.	DESIGN		CENT. STAT. PRESS."	TEST		NOTES
			FPM	CFM		FPM	CFM	
RTU-1								
Total	78" x 73"	39.54	430	17,000	w/ Velgrid	533	21,075	
O.A.								
ERV	69.5" x 28"	10.88	---	ND	w/ Velgrid	440	4787	
Bypass	2 (54" x 24")	26.25	---	ND	---	---	---	
RTU-2								
Total	103" x 62"	44.35	570	23,300	w/ Velgrid	420	18,627	
O.A.								
ERV	78.5" x 30"	12.08	---	ND	w/ Velgrid	225	2718	
Bypass	63" x 54"	23.625	---	ND	---	---	---	
RTU-3								
Total	103" x 62"	44.35	417	18,500	w/ Velgrid	533	23,639	
O.A.								
ERV	78.5" x 30"	10.11	---	ND	---	---	---	
Bypass	63" x 54"	23.625	---	ND	w/ Velgrid	662	15,640	
RTU-4								
Total	36" x 24"	6.00	1333	8000	+0.22"	1074	6444	
O.A.	35" x 32"	7.78	---	ND	w/ Velgrid	248	1929	
RTU-5								
Total	78.5" x 46.5"	25.35	357	9050	---	---	---	(1)
O.A.								
ERV	43" x 21"	6.27	---	ND	---	---	---	(1)
Bypass	44" x 35"	10.69	---	ND	---	---	---	(1)
RTU-6 Supply								
2nd Floor	30" x 16"	3.33	---	ND	+0.23"	1125	3746	
1st Floor	26" x 12"	2.17	---	ND	+0.386"	764	1658	
Total							5404	
O.A.	44" x 35"	10.69	---	ND	w/ Velgrid	369	394	
REMARKS								
(1) Unit not running.								
NA Not Available   ND No Design   DD Direct Drive   N/R No Requirement								















Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Field	001	Music Classroom	1049	---	---	Unknown	FCU-F1	O.A. by HX-1 (not running)
Field	002	Art Classroom	1657	---	---	Unknown	Unknown FCU	O.A. by HX-1 (not running)
Field	003	Storage	175	---	---	Unknown	Unknown FCU	O.A. by HX-1 (not running)
Field	005	Men's Room	0	---	---	---	EF	
Field	006	Women's Room	0	---	---	---	EF	
Field	007	Kiln	-27	---	---	---	---	Exh/Ret unknown.
Field	008	Art Classroom	0	---	---	---	FCU-6	Not running, no communication.
Field	009	Storage	0	---	---	Unknown	Unknown	
Field	010	Office	0	---	---	Unknown	Unknown	
Field	011	Keyboard Lab	0	---	---	Unknown	Unknown	
Field		Main Electrical	---	---	---	Unknown	Unknown	
Field	013	Transport/Comm	1999	---	---	Unknown	FCU-F-7	No HVAC plans.
Field	014	Computer	689	---	---	Unknown	FCU-F-7	No HVAC plans.
Field	016	Storage	---	---	---	---	---	No supply.
Field	017	Applied Technology	2052	---	---	Unknown	FCU-F-10	No HVAC plans.
Field	018	Office	145	---	---	Unknown	FCU-F-10	No HVAC plans.
Field	019	Storage	---	---	---	---	---	No HVAC plans.
Field	020	Orchestra Room	1414	---	---	Unknown	AHU-11	
Field	022	Band Room	0	---	---	Unknown	AHU-11	
Field	028	Elec	---	---	---	---	---	
Field	031	Band Room	3131	---	---	---	AHU-11	Possible FD closed.
Field	032	Practice	729	---	---	---	AHU-11	
Field	033	Office	374	---	---	---	AHU-11	
Field	034	Storage	---	---	---	---	Unknown	No supply.
Field	036	Storage	---	---	---	---	Unknown	
Field	038	Elev Mech	---	---	---	---	Unknown	



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Field	050	Grounds Equip.	---	---	---	---	Unknown	
Field	051	Exterior Storg.	---	---	---	---	Unknown	
Ground	101	Science Classroom	1553	353	22.7%	15%	RTU-1	
Ground	108	Faculty Room	427	97	22.7%	15%	RTU-2	
Ground	109	Classroom	1135	258	22.7%	15%	RTU-3	
Ground	110	Women's Room	285	---	---	---	EF-6	
Ground		Exterior Storage	---	---	---	---	---	
Ground	111A	Storage	---	---	---	---	---	No mechanical ventilation.
Ground	111B	Storage	---	---	---	---	RTU-2	No sup or ret to RTU-2.

Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Ground	112	Storage	102	15	14.6%	20%	RTU-2	
Ground	113	Science Classroom	594	87	14.6%	20%	RTU-2	
Ground	114	Classroom	468	68	14.6%	20%	RTU-2	
Ground	115	Classroom	522	76	14.6%	20%	RTU-2	
Ground	116	Classroom	423	62	14.6%	20%	RTU-2	
Ground	118	Men's Room	332	---	---	---	EF-7	
Ground	119	Classroom	412	60	14.6%	20%	RTU-2	
Ground	120	Office	116	17	14.6%	20%	RTU-2	
Ground	120C	MDF	---	---	14.6%	20%	RTU-2	Diffuser is not accessible.
Ground	121	Computer Lab	902	132	14.6%	20%	RTU-2	
Ground	125	Storage	---	---	---	---	---	No mechanical ventilation.
Ground	126	Classroom	1381	911	66%	15%	RTU-3	
Ground	127	Classroom	651	430	66%	15%	RTU-3	
Ground	128	Science Classroom	1097	724	66%	15%	RTU-3	
Ground	129	Storage	73	48	66%	15%	RTU-3	
Ground	130	Fitness Center	774	511	66%	15%	RTU-3	
Ground	140	Project Adventure	558	136	23%	Unknown	AH-2	No communication.
Ground	142	Storage	NA	---	---	---	---	No access to diffuser. System unknown, access door open.
Ground	144	Gym	6968	420	6%	Unknown	AH-1	No communication.
Ground	145	Storage	---	---	---	---	AH-1 / AH-2	Ductwork requires verification.
Ground		Elec	---	---	---	---		
Ground	148	Storage	244	244	100%	100%	RTU-10	ERV unit.
Ground	150	Boy's Locker Rm	593	593	100%	100%	RTU-10	ERV unit.
Ground	153	Office	150	150	100%	100%	RTU-10	
Ground	102	Prep	268	61	22.7%	15%	RTU-1	
Ground	103	Cust	---	---	---	---	RTU-1	No sup or ret to RTU-1.



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Ground	104	Classroom	473	107	22.7%	15%	RTU-1	
Ground	106	Storage	---	---	---	---	---	No mechanical ventilation.
Ground	107	Classroom	957	217	22.7%	15%	RTU-1	
Ground	156	Girl's Locker Rm	588	588	100%	100%	RTU-10	
Ground	157	Office	263	263	100%	100%	RTU-10	
Ground	164B	Storage	---	---	---	---	---	
Ground		Women's Room	159	---	---	---	EF-6	
Ground	165A	Storage	---	---	---	---	---	
Ground	165B	Data	---	---	---	---	---	
Ground		Storage	---	---	---	---	---	
Ground	166	Textile Lab	1411	691	49%	15%	RTU-7	
Ground	162	Men's Room	0	---			EF-6	
Ground	167	Classroom	587	288	49%	15%	RTU-7	
Ground	169	Classroom	808	396	49%	15%	RTU-7	
Ground	171	Cust Office	164	80	49%	15%	RTU-7	
Ground	170	Mech	---	---	---	---	EF-12	
Ground	173	Food Lab	1214	886	73%	15%	RTU-6	
Ground	172	Boiler Room	6222	6222	100%	100%	MAU-1	
Ground	175	Storage	---	---	---	---	---	
Ground	181	Cafeteria	0	---	---	15%	RTU-5	
Ground	182	Faculty Dining	0	---	---	15%	RTU-5	
Ground	183	Storage	0	---	---	15%	RTU-5	
Ground	184A	Cust	49	---	---	---	EF-6	
Ground	186	Dishwashing	301	301	100%	Unknown	AH-12	
Ground	187	Kitchen	2291	2291	100%	Unknown	AH-12	
Ground	188	Storage	200	200	100%	Unknown	AH-12	



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Ground	189	Office	57	57	100%	Unknown	AH-12	
Ground		Refr	---	---	---	---	AH-12	
Ground		Freezer	---	---	---	---	AH-12	
Ground	190	Storage	0	0	4.5%	10%	RTU-0	
Ground	193	Water Room	---	---	---	---	---	
Main	201	Science Classroom	1426	324	22.7%	15%	RTU-1	
Main	202	Prep	280	64	22.7%	15%	RTU1	
Main	185B	Servery	493	493	100%	Unknown	AH-12	
Main	203	Cust	---	---	22.7%	15%	RTU-1	No exhaust. Return to RTU-1
Main	205 / 207	Classroom	1107	251	22.7%	15%	RTU-1	
Main	206	Classroom	431	63	14.6%	20%	RTU-2	
Main	207	Classroom	902	205	22.7%	15%	RTU-1	
Main	208	Classroom	371	54	14.6%	20%	RTU-2	
Main	212	Men's Room	281	---	---	---	EF-6	
Main	213	Women's Room	275	---	---	---	EF-6	
Main	214	Toilet	299	---	---	---	EF-6	
Main	209	Science Classroom	525	77	14.6%	20%	RTU-2	
Main	210	Prep	116	17	14.6%	20%	RTU-2	
Main	211	IT Room	---	---	14.6%	20%	RTU-2	No supply, return to RTU-2.
Main	215	Classroom	419	61	14.6%	20%	RTU-2	
Main	216	Science Classroom	414	60	14.6%	20%	RTU-2	
Main	217	Prep	78	11	14.6%	20%	RTU-2	
Main	218	Computer Lab	659	96	14.6%	20%	RTU-2	
Main	221	Science Classroom	403	59	14.6%	20%	RTU-2	
Main	224	Storage	---	---	---	---	---	No mechanical ventilation.
Main	225	Classroom	1037	684	66%	15%	RTU-3	



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Main	226	Classroom	1009	666	66%	15%	RTU-3	
Main	227	Science Classroom	1117	737	66%	15%	RTU-3	
Main	228	Prep	205	135	66%	15%	RTU-3	
Main	229	Storage / Office	---	---	66%	15%	RTU-3	No supply, return to RTU-3.
Main	230	Men's Room	213 S/OE	141	66%	15%	RTU-3/EF-6	Duplicate tag, fan not running.
Main	232	Women's Room	205 S/OE	135	66%	15%	RTU-3/EF-6	
Main	231	Toilet	0	---	---	---	EF-6	
Main	233	Classroom	1083	---	66%	15%	RTU-3	
Main	242	Mechanical	---	---	---	---	---	No mechanical ventilation.
Main	244	Storage	---	---	49%	15%	RTU-7	No supply, return to RTU-7.
Main	245	Classroom OT/PT	226	---	49%	15%	RTU-7	
Main	246	Elec	---	---	---	---	EF-2	
Main	247	Aux Gym	4720	396	8.4%	Unknown	RTU-8	Damper closed, see photo.
Main	251	Toilet	280	---	---	---	EF-2-5	
Main	254	Main Office	473	232	49%	15%	RTU-7	
Main	256	Principal	276	135	49%	15%	RTU-7	
Main	258	Coffee Room	77	38	49%	15%	RTU-7	
Main	259	Office	159	78	49%	15%	RTU-7	
Main	260	Assistant Principal	394	193	49%	15%	RTU-7	
Main	261	Nurse	268	131	49%	15%	RTU-7	
Main	263	Men's Room	171	---	---	---	EF-2-5	
Main	262	Women's Room	169	---	---	---	EF-2-5	
Main	257	Toilet	74	---	---	---	EF-2-5	
Main	264	Exam	429	210	49%	15%	RTU-7	
Main	265	Office	167	82	49%	15%	RTU-7	
Main		Main Lobby	496	243	49%	15%	RTU-7	



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Main	267	Classroom	785	573	73%	15%	RTU-6	
Main	268	Classroom	834	609	73%	15%	RTU-6	
Main	271	Storage	251	57	22.7%	15%	RTU-1	
Main	274	Attendance	300	68	22.7%	15%	RTU-1	
Main	275	Dean	270	61	22.7%	15%	RTU-1	
Main	276	Office	86	20	22.7%	15%	RTU-1	
Main	277	Mail Room	138	31	22.7%	15%	RTU-1	
Main	278	Storage	149	34	22.7%	15%	RTU-1	
Main	279	Office Supplies	77	17	22.7%	15%	RTU-1	
Main	280	Toilet	145	---	---	---	EF-6	
Main	281	Assistant Principal	210	48	22.7%	15%	RTU-1	
Main	282	Office	369	84	22.7%	15%	RTU-1	
Main	283	Office	249	57	22.7%	15%	RTU-1	
Main	284	Office	304	222	73%	15%	RTU-6	
Main	282A	Storage	---	---	---	---	---	No mechanical ventilation.
Main	285	Office	431	98	22.7%	15%	RTU-1	
Main	286	Office	258	59	22.7%	15%	RTU-1	
Main	286A	Storage	---	---	---	---	---	
Main	288	Guidance	890	202	22.7%	15%	RTU-1	
Main	270	Women's Room	36	---	---	---	EF-2-4	
Main	290	Conference	456	104	22.7%	15%	RTU-1	
Main	295	Auditorium	14,607	669	4.5%		RTU-9	
Main	295	Stage	---	---	---	---	RTU-9	See adutorium 295.
Main	298	Not Labeled	---	---	---	---	---	Not on prints, door access dwp.
Main	294	Lobby	---	---	---	---	---	No mechanical ventilation.
Main		Storage	---	---	---	---	---	No mechanical ventilation.



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Upper	301	Science Classroom	1569	356	22.7%	15%	RTU-1	
Upper	302	Prep	250	57	22.7%	15%	RTU-1	
Upper	303	Cust	82	19	22.7%	15%	RTU-1	
Upper	305	Classroom	462	105	22.7%	15%	RTU-1	
Upper	306	Classroom	591	86	14.6%	20%	RTU-2	
Upper	307	Classroom	735	167	22.7%	15%	RTU-1	
Upper	308	Classroom	568	83	14.6%	20%	RTU-2	
Upper	309	Classroom	740	108	14.6%	20%	RTU-2	
Upper	313	Classroom	751	110	14.6%	20%	RTU-2	
Upper	310	Men's Room	118 S / 422 E	173	14.6%	20%	RTU-2	
Upper	311	Toilet	71 S / 95 E	10	14.6%	20%	RTU-2	
Upper	312	Women's Room	133 S / 423 E	19	14.6%	20%	RTU-2	
Upper	314A	Computer Lab	761	111	14.6%	20%	RTU-2	
Upper	314B	Storage	---	---	---	---	---	No mechanical ventilation.
Upper	315	Classroom	707	103	14.6%	20%	RTU-2	
Upper	316	Classroom	734	107	14.6%	20%	RTU-2	
Upper	318	Team Assembly	1381	911	66%	15%	RTU-3	
Upper	319	Classroom	1009	666	66%	15%	RTU-3	
Upper	320	Science Classroom	1033	628	66%	15%	RTU-3	
Upper	321	Prep	NA	---	66%	15%	RTU-3	Diffuser is not accessible.
Upper	322	Science Classroom	985	650	66%	15%	RTU-3	
Upper	323	Prep	277	183	66%	15%	RTU-3	
Upper	340	Book Storage	1058	518	49%	15%	RTU-7	
Upper	314	Mech	---	---	---	---	---	No mechanical ventilation.
Upper	343	Classroom	647	317	49%	15%	RTU-7	
Upper	344	Classroom	245	120	49%	15%	RTU-7	1 register not installed.



Project Name:	Fairfield Public Schools RCx: Tomlinson Middle School
Project Number:	2020102.00.04
Scope	TAB Data
Date	April 28, 2022

Zone Identification								
Floor	Room#	Room Name	TAB Measured (cfm)	Calc. OA CFM @ Min. (OA cfm)	Meas. unit OA %	BAS Damper Command (pos. %)	Associated VAV & RTU/AHU Unit	Notes
Upper	345	Classroom	643	227	49%	15%	RTU-7	
Upper	346	Classroom	428	210	49%	15%	RTU-7	
Upper	347	Classroom	562	275	49%	15%	RTU-7	
Upper	348	Classroom	362	177	49%	15%	RTU-7	
Upper	349	Faculty	644	470	73%	15%	RTU-6	
Upper	350	Classroom	832	607	73%	15%	RTU-6	
Upper	351	Classroom	1053	769	73%	15%	RTU-6	
Upper	362	Media Center	5070	1518	30%	25%	RTU-4	
Upper	364	Seminar	627	188	30%	25%	RTU-4	
Upper	365	AV storage	147	44	30%	25%	RTU-4	
Upper	366	Work Room	502	150	30%	25%	RTU-4	
Upper	366A	Office	98	29	30%	25%	RTU-4	
Upper	369	Balcony	---	---	---	---	RTU-9	See auditorium 295.
Upper		Storage	---	---	---	---	---	No mechanical ventilation.
Upper		Storage	---	---	---	---	---	No mechanical ventilation.
Upper		Storage	---	---	---	---	---	No mechanical ventilation.
Upper	374	Mech	---	---	---	---	---	No mechanical ventilation.
Upper	375	Storage	---	---	---	---	---	No mechanical ventilation.
Upper	374	Mech	---	---	---	---	---	No mechanical ventilation.
Upper	375	Storage	---	---	---	---	---	No mechanical ventilation.



## APPENDIX 5 – RCx Unit and Room Take-Off Data



Project Name:		Fairfield Public Schools RCx							
Project Number:		2020102.00.04		RCM, REA, JRK					
Scope		Room Take-Off Data							
Date		03/30/2022							
		Tomlinson Middle School							
Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
Field	001	Music Classroom	979	10	9790	9	2 Supplies and 2 Returns	FCU in 002	
Field	002	Art Classroom	1312	9.8	12858	16	3 Supplies and 1 Return Air	FCU above Ceiling as well as another serving 001	
Field	003	Storage	213	9.7	2066	0	1 Supply and 1 Return		
Field	005	Men	138	9.7	1339	4			
Field	006	Women	138	9.7	1339	4			
Field	007	Kiln	112	13.4	1501	0	2 Exhaust systems		
Field	008	Art Classroom	1138	9.8	11152	18	3 Supplies and 2 Returns	FCU in Room	
Field	009	Storage	48	9.8	470	0	1 Supply and 2 Returns		
Field	010	Office	170	9.8	1666	2			
Field	011	Keyboard Lab	711	9.8	6968	24	1 Supply and 1 Return	Served by FCU in 008	
Field	012	Main Electrical	285	13.4	3819	0			
Field	013	Transportation/Com munication	1224	9.8	11995	30	3 Supplies and 3 Returns	FCU in Room, Additional FCU Serves 014	
Field	014	Computer	276	9.8	2705	7	1 Supply and 1 Return		
Field	016	Storage	177	13.4	2372	0	1 Return		
Field	017	Applied Technology	1482	10	14820	25	4 Supplies and 1 Return	Served by FCU-10, FCU-9 in Room serving Main Electrical Room, FCU-5 in	
Field	018	Office	121	8	968	1	1 Supply		
Field	019	Storage	166	13.4	2224	0	1 Supply and 1 Return	FCU-8 in room Serves 020	
Field	020	Orchestra Room	374 773	9.3 11.4	12290	40	2 Supplies and 1 Return 1 Supply and 1 Return	- Served by FCU-8	
Field	022	Band Room	1326	10	13260	56	4 Supplies and 1 Return		
Field	035	Elec	60	13.4	804	0			
Field	031	Band Room	2160	12.8	27648	75	3 Supplies and 1 Return	Served by AHU-11	
Field	032	Practice	349	9.3	3246	7	2 Supplies and 1 Return		
Field	033	Office	142	9.3	1321	2	1 Supply and 1 Return		
Field	034	Storage	155	9.3	1442	0			
Field	036	Storage	104	9.3	967	0			
Field	037	Toilet	37	9.3	344	1			
Field	038	Elev Mech	68	13.4	911	0			
Field	050	Grounds Equipment	165	13.4	2211	0			
Field	051	Exterior Storage	75	13.4	1005	0			
Ground	101	Science Classroom	1026	9.5	9747	26	3 SA. 3 RA. FTR		
Ground	102	Prep	182	9.5	1729	3	1 SA, 1 RA, FTR		
Ground	103	Cust	90	13.5	1215	1			
Ground	104	Classroom	588	7.5	4410	16	2 SA, 1 RA		
Ground	106	Storage	91	8.3	755	0			
Ground	107	Classroom	667	8.3	5536	26	2 SA, 1 RA, FTR		
Ground	108	Faculty Room	561	8.3	4656	13	1 SA. 1 RA		
Ground	109	Classroom	655	8.3	5437	25	2 SA, 1 RA, FTR		
Ground	110	Women	221	8	1768	3			
Ground	111	Exterior Storage	84	13.5	1134	0			
Ground	111A	Storage	53	13.5	716	0			
Ground	111B	Storage	44	13.5	594	0			

Project Name:		Fairfield Public Schools RCx				RCM, REA, JRK			
Project Number:		2020102.00.04							
Scope		Room Take-Off Data							
Date		03/30/2022							
		Tomlinson Middle School							
Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
Ground	112	Storage	200	10	2000	0	1 SA, 1 RA		
Ground	113	Science Classroom	1034	9.3	9616	26	4 SA, 4 RA, FTR	Room Missing from Original Sheet	
Ground	114	Classroom	675	9.2	6210	26	2 SA. 1 RA, FTR		
Ground	115	Classroom	703	9.2	6468	23	2 SA. 1 RA, FTR		
Ground	116	Classroom	561	9.2	5161	12	2 SA, 2 RA, FTR		
Ground	118	Men	228	8.3	1892	3			
Ground	119	Classroom	697	9.3	6482	10	2 SA, 1 RA, FTR		
Ground	120	Office	182	9	1638	5	1 SA, 1 RA	Computer IT Support warm	
Ground	120C	MDF	129	13	1677	2	FCU in Room	Room warm and 9' Ceiling Tiles open to allow additional heat transfer out.	Y /N
Ground	121	Computer Lab	898	9.3	8351	27	2 SA, 2 RA		
Ground	125	Storage	99	8	792	0		Room Missing from Original Sheet	
Ground	126	Classroom	871	9.3	8100	26	2 SA, 2 RA		
Ground	127	Classroom	736	9.3	6845	26	2 SA, 2 RA, FTR		
Ground	128	Science Classroom	973	9.3	9049	26	4 SA, 4 RA, FTR		
Ground	129	Storage	183	9	1647	0	1 SA, 1 RA		
Ground	130	Fitness Center	934	9.8	9153	20	3 SA, 1 RA	Odor in room almost like Hydraulic oil	
Ground	140	Project Adventure	2270	27.6	62652	15	4 SA off of AHU-2	Looks like 1 through roof Exh.	
Ground	142	Storage	280	27.6	7728	0	UH Only		
Ground	144	Gymnasium	7397	27.6	204157	60	AHU-2A	Looks like 4 through roof Exh.	
Ground	145	Storage	56	11	616	0			
Ground	146	Elec	96	11	1056	0			
Ground	148	Storage	211	11	2321	0	1 Exh grill		
Ground	150	Boys Locker Room	1327	9.5	12607	25	2 SA plus Exh	Area not used and does not seem to have good airflow, if any	
Ground	153	Office	260	8	2080	4	1 SA, 1 Exh in Bathroom		
Ground	156	Girls Locker Room	1374	10.7	14702	25	2 SA, 3 Exh	Area not used and does not seem to have much air circulation	
Ground	157	Office	268	8	2144	5	1 SA, 1 RA		
Ground	164B	Storage	74	10	740	0			
Ground	164A	Women	100	7.7	770	2			
Ground	165A	Storage	31	10	310	0	Inline Exhaust and Room Hot		
Ground	165B	Data	28	10.7	300	0			
Ground	164A	Storage	73	10.8	788	0			
Ground	166	Textile Lab	1191	9	10719	26	3 SA, 2 RA, FTR		
Ground	162	Men Faculty	142	8	1136	2			
Ground	167	Classroom	597	8.6	5134	23	2 SA, 1 RA, FTR	Stuffy in Room	
Ground	169	Classroom	601	8.6	5169	23	2 SA, 1 RA, FTR		
Ground	171	Cust Office	212	13	2756	8	1 Exh grill		
Ground	170	Mech	237	13	3081	0	MER 6. HX, Pumps, VFD, Controls	Room get very hot and needs added space ventilation to protect	
Ground	171	Food Lab	1128	8.6	9701	23	5 Sa, 3 RA, FTR		
Ground	172	Boiler Room	940	16	15040	0	Served by MAU	Needs Exhaust as room gets very hot	
Ground	175	Storage	100	9.2	920	0			
Ground	181	Cafeteria	4181	9.6	40138	226	13 SA, 4 RA, FTR		



Project Name:		Fairfield Public Schools RCx			RCM, REA, JRK				
Project Number:		2020102.00.04							
Scope		Room Take-Off Data							
Date		03/30/2022							
		Tomlinson Middle School							
Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
Ground	182	Faculty Dining	270	9	2430	6	2 SA, 1 RA		
Ground	183	Storage	61	9	549	0	1 SA		
Ground	184A	Cust	48	9.1	437	1			
Ground	186	Dishwashing	307	10	3070	3			
Ground	187	Kitchen	1366	10	13660	8	6 SA with 2 Cooking Hoods	AHU and KEF not running	
Ground	188	Storage	207	9	1863	0	1 Sa, AHU-12 above Ceiling	AHU needs to remain Accessable	
Ground	189	Office	82	8.6	705	1	1 Sa		
Ground	190	Storage	100	9.2	920	0			
Ground	193	Water Room	167	9.3	1553	0			
Main	201	Science Classroom	998	9.6	9581	25	4 Sa, 2 RA, FTR		
Main	202	Prep	170	9.6	1632	2	1 SA, 1 RA		
Main	185B	Servery	1000	10	10000	25			
Main	203	Cust	64	13.5	864	1	1 Exhaust		
Main	205	Classroom	666	9.6	6394	16	2 Sa, 1 RA, FTR, Combined with 207 (Open foldable partition)		
Main	206	Classroom	248	9.6	2381	25	2 SA. 1 RA, FTR		
Main	207	Classroom	642	9.6	6163	16	2 Sa, 1 RA, FTR, Combined with 205 (Open foldable partition)		
Main	208	Classroom	525	9.2	4830	9	2 SA, 1 RA, FTR		
Main	212	Men	210	9.5	1995	4			
Main	213	Women	210	9.5	1995	4			
Main	214	Toilet	59	8	472	1			
Main	209	Science Classroom	1038	9.6	9965	25	3 SA, 3 RA		
Main	210	Prep	167	9.6	1603	1	1 SA, 1 RA		
Main	211	IT Room	73	12.7	927	0			
Main	215	Classroom	687	9.6	6595	26	2 SA, 1 RA, FTR		
Main	216	Science Classroom	1062	10	10620	16	4 SA, 2 RA		
Main	217	Prep	130	8.6	1118	12	1 SA, 1 RA		
Main	218	Computer Lab	693	8.6	5960	15	5 Sa, 2 RA		
Main	220	Lobby/Lounge	925	9.6	8880	15			
Main	221	Science Classroom	651	9.6	6250	25	2 SA. 1 RA, FTR		
Main	224	Storage	101	7.3	737	0			
Main	225	Classroom	881	9.6	8458	26	2 SA, 1 RA, FTR		
Main	226	Classroom	730	9.6	7008	25	2 SA, 1 RA, FTR		
Main	227	Science Classroom	974	9.6	9350	25	3 SA, 2 RA, FTR		
Main	228	Prep	146	9.6	1402	1	1 SA, 1 RA		
Main	229	Storage/Office	144	9.3	1339	3	SF approx due to shape of one wall		
Main	230	Men	210	9.5	1995	3			
Main	232	Women	210	9.5	1995	3			
Main	231	Toilet	59	8	472	1			
Main	233	Classroom	866	9.6	8314	26	4 SA, 1 RA, FTR		
Main	242	Mechanical	302	14.5	4379	0			
Main	244	Storage	43	16.7	718	0	1 Exhaust		

Project Name:		Fairfield Public Schools RCx				RCM, REA, JRK			
Project Number:		2020102.00.04							
Scope		Room Take-Off Data							
Date		03/30/2022							
		Tomlinson Middle School							
Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
Main	245	Classroom OT/PT	331	8.6	2847	5	1 SA	Sanyo 2.5 T KS3032 Split	Y
Main	246	Elec	109	16.7	1820	0	1 Exh		
Main	247	Aux Gym	2722	24	65328	50	4 SA, 2 RA Served RTU-8	Peaked Roof 22' to 27'	
Main	251	Men	215	8.8	1892	3			
Main	254	Main Office	383	9.6	3677	5	2 Supplies and 1 Return		
Main	256	Principal	257	9.6	2467	4	1 SA, 1 RA, FTR	Stuffy in Room	
Main	258	Office ("Coffee Room" Copy)	102	8.7	887	2	1 SA		
Main	259	Office	114	9.5	1083	2	1 Supply and 1 Return		
Main	260	Assistant Principal	276	9.6	2650	4	1 SA, 1 RA		
Main	261	Nurse	267	9.6	2563	4	1 SA, 1 RA		
Main	263	Men's Room	21	8	168	1			
Main	262	Women's Room	34	8	272	1			
Main	257	Principal Toilet	33	8	264	1			
Main	264	Exam	235	9.6	2256	3	1 SA, FTR		
Main	265	Office	91	9.6	874	2	1 SA, FTR	Complained about lack of air	
Main	267	Classroom	587	9.6	5635	24	2 Supplies and 1 Return		
Main	268	Classroom	587	9.6	5635	24	2 Supplies and 1 Return		
Main	271	Storage	189	9.5	1796	0	1 supply		
Main	272	Main Lobby	2131	9.6	20458	20	4 Supplies and 1 Return	Added	
Main	274	Attendance	361	9.5	3430	3	2 Supplies		
Main	275	Dean	203	9.2	1868	3	1 Supplies and 1 Return		
Main	276	Office	100	8.6	860	2	1 Supplies and 1 Return		
Main	277	Mail Room	162	8.9	1442	2	1 Supplies and 1 Return	Copier	
Main	278	Storage	440	9	3960	0	1 SA, 1 RA		
Main	279	Office Supplies	119	13.5	1607	0		Occupied	
Main	280	Attendance Toilet	54	8	432	1			
Main	281	Assistant Principal	285	8.9	2537	14	1 Supply and 1 Return	Deans Conference	
Main	282	Office	180	13.8	2484	2	1 Supply and 1 Return	added 832 Cu.Ft to volume	
Main	282A	Storage	47	9	423	0			
Main	283	Office	200	9.2	1840	2	1 Supply		
Main	284	Office	180	13.8	2484	2	1 Supplies and 1 Return	added 832 Cu.Ft to volume	
Main	284A	Storage	47	9	423	0			
Main	285	Office	87	9.2	800	2			
Main	286	Office	190	13.8	2622	2		added 832 Cu.Ft to volume	
Main	286A	Storage	47	9	423	0			
Main	288	Guidance	536	9.4	5038	2			
Main	270	Women	245	8	1960	4			
Main	290	Conference	280	9.4	2632	2	1 Supply and 1 Return	Move and Cool	
Main	295	Auditorium	4635	25	115875	760			
Main	296	Stage	1695	36	61020	40			
Main	298	Counseling Center Workroom	184	9.5	1748	2	Open to Guidance		

Project Name:		Fairfield Public Schools RCx							
Project Number:		2020102.00.04		RCM, REA, JRK					
Scope		Room Take-Off Data							
Date		03/30/2022							
		Tomlinson Middle School							
Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures Y /N
Main	294	Lobby	428	16	6848	30			
Upper	301	Science Classroom	736	9.5	6992	9.5	2- Supplies, 1- Return FTR Perimeter		
Upper	302	Prep	187	9.5	1777	2	1 SA		
Upper	303	Cust	63	18.3	1153	1			
Upper	305	Classroom	646	9.5	6137	25	2- Supplies, 1- Return FTR Perimeter		
Upper	306	Classroom	699	9.5	6641	14	2- Supplies, 1- Return FTR Perimeter		
Upper	307	Classroom	617	9.5	5862	26	2- Supplies, 1- Return FTR Perimeter		
Upper	308	Classroom	544	9.6	5222	6	2- Supplies, 1- Return FTR Perimeter		
Upper	309	Classroom	671	9.6	6442	26	2- Supplies, 1- Return FTR Perimeter		
Upper	313	Classroom	620	9.6	5952	11	2- Supplies, 1- Return FTR Perimeter		
Upper	310	Men's Room	210	9.5	1995	4			
Upper	311	Toilet	59	8	472	1			
Upper	312	Women's Room	210	9.5	1995	4			
Upper	314	Computer Lab	774	9.5	7353	30	6- Supplies, 4- Return		
Upper	314A	Storage	72	18	1296	0	1-Low return, directly connected to Computer Lab		
Upper	314B	Storage	72	18	1296	0	1-Low return, Accessible from Corridor		
Upper	315	Classroom	674	9.6	6470	26	3- Supplies, 1- Return FTR Perimeter		
Upper	316	Classroom	692	9.6	6643	25	3- Supplies, 1- Return FTR Perimeter		
Upper	317	Lobby	745	9.6	7152	10	Connected to 220? Lobby/Lounge		
Upper	318	Team Assembly	1030	15.6	16068	25	2- Supplies, 1- Return FTR Perimeter	Section A 144 sf w/9.5 Ceiling and 2 Supplies. Section B: 42 x 21 (897 sf.) with along the 42' run ceiling slopes from 9' to 14' and 14' to 19.2'.	
Upper	319	Classroom	655	9.9	6485	25	2- Supplies, 1- Return FTR Perimeter		
Upper	320	Science Classroom	1038	9.8	10172	25	4- Supplies, 4- Return FTR Benches		
Upper	321	Prep	172	8.9	1531	1	2- Supplies, 1- Return		
Upper	322	Science Classroom	1111	10	11110	25	4- Supplies, 4- Return FTR Benches		Y
Upper	323	Prep	233	8.9	2074	1	2- Supplies, 1- Return		
Upper	340	Book Storage	890	9	8010	10	2 Supplies, 1 Return		
Upper	341	Mech	58	9	522	0			
Upper	343	Classroom	314	9.5	2983	8	2- Supplies, 1- Return FTR Perimeter		
Upper	344	Classroom	241	9.5	2290	5	1 - Supply, 1 - Return with FTR		
Upper	345	Classroom	327	9.5	3107	8	2- Supplies, 1- Return FTR Perimeter		
Upper	346	Classroom	386	9.5	3667	10	2- Supplies, 1- Return FTR Perimeter		
Upper	347	Classroom	487	9.6	4675	23	(1) 20"x20" Sup, 1-Return FTR Perimeter		
Upper	348	Classroom	478	9.5	4541	12	1- Supplies, 1- Return FTR Perimeter		
Upper	349	Faculty	365	9.5	3468	10	1- Supplies, 1- Return FTR Perimeter	No glass	
Upper	350	Classroom	510	9.5	4845	25	2- Supplies, 1- Return FTR Perimeter		
Upper	351	Classroom	599	9.5	5691	25	2- Supplies, 1- Return	2-Exterior exposure with glass	
Upper	362	Media Center	3700 1000	9.6 11.8	47320	56	10- Supplies, 6>Returns		
Upper	364	Seminar	546	9.4	5132	12	2 - Supplies		
Upper	365	A/V Storage	192	9.4	1805	2			

<b>Project Name:</b>	<b>Fairfield Public Schools RCx</b>	<i>RCM, REA, JRK</i>
<b>Project Number:</b>	<i>2020102.00.04</i>	
<b>Scope</b>	<b>Room Take-Off Data</b>	
<b>Date</b>	<b>03/30/2022</b>	
<b>Tomlinson Middle School</b>		

Zone Identification									
Floor	Room#	Room Name	Area (SF)	Ceiling Height	Volume	People	Notes	Identified Defficiencies	Pictures
									Y /N
Upper	366	Work Room	314	9.4	2952	7	1 - Supply		
Upper	366A	Office	141	9	1269	3	1 - Supply		
Upper	369	Balcony	1561	11.6	18108	60	Open to Auditorium, 4x Linear Slot SA		
Upper	371	Storage	170	9	1530	0	uses special custodian keys to access, leads to 372, 373 storages		
Upper	372	Storage	108	7	756	0			
Upper	373	Storage	75	7	525	0			
Upper	374	Mech	162	9	1458	0	padlocked, uses special custodian keys to access		
Upper	375	Storage	196	9	1764	0			

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>AHU-1</u>	<u>Addition comments descriptions</u>
Location	Gym Mezzanine	
Serving	Main Gym	
Config/Style	Min OA, HW w/ bypass, CHW, single fan (SF), relief	
Mfr.	Trane Climate Changer	
Model #	Type LZ-25 J	
Serial #	K77F17147	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208/230/460/60/3	
SF Qty/HP	(1) 10.0 (2) BP-72 Belts loose	Bad bearing or sloppy belts creating bad rumble, over greased.
SF VFD Data	N/A	
RF Qty/HP	N/A	Roof Mounted Exhaust fans
RF VFD Data	N/A	
Filter Data (Size Quantity)	(12) 16"x25"x2"	
Filter Status	Dirty	10-8-21
Controls Type	Factory	
Controls Mfr.	BAS	
Economizer	Not Identified by probably	
CO <sub>2</sub> DCV	-	
Damper Styles	Multi zone, bypass	Old Pneumatic actuators, NIU
Damper Status	Unknown	
Heating Type	Hot Water	
Heating Coil Condition	Dirty	
Cooling Type	N/A	
Cooling Coil Condition	N/A	
CU Mfr.	N/A	
CU Model	N/A	
CU Serial	N/A	
Drain Pan Status	N/A	
Notes:	Unit is old and need TLC to continue to function properly	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit Tag Info	 A close-up photograph of a metal identification tag mounted on a dark surface. The tag features the 'Trane' logo in a stylized font, followed by the words 'CLIMATE CHANGER' in bold, capital letters. Below this, there are several blank lines for handwritten information, and at the bottom, it reads 'TOMLINSON MIDDLE SCHOOL - FAIRFIELD, WISCONSIN'.
Unit from afar	 Two photographs showing the Trane Climate Changer unit from a distance. The top photo shows the unit's exterior with a large, white, triangular air intake or filter cover on top. The bottom photo shows the unit's base and a large, circular, metallic component, possibly a fan or motor, on the right side. The unit is blue and is located in a room with orange metal shelving units in the background.

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



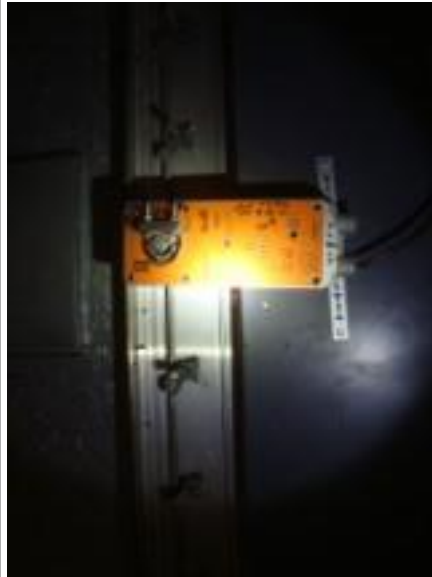


PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Heating Coil



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters



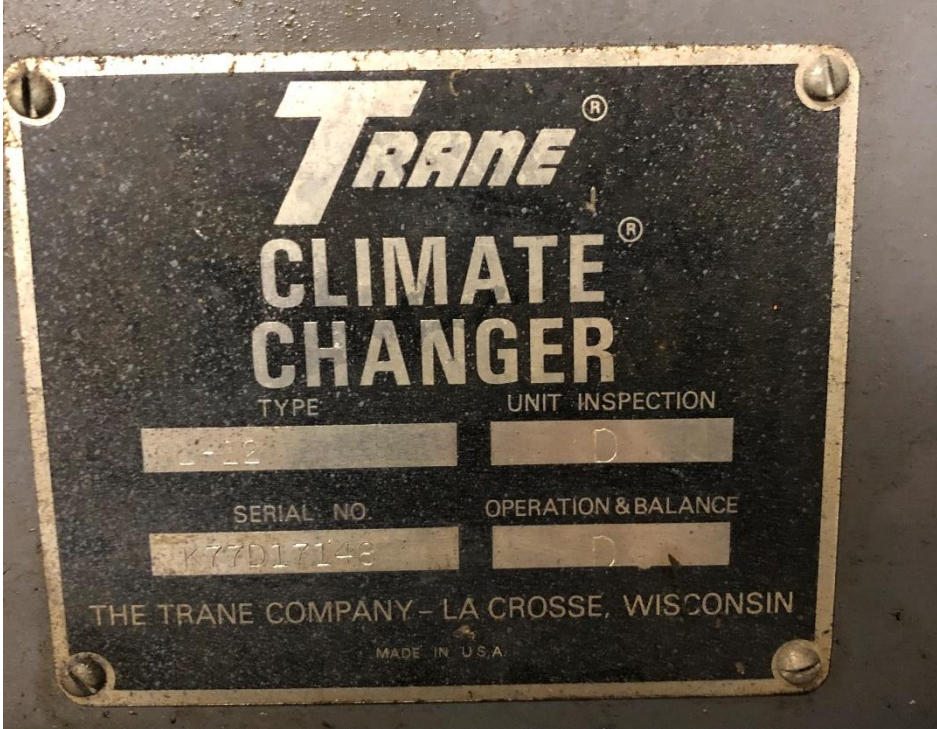

Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>AHU-2</u>	<u>Addition comments descriptions</u>
Location	Gym Storage	
Serving	Project Adventure	
Config/Style	Min OA, HW w/ bypass, CHW, single fan (SF), relief	
Mfr.	Trane Climate Changer	
Model #	Type L-12	
Serial #	K77D17148	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	208/230/460/60/3	
SF Qty/HP	(1)	
SF VFD Data	N/A	
RF Qty/HP	N/A	Roof Mounted Exhaust fans
RF VFD Data	N/A	
Filter Data (Size Quantity)	(6) 18"x25"x2"	
Filter Status	Clean	10-8-21
Controls Type	Factory	
Controls Mfr.	BAS	
Economizer	Not Identified but probably	
CO <sub>2</sub> DCV	-	
Damper Styles	Multi zone, bypass	Old Pneumatic actuators, NIU
Damper Status	Unknown	
Heating Type	Hot Water	
Heating Coil Condition	Dirty	
Cooling Type	N/A	
Cooling Coil Condition	N/A	
CU Mfr.	N/A	
CU Model	N/A	
CU Serial	N/A	
Drain Pan Status	N/A	
Notes:	Unit is old and need TLC to continue to function properly	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	
Unit SF Tag Info	



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Heating Coil

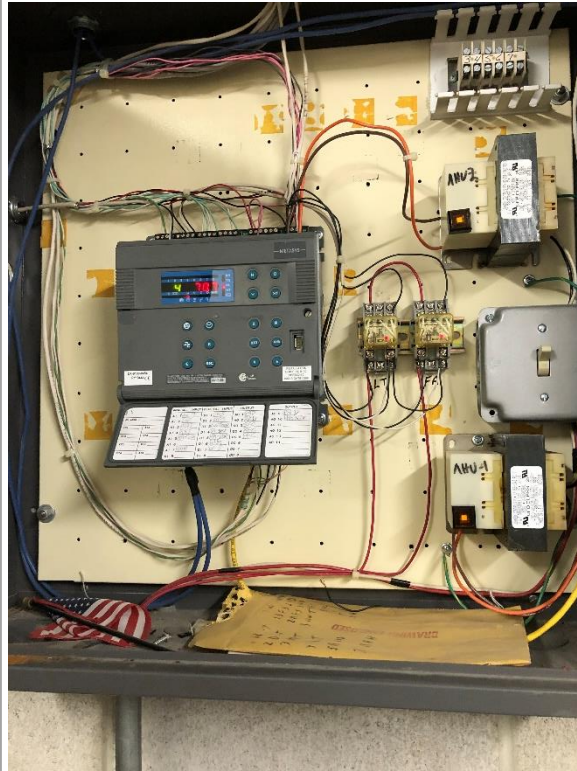


Filters



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Controls



Electrical / Misc.

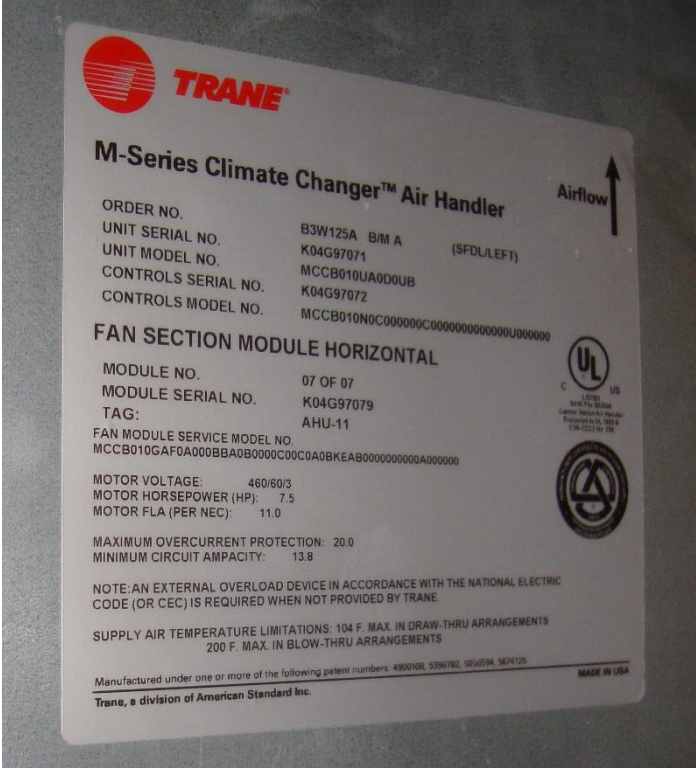



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>AHU-11</u>	<u>Addition comments descriptions</u>
Location	Lower Level 036	
Serving	Band	
Config/Style	Min OA, HW w/ bypass, CHW, single fan (SF), relief	
Mfr.	Trane Modular	
Model #	MCCB010UA0D0UB	
Serial #	KO4G97072	
Age (years)		
System CFM		
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	(1) 7.5 Belts (2) AX-75	NEW MOTOR 8/10/12
SF VFD Data	N/A	
RF Qty/HP	N/A	
RF VFD Data	N/A	
Filter Data (Size Quantity)	(2) 20"x15"x2" (1) 12"x25"x2"	10/8/21 Last change date
Filter Status	Dirty	Missing end Plates
Controls Type	DDC Electronic Packaged Controls	
Controls Mfr.	ALC	
Economizer	Yes	
CO <sub>2</sub> DCV		
Damper Styles	Factory Opposed	
Damper Status	Dampers all closed while unit operating	Linkage disconnected
Heating Type	Hot Water	
Heating Coil Condition	Dirty	
Cooling Type	Chilled Water	
Cooling Coil Condition	Dirty	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status	Flush after coil cleaning	
Notes:	Face and Bypass dampers not functional, John and Tony corrected,	

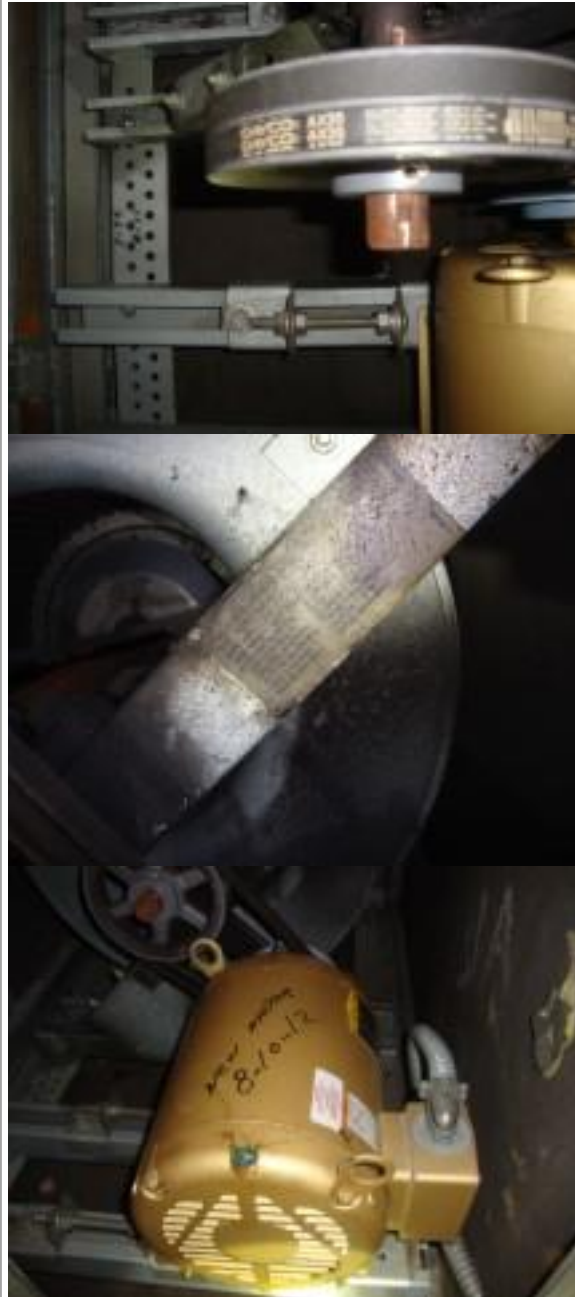


PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	
Location	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



Heating Coil



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Cooling Coil



Control Dampers




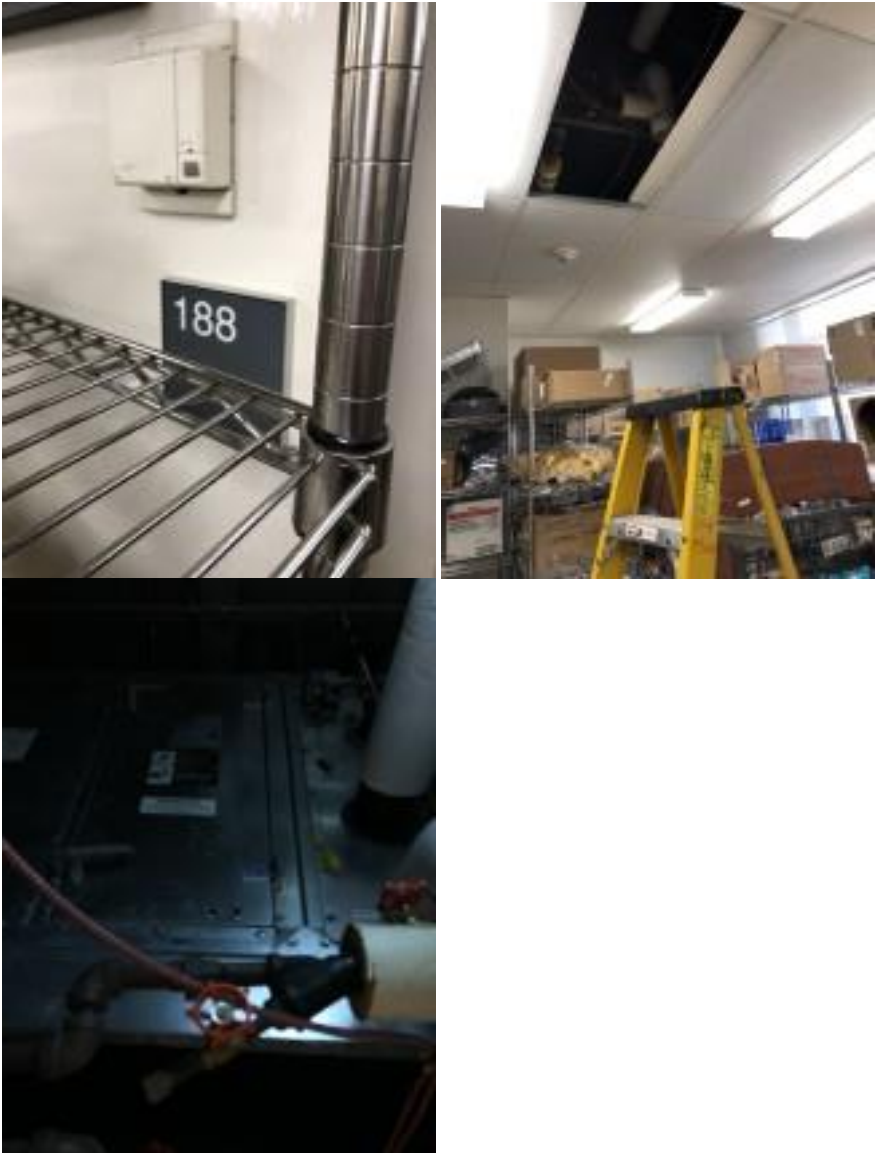
Electrical / Misc.



**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<u>Unit Tag</u>	<u>AHU-12/KEF-1</u>	<u>Addition comments descriptions</u>
Location	Storage 188 (Suspended)	
Serving	Kitchen/Servery	
Config/Style	100% Recirc capable with OA, Steam w/ bypass, Associated KEF	
Mfr.	Trane	
Model #	MCCB012UA0C0UA	
Serial #	K04M65395A	
Age (years)		
System CFM	5,600 Total, 4,000 CFM O.A.	
Max OA CFM		
V/Hz/Ph		
SF Qty/HP	Unable to verify due to access. Model look-up option	
SF VFD Data		
RF Qty/HP		
RF VFD Data		
Filter Data (Size Quantity)	(6) 20 x 20 x2	Last changed 10-18-21
Filter Status	Clean as unit does not appear to have run frequently	
Controls Type	BAS	
Controls Mfr.	JCI DX 9100	Soon to be converted to ALC
Economizer		
CO <sub>2</sub> DCV		
Damper Styles	Packaged/Opposed	
Damper Status	Could use lubrication	
Heating Type	Steam with Face & Bypass	
Heating Coil Condition	Unable to see	
Cooling Type	NA	
Cooling Coil Condition		
Drain Pan Status		
Notes:	Unit was not running and not providing ventilation to Café and Kitchen to offset KEF operation. KEF was not running during school lunch period 4-13- 22	Access limited due to dry food storage supplies below unit

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit Tag Info	
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

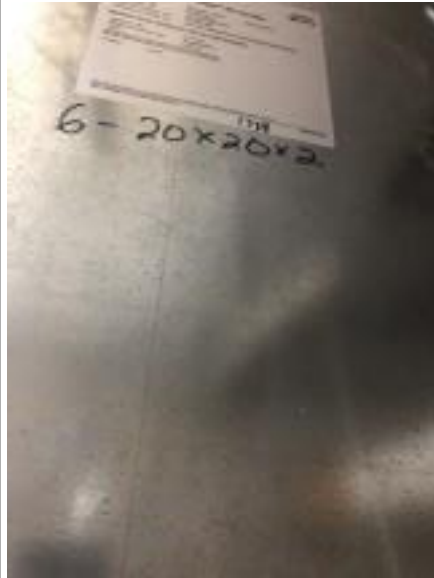
Heating Coil



Control Dampers



Filters





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Controls



Electrical / Misc.





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

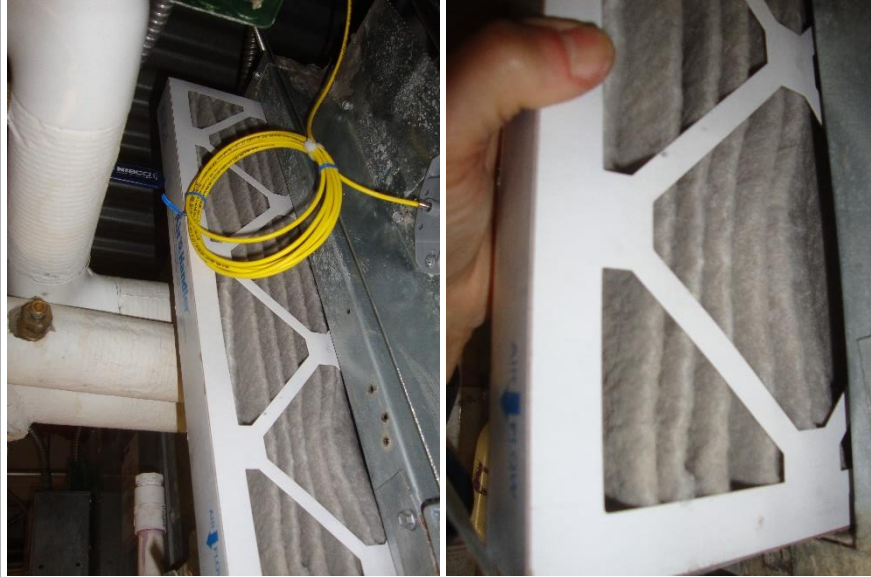
<u>Unit Tag</u>	<u>FCU-F8</u>	<u>Addition comments descriptions</u>
Location	Wood shop Storage	Typical of 13, FCU's served by HX-1 O.A.
Serving	Orchestra 020	
Config/Style	4-Pipe FCU	
Mfr.	Trane	
Model #	BCHC054G1A0A1BG4E	
Serial #	TO4G44059	
Age (years)	Unknown	
System CFM		
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	(1) 1.0	
SF VFD Data	N/A	
RF Qty/HP	N/A	Roof Mounted Exhaust fans
RF VFD Data	N/A	
Filter Data (Size Quantity)	(2) 20"x20"x2"	Filters are inaccessible, rear door missing
Filter Status	Dirty	Filters are inaccessible
Controls Type	Factory	
Controls Mfr.	DDC Electronic Automated Logic	
Economizer	N/A	
CO <sub>2</sub> DCV	-	
Damper Styles	N/A	
Damper Status	N/A	
Heating Type	Hot Water	
Heating Coil Condition	Dirty	
Cooling Type	Chilled water	
Cooling Coil Condition	Dirty	
CU Mfr.	N/A	
CU Model	N/A	
CU Serial	N/A	
Drain Pan Status	N/A	
Notes:		

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters




Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>HX-1</u>	<u>Addition comments descriptions</u>
Location	Roof	System actually functions
Serving	Tech	
Config/Style	100% OA Heat exchanger, area reheat coils, bypass dampers	
Mfr.	Innovent	
Model #	E-5000-1F-6750-FR-1-C-R	
Serial #	204118-1	
Age (years)	9/2004	
System CFM		
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	5.0 Belt B69	
SF VFD Data	N/A	
EF Qty/HP	5.0 Belt PB69	
EF VFD Data	N/A	
Filter Data (Size Quantity)	(8) 20"X25"X2"	
Filter Status	Dirty	10/8/21
Controls Type	Factory	
Controls Mfr.		
Economizer	100% O.A.	
CO <sub>2</sub> DCV	-	
Damper Styles	Opposed Blade, face and bypass, economizer, freeze bypass	Actuator AF-24-MFT-5-US
Damper Status	OK	
Heating Type	(Duct mounted Reheat, H.W.)	
Heating Coil Condition	Unknown	
Cooling Type	N/A	
Cooling Coil Condition	N/A	
CU Mfr.	N/A	
CU Model	N/A	
CU Serial	N/A	
Drain Pan Status	OK Trap intact	
Notes:	Discharge restricted	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit RF/EF Tag Info



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters





Electrical / Misc.



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>MAU-1</u>	<u>Addition comments descriptions</u>
Location	Boiler Room 172	
Serving	Combustion Air Makeup for 172 Boiler Room	
Config/Style	100% OA Steam heating only with coil bypass	
Mfr.	Trane	
Model #	MCCB014UA0C0UA	
Serial #	K04M654)2A	
Age (years)		
System CFM	7,300	
Max OA CFM	7,300	
V/Hz/Ph	460 3-Phase	
SF Qty/HP	5 HP with BX 46 Belt	Access to motor and belt on back wall side of suspended unit with no ladder setup possible. Must climb upon condensate pumps, cond. Tank and hand valve wheel to access
SF VFD Data	NA	
RF Qty/HP	NA	
RF VFD Data		
Filter Data (Size Quantity)	(4) 16 x 20 x 2, (4) 16 x 25 x 2	
Filter Status	Last changed 10-18-21 and very dirty/plugged	
Controls Type	DDC BAS	
Controls Mfr.	Being converted from JCI to ALC	
Economizer	NA	
Damper Styles	Opposed	
Damper Status	Both ODA and F&B dampers require cleaning, adjustment, and lubrication	Not able to verify OA Actuator as damper is withing ductwork and high up in room. OAD did not appear to close when unit was shut down
Heating Type	Steam with Face & Bypass	
Heating Coil Condition	Could not see but based upon filter condition we would presume coil is in need of cleaning	
Notes:	Service access is unsafe and filters should be changed 4 x per year	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit Tag Info	 <p>The photos show the exterior of a Trane air handler unit. The left photo is a close-up of the unit's exterior, showing a Trane label with technical specifications and a copper pipe. The right photo shows a similar view, but with a warning sign visible below the label. The warning sign features a graphic of a person falling and the text 'WARNING' and 'CAUTION'.</p>
Unit from afar	 <p>The photos show the air handler unit from a distance. The left photo shows the unit's exterior, with a copper pipe and a Trane label visible. The right photo shows the unit's exterior, with a copper pipe and a Trane label visible. The unit is mounted on a wall, and the photos show the unit's exterior and the copper pipe.</p>

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Filters





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Electrical / Misc.



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>RTU-1</u>	<u>Addition comments descriptions</u>
Location	Roof	Unit controls are really questionable
Serving	Science Classrooms	
Config/Style	100% OA capable with ERW, HW, and DX	
Mfr.	Trane Intellipak	
Model #	SSHFC5045757C7BD901AOCE0G00L00TOY8600	
Serial #	C04L09543	
Age (years)		
System CFM	17,000	
Max OA CFM		
V/Hz/Ph	460 /3-PHASE/60Hz.	
SF Qty/HP	25 Twin (2) 5VX880 Belt: Browning V-Belt Drive Kit	
SF VFD Data	VFD	
EF Qty/HP	7-1/2 TCF NICOTRA 16" B-DWDI RDH K Belt BX78	
EF VFD Data	VFD	
Filter Data (Size Quantity)	(12) 25x25x2 (4) 16x25x2 O.A. Filters are filthy, wheel is dirty	10-7-21 Change
Filter Status	Filter change required, dirty	
Controls Type	Packaged	
Controls Mfr.	JCI-ALC-BAS	
Economizer	Yes	Functionality unknown
CO <sub>2</sub> DCV		
Damper Styles	Parallel	Damper did not close or move when powered unit down.
Damper Status	Operation unknown, seals falling off	
Heating Type	Water/Steam	
Heating Coil Condition	Dirty	
Cooling Type	Dx cooling, coil fins dirty	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status	Crusty pan, Coil section rusted	
Notes:	Aire exchange Mod: ERC-5856C-DW-04-X460, Ser: 073640-0449.	Wheel is dirty, motor ¼ HP UV-Lamps in front of Filter racks, Door switch, Lamp operation is questionable, switch @Panel is off.

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

		<p>UV Lamp bracket is in contact with dampers, installation needs attention.</p> <p>Door hardware is failing, most of the fasteners are rusted, free spin or both.</p> <p>Heat Recovery fan: TCF NICOTRA 16" B-DWDI RDH K Belt AP-65</p> <p>Traps are missing and or broken</p>
--	--	---

<u>Description</u>	<u>Photos</u>
Unit Tag Info	
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Unit SF Tag Info





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Heating Coil



Cooling Coil



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Condensate Pan



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters



Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Electrical / Misc.





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>RTU-2</u>	<u>Addition comments descriptions</u>
Location	Roof	
Serving	Classrooms	
Config/Style	100% OA capable with ERW, HW, and DX	
Mfr.	Trane Intellipak	
Model #	SSHFC7044788C9BD9001ACE0000LORTOY8600	
Serial #	C04L09544	
Age (years)		
System CFM	25,300	
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	(1) 40.0 (2) 5VX1000 SPBX2530	V-BELT DRIVE KIT
SF VFD Data	VFD	
EF Qty/HP	(1) 10.0	HP assumption
EF VFD Data	VFD	
Filter Data (Size Quantity)	(25) 20"x22"x2"	End safing missing
Filter Status	Change out required, O.A. filters at wheel require replacement (6) 24"x24"x2"	
Controls Type	Factory	Starter in off position
Controls Mfr.	BMS	
Economizer	Yes	
CO <sub>2</sub> DCV	-	
Damper Styles	Factory	
Damper Status	Seals falling off, operation, unclear, UV lights brackets might interfere with operation	
Heating Type	STEAM	
Heating Coil Condition	DIRTY	
Cooling Type	DX	
Cooling Coil Condition	DIRTY	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status	Clean-out required,	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Notes:	<p>Wheel belt broken, ¼ HP ERC-77490RC-DW-04-X460. Wheel exhaust fan, Twin City, Size 181, Type BAB, Ser. 04-199458-2-1, 5.0 HP, AP72</p> <p>Wheel dirty, UV lights, wires off switch in off position- Operation unknown, controls did not move dampers on shut down.</p>	
--------	---	--

<u>Description</u>	<u>Photos</u>
Unit Tag Info	
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit RF/EF Tag Info





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Heating Coil



Cooling Coil



Condensate Pan



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Control Dampers



Filters



Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Electrical / Misc.



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET


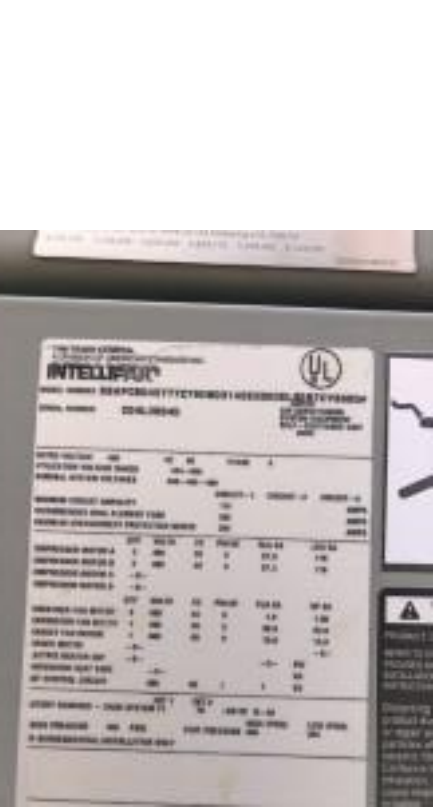



**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<u><b>Unit Tag</b></u>	<u><b>RTU-3</b></u>	<u><b>Addition comments descriptions</b></u>
Location	Roof	
Serving	New Science Wing	
Config/Style	100% OA capable with ERW, HW, and DX	
Mfr.	Trane	
Model #	SSHFC6045777C79D9001A0CE0000L00RT0Y8600	
Serial #	C04L09545	
Age (years)		
System CFM	18,500	
Max OA CFM		
V/Hz/Ph	440 – 460 -480	
SF Qty/HP	25-HP Century E-plus 3, 230/460	
SF VFD Data	Trane	
RF Qty/HP	ERW Power Exhaust 3- HP 208-230-460 Building Power Exhaust 15-HP Baldor	(2) BX 96 Belts. Wheel Very Dirty
RF VFD Data	Trane TR1- 18B554 Building PE, TR1 for ERW Exh	
ERW	Wheel Very Dirty 1/6 HP Motor	Belt off ERW
Filter Data (Size Quantity)	OA ERW Pre-Filters Metal Mesh (4) 24 x 24 x 2, (2) 12 x 24 x2 (25) 20 x 22 x 2 not correct size used	Very Dirty  Dirty
Filter Status	Needs Changing	
Controls Type		
Controls Mfr.		
Economizer	Not operational	
CO <sub>2</sub> DCV		
Damper Styles	Opposed	Dirty, frozen
Damper Status	With unit off OAD 30% open with missing end seals	UV Lights hitting dampers
Heating Type	Steam	
Heating Coil Condition	Dirty	
Cooling Type	DX	
Cooling Coil Condition	Dirty	
Drain Pan Status	Needs Cleaning	
Notes:	UV Lights disconnected (6). NOTE: Unit sections between ERW and RF section has 2" gap bypassing OA air into RF section. Unit support may not be level.	



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	 
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Heating Coil



Cooling Coil



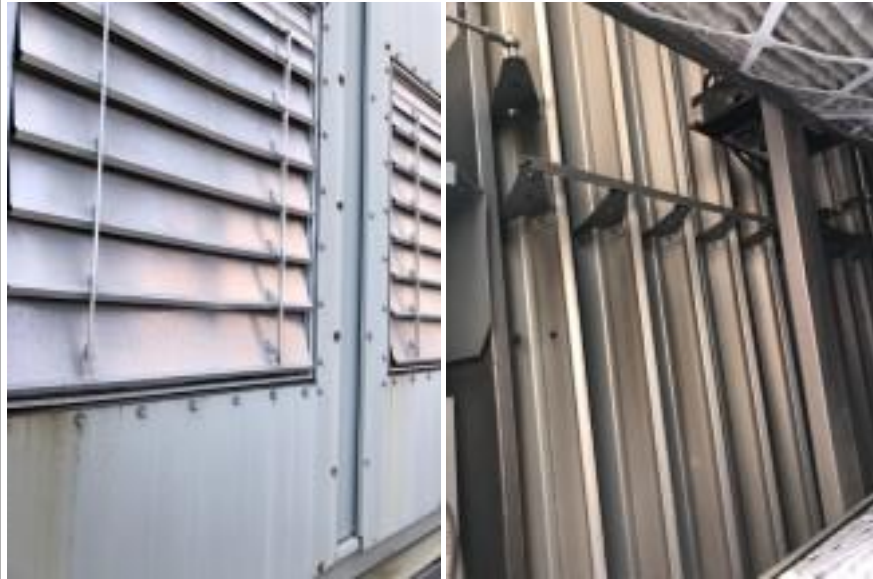
Condensate Pan





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Control Dampers



Filters

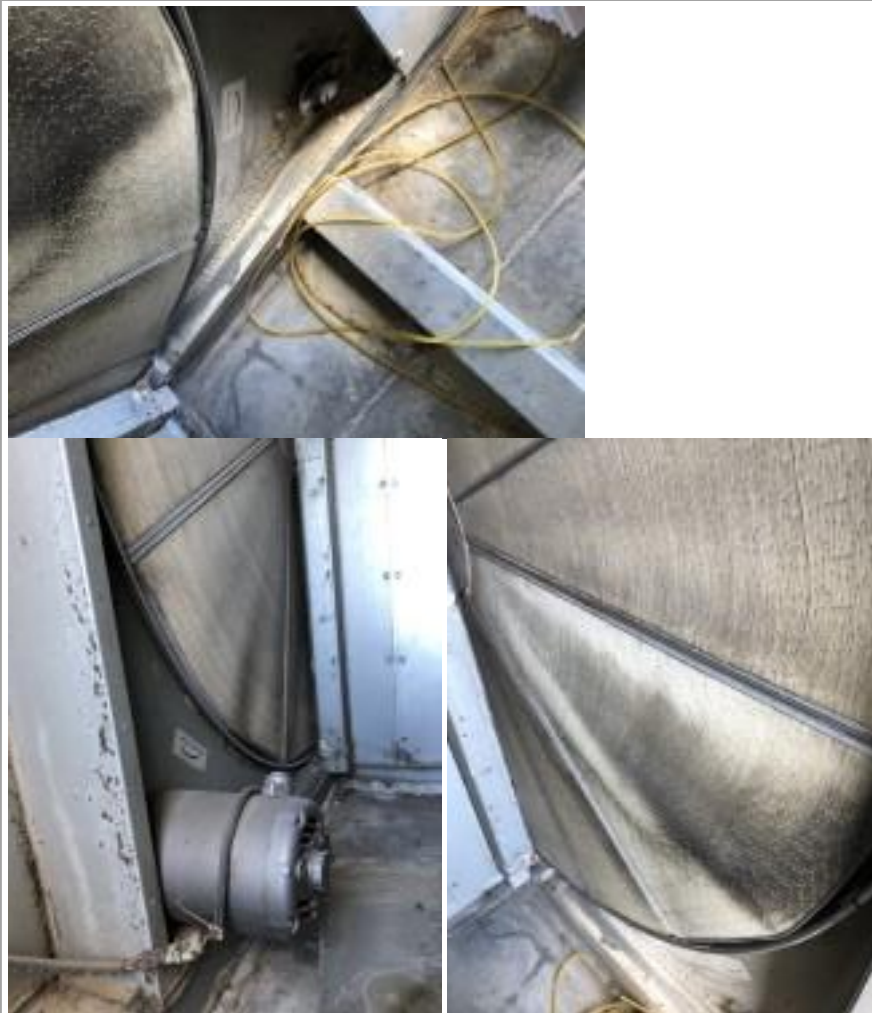


PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Controls



Electrical / Misc.


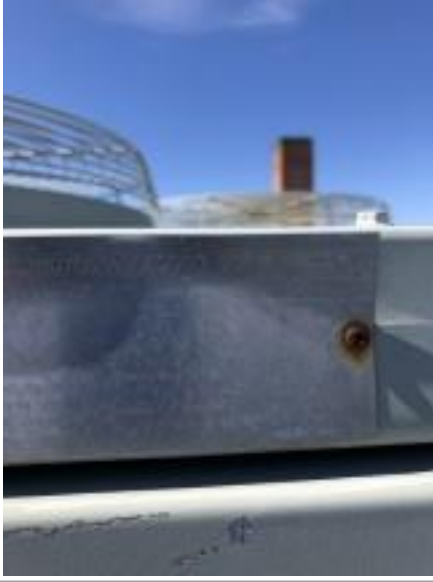




**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<b><u>Unit Tag</u></b>	<b><u>RTU-4</u></b>	<b><u>Addition comments descriptions</u></b>
Location	Roof	
Serving	Library Media	
Config/Style	SF/RF with mixing dampers, HW w/ bypass, and DX	
Mfr.	Trane	
Model #	SSHFC2545700C3BD700A0CE0G00L00RT)Y8600	
Serial #	C04L)9548	
Age (years)		
System CFM	8,000 (TAB-7,250)	Fan Wheel cups dirty reducing CFM
Max OA CFM		
V/Hz/Ph	46- 3-Phase	
SF Qty/HP	7.5 HP	(1) BX65 Belt
SF VFD Data	Trane TR-1 Series X13170391-38	
RF Qty/HP	NA	
RF VFD Data		
Filter Data (Size Quantity)	(12) – 20 x 20 x12	Last changed 10-7-21
Filter Status	Moderate	
Controls Type		
Controls Mfr.		
Economizer	ODA Dampers end seals separated and damper does not close more than 70%	
CO <sub>2</sub> DCV		
Damper Styles	Opposed	
Damper Status	In need of adjustment and lubrication	Dampers appear to be inoperable
Heating Type	Steam	
Heating Coil Condition	Very dirty	
Cooling Type	DX	
Cooling Coil Condition	Moderate	
CU Serial		
Drain Pan Status	OK	
Notes:		



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	 
Unit from afar	 

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



Unit RF/EF Tag Info

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Heating Coil



Cooling Coil



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters



Controls





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Electrical / Misc.



**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<b><u>Unit Tag</u></b>	<b><u>RTU-5</u></b>	<b><u>Addition comments descriptions</u></b>
Location	Roof: Roof Pipe penetrations under unit missing insulation.	Fan was and has been off for a long time as filters are clean
Serving	Cafe	
Config/Style	100% OA capable with ERW, HW, and DX	
Mfr.	Trane Intellipak	
Model #	SSHFC3043736C5BD9001ADCE0000L00RTOY8600	
Serial #	C04L09546	
Age (years)		
System CFM	9,050	
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	15 (1) BELT 5VX780	
SF VFD Data	VFD	
EF Qty/HP	3.0 (1) A67	
EF VFD Data	VFD	
Filter Data (Size Quantity)	(16) 20"x22"x2	10-7-21
Filter Status	Like new, factory end plates missing. End plates made up from Stud material, no seals on ends. Wheel O.A. intake filter in poor condition	
Controls Type	Factory	
Controls Mfr.	BMS	
Economizer	Not functional	
CO <sub>2</sub> DCV	-	
Damper Styles	Damper linkage unhooked, UV lamp brackets hitting dampers, seals falling off blades	
Damper Status	Contact with UV lights, Actuator unhooked, no control	
Heating Type	Steam	
Heating Coil Condition	Dirty	
Cooling Type	DX	
Cooling Coil Condition	Dirty	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status		

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Notes:

HX Fan Twin City Size 141 3/4 HP Belt AP59  
Wheel belt loose, wheel falling apart,  
UV lights power panel off, not functional, wires  
inside cabinet

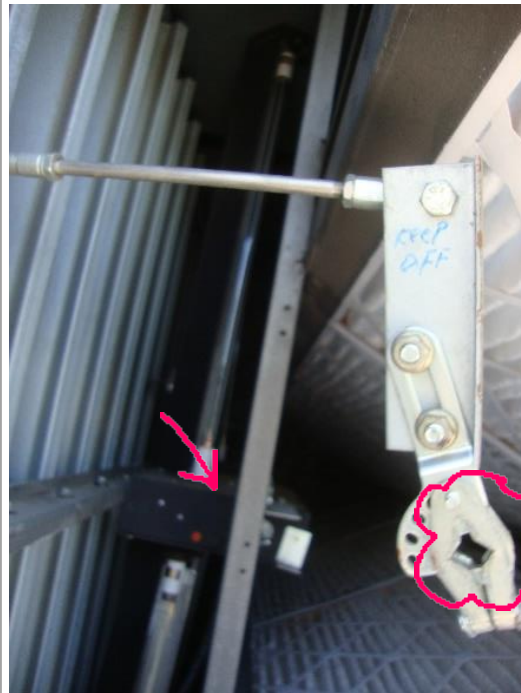
Description

Photos

Unit from afar



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters



Controls UV Lights



ER Wheel










PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>RTU-6</u>	<u>Addition comments descriptions</u>
Location	Roof	3
Serving	Admin Area	
Config/Style	SF/RF with mixing dampers, HW w/ bypass, and DX	
Mfr.	Trane	
Model #	SSHFC3043736C3AD9001A0CE000L00RT0Y8600	
Serial #	CO4L09549	
Age (years)		
System CFM	7825	
Max OA CFM		
V/Hz/Ph	460 3-Phase	
SF Qty/HP	7.5 HP Century 230/460 E-plus 3	BX 70 Belt
SF VFD Data	Trane	
RF Qty/HP	3-HP 208 -230- 460 Baldor Super-E	AP 67 Belt
RF VFD Data	Trane	
Filter Data (Size Quantity)	(16) 20 x 22 x 2	Changed 10-17
Filter Status	Should be changed	
Controls Type		
Controls Mfr.		
Economizer	Damper operation impeded by UV Lights	
CO <sub>2</sub> DCV		
Damper Styles		
Damper Status	Dampers likely not operational with OA Damper 25% open	
Heating Type	Steam	
Heating Coil Condition	Very dirty	
Cooling Type	DX	
Cooling Coil Condition	Dirty	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status	Needs cleaning with dried scale on surface	
Notes:	UV Lights disconnected and hitting RA Damper Blade. OA SP Pressure pickup device failed with sensing tube disconnected	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	  
Unit from afar	 

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Heating Coil



Cooling Coil





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Condensate Pan



Control Dampers



Filters





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Controls






Electrical / Misc.



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Unit Tag</u>	<u>RTU-7</u>	<u>Addition comments descriptions</u>
Location	Roof	
Serving	Classrooms	
Config/Style	SF/RF with mixing dampers, HW w/ bypass, and DX	
Mfr.	Trane Intellipak	
Model #	SSHFC4045745C49D9001ADCE0000L00RTOY8600	
Serial #	C04L09550	
Age (years)		
System CFM	11,000	
Max OA CFM		
V/Hz/Ph	460/60/3	
SF Qty/HP	(1) 10.0	
SF VFD Data	VFD	
RF Qty/HP	(1) 5.0 (1) BX-77 (1) BX94	
RF VFD Data	VFD	
Filter Data (Size Quantity)	(12) 24"X25"X2" (4) 16"X25"X2"	
Filter Status	Dirty	10/8/21
Controls Type	Factory	
Controls Mfr.	BAS	
Economizer	yes	
CO <sub>2</sub> DCV		
Damper Styles	Factory, dampers did not modulate when unit was turned off	
Damper Status	End seal falling off	
Heating Type	Steam. Insulation under unit is in need of repair	
Heating Coil Condition	Dirty	
Cooling Type	DX	
Cooling Coil Condition	Dirty	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status	Crusty	
Notes:	UV Lights, power off, wires inside cabinet, lights not working?	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit Tag Info	 The first photo shows a white equipment tag with technical specifications and a barcode. The second photo shows a close-up of the unit's exterior, which is a light-colored metal with a small yellow label and a circular access point.
Unit from afar	 The first photo shows a large, light-colored HVAC unit on a rooftop. The second photo shows a wider view of the rooftop, with several other units and a brick wall in the background.
Unit SF Tag Info	 The photo shows the interior of the unit, featuring a large, curved metal duct, a fan, and various mechanical components.

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit RF/EF Tag Info



Heating Coil



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Cooling Coil



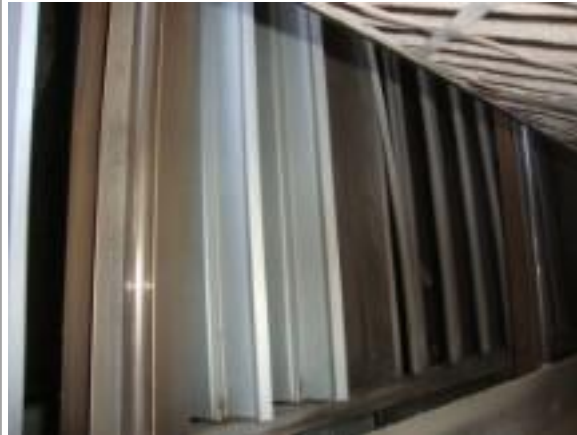


PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Condensate Pan



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Filters



Controls



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

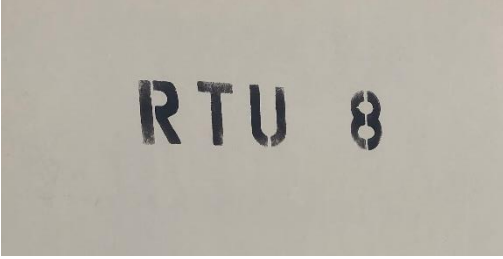



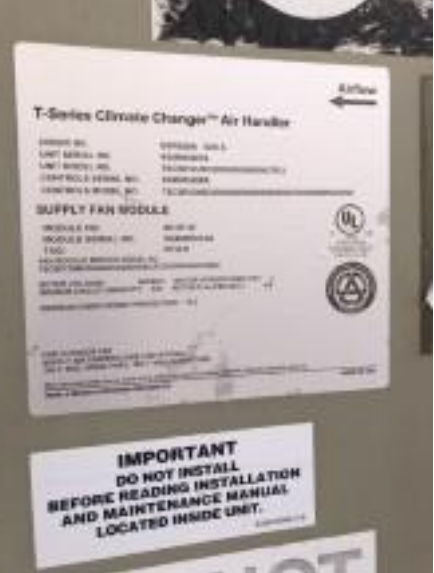


Electrical / Misc.

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

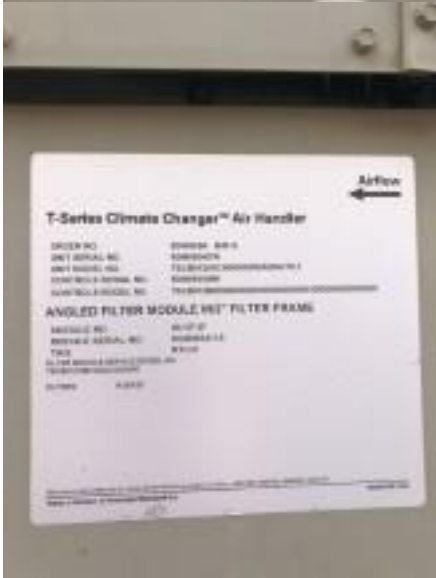
<u>Unit Tag</u>	<u>RTU-8</u>	<u>Addition comments descriptions</u>
Location	Roof	
Serving	Aux Gym	
Config/Style	CV SF/RF with mixing dampers, HW w/ bypass	
Mfr.	Trane	
Model #	TSCB012U0C0000000A00A278.5	
Serial #	K04M65407A	
Age (years)		
System CFM	4,500	
Max OA CFM		
V/Hz/Ph	460 3-Phase	
SF Qty/HP	3-HP Century E-Plus 230.460	
SF VFD Data		
RF Qty/HP	2-HP Century E-Plus 230/460	AX 42 Belt
RF VFD Data		
Filter Data (Size Quantity)	(6) 20 x 20 x2	
Filter Status	Moderate	
Controls Type		
Controls Mfr.		
Economizer		
CO <sub>2</sub> DCV		
Damper Styles	Economizer and F&B	
Damper Status	OAD damper with unit off 10% open. Need cleaning and lubrication	
Heating Type	Steam	
Heating Coil Condition	Not witnessed	
Cooling Type	DX	
Cooling Coil Condition	OK	
CU Mfr.		
CU Model		
CU Serial		
Drain Pan Status		
Notes:	No external Electrical Disconnect only fan EPO. RF EPO broken-off	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Description	Photos
Unit Tag Info	    



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT DATA SHEET



Unit from afar



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT DATA SHEET

## Unit SF Tag Info



## Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Heating Coil



Control Dampers



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Filters



Controls

Electrical / Misc.



**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<b><u>Unit Tag</u></b>	<b><u>RTU-9</u></b>	<b><u>Addition comments descriptions</u></b>
Location	Roof	
Serving	Auditorium	
Config/Style	100% OA capable with ERW, Steam, and DX	
Mfr.	Trane	
Model #	SSHFC4044756C5AD9001A0CE0000L00RTOY8600	
Serial #	C04L09547	
Age (years)		
System CFM	12,000	
Max OA CFM		
V/Hz/Ph	460 3-Phase	
SF Qty/HP	15-HP Baldor Super-E with (2) BX89 Belts	Belts mismatch with one very loose
SF VFD Data		
RF Qty/HP	5-HP ERW exhaust with AP 65 Belt 208/230 – 460 3-P 7.5 HP Century E-Plus 3 Building Power Exhaust with BX86 Belt	
RF VFD Data	Trane TR-200	
ERW Wheel	1/6 HP 200/400 VAC	Wheel very Dirty along with OA Pre-Filters Plugged
Filter Data (Size Quantity)	(3) OA Pre Metal Mesh 24 x 12 x2 (2) 24 x 24 x 2 (12) 25 x 25 x 2, (40) 16 x 25 x2	Plugged Very Dirty Dirty
Filter Status		
Controls Type		
Controls Mfr.	Trane / JCI	
Economizer	Non-Operational	
CO <sub>2</sub> DCV		
Damper Styles	Opposed	
Damper Status	Actuator Disconnected, need Clean and Lubrication	Inoperative UV Lights preventing damper free movement
Heating Type	Steam	
Heating Coil Condition	Very Dirty	
Cooling Type	DX	
Cooling Coil Condition	Needs Cleaning	
CU Mfr.		
CU Model		
CU Serial		



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Drain Pan Status	Dirty with Traps in need of replacement. One U-bend broken off	
Notes:	All UV Lights unplugged and inoperative. System Static Pressure housing broken with air tube dangling.	

Description	Photos
Unit Tag Info	
Unit from afar	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Unit SF Tag Info



Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Heating Coil



Cooling Coil





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Condensate Pan



Control Dampers



Filters





Controls





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Electrical / Misc.



**PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET**

<b><u>Unit Tag</u></b>	<b><u>RTU-10</u></b>	<b><u>Addition comments descriptions</u></b>
Location	Roof	System operates.
Serving	Locker rooms-	
Config/Style	100% OA with CF HX w/ bypass, HW w/ bypass	
Mfr.	Innovent	
Model #	E-5000-1A3050-FR/ST-1-C-R	
Serial #	204118-10	
Age (years)	9/2004	
System CFM	2,500	
Max OA CFM	-	
V/Hz/Ph	460/60/3	
SF Qty/HP	2.0 Belt 5L520	
SF VFD Data	N/A	
RF Qty/HP	2.0 Belt BP44	
RF VFD Data	N/A	
Filter Data (Size Quantity)	(4) 18"X25"X2"	
Filter Status	Dirty	10/8/21
Controls Type	Factory	
Controls Mfr.	BMS	
Economizer	100% O.A.	
CO <sub>2</sub> DCV	-	
Damper Styles	Opposed	
Damper Status	OK	
Heating Type	Stream	
Heating Coil Condition	Dirty	
Cooling Type	N/A	
Cooling Coil Condition	N/A	
CU Mfr.	N/A	
CU Model	N/A	
CU Serial	N/A	
Drain Pan Status	Needs Cleaning	
Notes:	Plate needs cleaning, traps OK	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

<u>Description</u>	<u>Photos</u>
Unit Tag Info	
Unit from afar	
Unit SF Tag Info	

PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Unit RF/EF Tag Info



PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET

Control Dampers

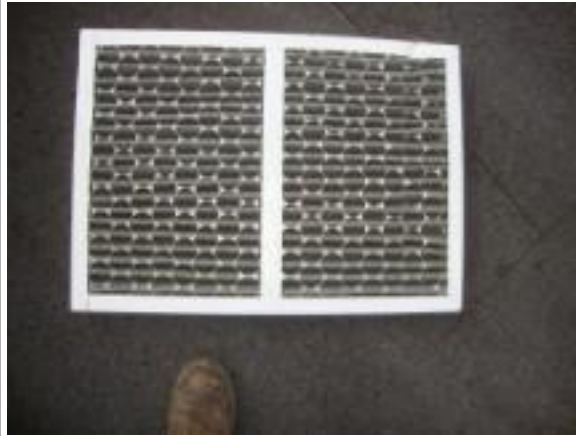


Filters





PROJECT: 2020102.00.04 FAIRFIELD PUBLIC SCHOOLS – TOMLINSON MIDDLE SCHOOL EQUIPMENT  
DATA SHEET



Controls



Electrical / Misc.



