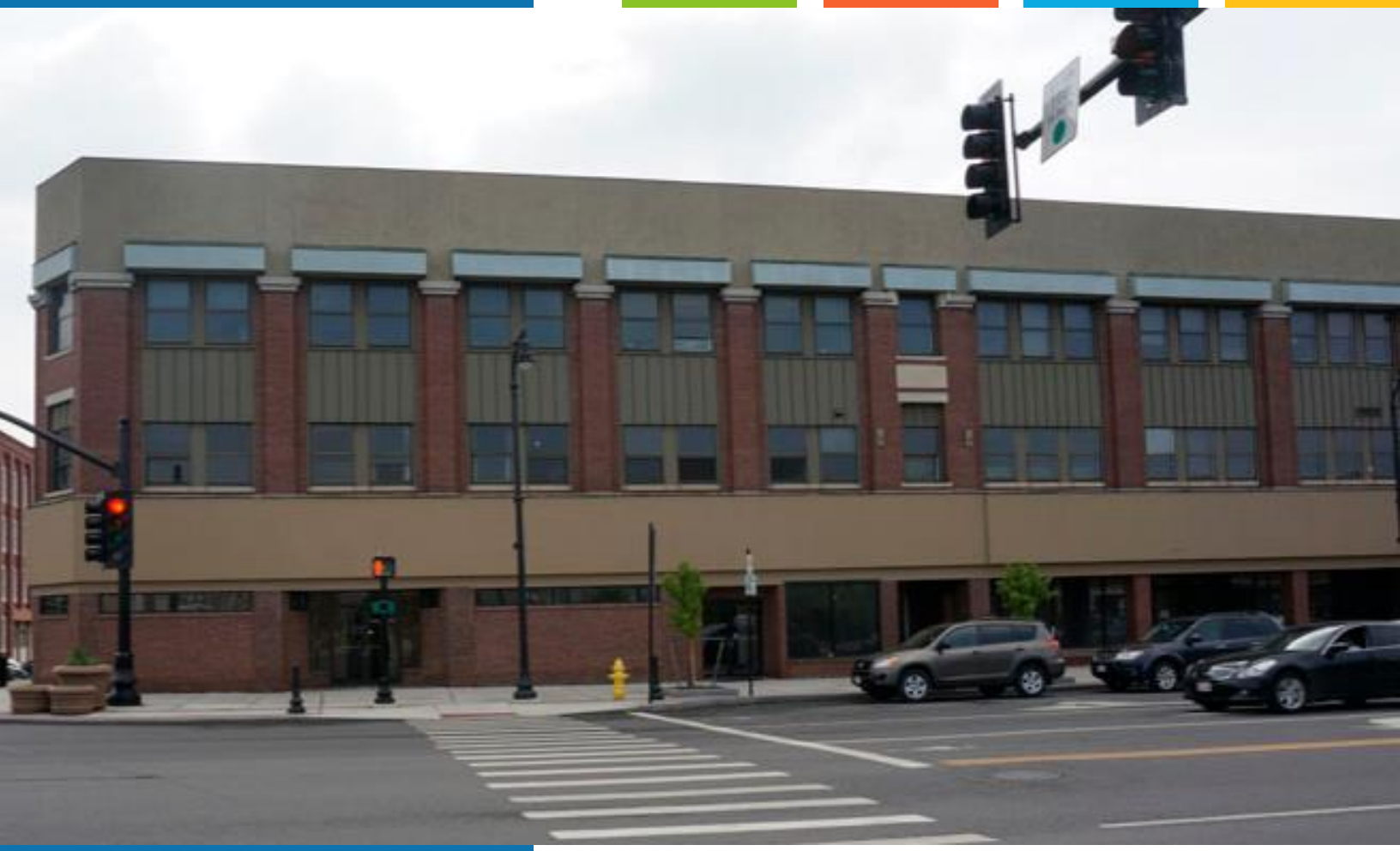

Pittsfield Juvenile Court
Pittsfield, MA

HVAC SYSTEM EVALUATIONS COVID-19

Office of Court Management

October 6, 2021

Tighe&Bond

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Section 1
Existing Conditions and Site Observations

Tighe & Bond visited the Pittsfield Juvenile Courthouse on August 11th , 2021. While on site we inspected the air handling equipment located in the mechanical rooms and toured the facility to determine if the spaces generally matched usages noted on the architectural plans. Tighe and Bond was provided with mechanical design plans from 1997 and 2019. Our analysis is based on these drawings and our one day on site.

Site Visit Attendees:

- *Courthouse Facility Staff:*
  - Michael Passardi – Passardi Family Holdings
  - Nelson Orsini – Pittsfield Pipers (Installing Contractor)

- *Office of Court Management:*
  - Michael Briggs – Facilities Systems Supervisor

- *Tighe & Bond:*
  - Sean Pringle, PE, Senior Mechanical Engineer
  - Peter Luchini, Staff Mechanical Engineer

1.1 Existing Ventilation System

The Pittsfield Juvenile Courthouse building was constructed in 1913 and is privately owned. In 1997, a portion of the building was renovated for use as a courthouse. The courthouse is currently in the process of being renovated and expanded. The area occupied by the courthouse is approximately 25,000 square feet in size. Six rooftop air handling units (RTU's) and two indoor air handling units (AHU's) provide ventilation air to the courthouse spaces.

AHU-A is approximately three years old and is located above the bathrooms on the first floor. This unit operates as a variable air volume (VAV) system with bypass air, and has a mixing section, 2" MERV 13 filters, a direct expansion refrigerant (DX) cooling coil with dedicated remote condenser, a supply fan, and outdoor and return air dampers. Two hot water coils within the ductwork provide heat to the spaces. The AHU runs constantly to supply air to several VAV zones. While service and inspection access is possible, it is somewhat limited given the location. Because of this, we were unable to access the filters or coil without removing the entire side panel of the AHU.

AHU-B was installed as part of the current renovation and is located in the mechanical room on the first floor and serves the newly renovated jury pool area. AHU-B is a light commercial / residential type unit. AHU-B is a constant airflow system and has 1" mesh filters with no visible MERV rating, a DX cooling coil with dedicated remote condenser, a supply fan, and outdoor and return air dampers within the ductwork. Two hot water coils within the ductwork provide heat to the spaces.

RTU's 2 and 6 do not serve courthouse areas, therefore were not inspected. These units serve other occupied areas of the building.

RTU's 1, 4, and 5 were installed as part of the current renovation and are located on the 2nd floor terrace in the rear of the building. Each unit has a mixing section with built in economizer, 2" MERV 13 filters, a DX cooling coil with onboard condenser, and a supply fan. The units are constant airflow. Several hot water coils within the ductwork provide heat to the spaces. There was a noticeable gap between the filters on RTU-1, likely due to missing end spacers. Large gaps in filter racks cause air to bypass the filters, causing unfiltered air to be delivered to occupied areas and causing dust to accumulate on the coils over time.

RTU's 3 and 8 are older units that appear to be original from the 1997 renovation. They are identical to RTU's 1, 4, and 5, except they utilize 2" MERV 8 filters, and operate with R-22 refrigerant, which is obsolete and is no longer manufactured due to environmental concerns (global warming potential). RTU-8 also has a natural gas furnace section. The remaining RTU's on the 2nd floor terrace utilize hot water coils within the ductwork provide heat to the spaces.

RTU-7 was installed as part of the current renovation, and is a VAV unit located in an enclosed room in the basement. Several permanent openings (windows with bars) connect this space to the outdoors. The unit has an outdoor air opening (open to the room), a duct-mounted power exhaust (open to the room), a mixing box with built in economizer, 2" MERV 13 filters, a DX cooling coil with onboard condenser, and a supply fan. The units are constant airflow. RTU-7 supplies air to several VAV zones, with hot water heating coils within each VAV box.

Because the outdoor air and exhaust openings for RTU-7 are in the same space, the ventilation efficiency is likely impacted by this arrangement. In addition, if the windows to the space are considered the intakes, they would not meet the requirements of the 2015 International Mechanical Code (IMC 401.4-2), since they are directly adjacent to a parking lot (not separated by 10 feet as required). This can cause CO to be drawn into the occupied space if cars are left idling in this area.

RTU-5 supplies air to the existing basement areas, including the lockup area and individual cells. According to the staff, the supply air to these areas is not being renovated. Air is exhausted from the cells via a small inline fan in the corridor. At the time of the visit, the holding cell exhaust appeared very weak, and did not appear to be operating as intended, although the fan was running. There was a large section of flexible duct in Telephone/Computer Room 006, that appeared to be pinched in several locations. This may be causing additional resistance to airflow. The duct openings in the cells also appeared partially blocked due to dust buildup.

The ceiling exhaust fans serving men's and women's locker/restrooms in the basement were not operable at the time of the visit.

During our review of the 2019 design drawings, we identified AHU-B and RTU-7 as being significantly under ventilated based on ASHRAE default occupancies. This is discussed in further detail in sections 2.2 and 2.7.1.

The 2019 drawings did not show individual register airflows for areas served by RTU-5. The total supply and outdoor airflow of RTU-5 did not match the 1997 drawings. Our review of areas served by RTU-5 is based on the supply and outdoor airflows shown on the 1997 drawings. In addition, the intended supply and outdoor airflows for the existing

RTU's 3 and 8 are not documented on the 2019 drawings. While these are existing units, the distribution of these systems is substantially altered in the 2019 design. This is discussed in further detail in sections 2.2 and 2.7.1.

Table 1 summarizes the air handling units' designed airflow rates, the MERV rating of the installed filters, and the condition of the units.

TABLE 1
Existing Air Handling Units

Unit	Original Design Airflow (CFM)	Original Design Min. O.A. (CFM)	Pre/Final Filters	Condition
AHU-A	Not Specified	Not Specified	2" MERV 13	New
AHU-B	755	185	1" Mesh	New
RTU-1	1,200	150	2" MERV 13	New
RTU-3	Not Specified	Not Specified	2" MERV 8	Fair
RTU-4	1,130	280	2" MERV 13	New
RTU-5	3,400	340	2" MERV 13	New
RTU-7	3,250	640	2" MERV 13	New
RTU-8	Not Specified	Not Specified	2" MERV 8	Fair

Photo 1 – Representative Rooftop Air Handler

Photo 1 – Opening From RTU-7 Room to exterior. Parked Car Visible.

1.2 Existing Control System

The new HVAC equipment is controlled by a Carrier "i-Vu" limited building management system (BMS). AHU-A and the new RTU's and associated VAV boxes are controlled by and accessible through this system. The existing RTU's, AHU-B, local exhaust fans, and boilers, are controlled via local electronic controls.

Section 2
Recommendations

Below is a list of recommendations for the Pittsfield Juvenile Courthouse. Please refer to the "Overview of Recommendations" report for further explanation and requirements of the stated recommendations.

2.1 Filtration Efficiency Recommendations

The filters in all new air handlers (except AHU-B) were already upgraded with 2" MERV 13 filters. The use of 2" MERV 13 meets the minimum ASHRAE recommendations for filtration during the pandemic. We recommend that a testing and balancing contractor test and document the airflow and static pressure profile of all air handlers, as outlined in recommendation RF-1 in the Overview of Recommendations document.

We recommend the following measures be implemented for the existing air handling units:

RF-1: *Replace filters with MERV-13 filters and install end spacers.*

Replace filters in the existing RTU's 3 and 8, and AHU-B. The TAB Contractor and/or Engineer shall verify that the existing air handlers can accommodate a MERV-13 filter per Appendix A in the overview of recommendations report.

It is possible that AHU-B will not be able to maintain airflow with 1" MERV 13 filters. As this type of unit is designed to operate at a relatively low static pressure, this level of filtration may negatively affect the supply and outdoor airflow. If airflow cannot be maintained with MERV 13 filters, we recommend using a filter with the highest possible MERV rating while maintaining the design airflow, likely MERV 8 or 11.

All filter racks should be inspected and adjusted to ensure that filters fit tightly and that end spacers are in place to minimize filter bypass. Poor fitment was observed in several units.

RF-3: *Install a differential pressure switch across the filter bank.*

RF-3a: *Connect the pressure sensor to the BMS system and/or a local alarm.*

We recommend investigating if the differential pressure switch can be added to the existing controllers in the new RTU's with "i-VU" controls. The pressure setting should be adjusted per manufacturer's recommendation based on air velocity to ensure filters are within their service lives. Typically, this is not more than 1.0" w.g.

2.2 Testing & Balancing Recommendations

While most of the AHU's are new, two of the air handling units are approximately 23 years old and it is unknown to Tighe & Bond when the last time the units were tested and balanced. Also, the code requirements to determine the outdoor air flow rates that were used to design the original system may be different than the 2015 International Mechanical Code (IMC) and current ASHRAE Standard 62.1 requirements.

We recommend the following testing and balancing measures be implemented:

RTB-1: *Test and balance air handling unit supply air and minimum outdoor air flow rates.*

We recommend testing and balancing the outdoor air flow rates for all air handling units to the recommended minimum O.A. rates listed in Table 2.

TABLE 2
Recommended Air Handler O.A. Flow Rates

Unit	Original Supply Airflow (CFM)	Original Design Min. O.A. (CFM)	Current Code Min. O.A. Requirements (CFM)	Recommended Minimum O.A. (CFM)
AHU-A	Not Specified (6,300) *	Not Specified	1,200 **	**1,200**
AHU-B	755	185	230 **	**230**
RTU-1	1,200	150	150	**150**
RTU-3	Not Specified (1,200) *	Not Specified	100	**200 *****
RTU-4	1,130	280	360 **	**360**
RTU-5	3,400	340	340	**740 *****
RTU-7	3,250	640	2,100 **	**900**
RTU-8	Not Specified (1,100) *	Not Specified	150	**150**

Note: Although the ASHRAE Position Document on Infectious Aerosols recommends using the latest published standards and codes as a baseline for minimum ventilation, the mechanical code in effect at the time the HVAC systems were designed and constructed is what governs the required outdoor air flowrate for the HVAC equipment, if there have been no additions, renovations, alterations or changes in occupancy to the building. The 2015 International Mechanical Code does not prevent the continued use of existing systems.
*Indicated airflow is the sum of the connected airflows shown in the 2019 drawings.
**Calculated O.A. Requirements include the occupancy reductions shown in Table 3.
***The airflow indicated is required to satisfy exhaust requirements.

Our ventilation air analysis discovered that many spaces were not receiving the correct quantity of outdoor air based on today's code requirements at full occupancy. Our calculations showed that the quantity of outdoor air required per code would result in a significant increase in outdoor air for some air handlers, increasing the load on the heating and cooling coils. These loads appear to exceed the capacity of the units. We recommend temporarily reducing the occupancy of the spaces that are not receiving the code required ventilation air. Table 3 lists the spaces that would require a reduced occupancy. The recommended outdoor air flow rates listed in Table 2 reflect the outdoor air requirements based on a reduced occupancy shown in Table 3.

TABLE 3
Recommended Occupancy During COVID-19 Pandemic

Room & Associated AHU	***2015 IMC Permitted Occupancy (# of People)***	***Recommended Occupancy (# of People)***
AHU-A		
161 Pretrial Conference	5	4
163 Pretrial Conference	6	4
164 Pretrial Conference	6	4
AHU-B		
048 Jury Assembly	23	10
052 Common Lobby (Now part of Jury Assembly room)	23	1
RTU-4		
110 Courtroom	94	40
RTU-7		
125 Courtroom	60	30
145 Staff Support Room (Break)	14	1*
110 Courtroom	94	40

*Room is under-ventilated at any occupancy level.

Where we recommend increasing the outdoor air beyond the original design, it appears the cooling and heating coils should be able to provide leaving air conditions similar to the original design under peak outdoor air conditions, assuming the coils are clean and their performance has not degraded significantly over time. We were not provided with capacity data for existing hot water heating coils, and as a result we were unable to evaluate the heating performance of areas where heating coils in the ductwork provide heat to the area. Supply air temperatures during cooling season and space temperatures in the heating season should be monitored to ensure they are not meeting design values. If the temperatures drop fail to meet design values, the outdoor airflow rate should be reduced, but not below the originally designed outdoor air flow rates.

Where we do not recommend increasing outdoor air to the current code requirements, it appears the cooling and/or heating coils cannot maintain the proper leaving air temperature under peak outdoor air conditions. This applies to RTU-7. See section 2.7.1 for additional RTU-7 recommendations.

The average airflow rate per person is shown below in Table 4. These values are based on the original full design supply airflow rate and the recommended outdoor airflow rates shown in Table 2. The airflow rate per person assumes a diversity factor of 70%, meaning the maximum number of occupants assumed to be in all zones at all times equates to 70% of the code required occupancy.

TABLE 4
Average Airflow Rate per Person

	All Spaces	*Courtrooms*	*Non-Courtroom Spaces*
Total Occupancy (People)	262	49	213
Total Supply Air (CFM/Person)	70	45	76
Outdoor Air (CFM/Person)	15	13	15

The airflow rate per person for each Courtroom and the Jury Pool Room is shown below in Table 5. These values are based on full occupancy without taking diversity into account, the original full design supply airflow rate, and the recommended outdoor airflow rate. The airflow rates per person assumes the full supply and code minimum outdoor airflows are being delivered to the room. At times when the supply airflow is reduced due to the space temperature being satisfied, the airflow rate per person will also be reduced.

TABLE 5
Airflow Rate per Person (Full Occupancy)

		Total Air		*Outdoor Air*	
Courtroom	*Total People*	*Supply Airflow (CFM)*	*Airflow Rate (CFM/Person)*	*Outdoor Airflow (CFM)*	*Airflow Rate (CFM/Person)*
048/052 Jury Assembly Room	11	375	34	115	10
125 Courtroom	40	1,000	25	320	8
110 Courtroom	30	1,200	40	330	11

Note: Jury and Courtroom occupant density is based on reduced courtroom occupancies shown in Table 3, which is less than the 50 and 70 people, respectively, per 1,000 square feet indicated by the 2015 International Mechanical Code

The airflow rate per person for each Courtroom and the Jury Pool Room, based on a reduced occupancy schedule determined by the Office of Court Management, is shown below in Table 5a. The airflow rate per person assumes the full supply airflow is being delivered to the room. At times when the supply airflow is reduced due to the space temperature being satisfied, the airflow rate per person will also be reduced.

TABLE 5a
Airflow Rate per Person (Reduced Occupancy)

		Total Air		Outdoor Air	
Courtroom	*Total People*	*Supply Airflow (CFM)*	*Airflow Rate (CFM/Person)*	*Outdoor Airflow (CFM)*	*Airflow Rate (CFM/Person)*
048/052 Jury Assembly Room	11*	375	23	115	7
125 Courtroom	27	1,000	37	320	12
110 Courtroom	12	1,200	100	330	28

Note: If occupancy is further reduced, the airflow rate per person will increase, assuming full airflow is being delivered to the space.
*The Office of Court Management social distancing plan shows 16 people in this space. However, Tighe & Bond only recommends an occupancy of 11 people. See Table 3.

RTB-4: *Test and balance VAV box flow rates.*

We recommend testing and balancing the new and existing VAV boxes to ensure each space is being supplied the proper quantity of air.

We were not provided with any documentation of the VAV minimum airflows for the existing VAV boxes on the AHU-A system. Where these are unknown, VAV minimum airflows will need to be established by the engineer of record.

RTB-5: *Test and balance all air inlets and outlets.*

As part of the current construction project, we recommend testing and rebalancing the airflow rates of all inlets and outlets in the courthouse once all construction is completed. This includes both renovated and areas with existing ductwork.

Prior to rebalancing the building, we recommend verifying the boilers are maintaining the correct supply temperatures. Incorrect supply water temperature can contribute to temperature control complaints, rather than a lack of airflow.

RTB-6: *Ensure AHU and RTU refrigerant coils are fully charged with refrigerant.*

Confirm that the air handler's refrigerant system is operating correctly to ensure the DX coil is receiving full refrigerant flow.

2.3 Equipment Maintenance & Upgrades

We recommend the following equipment maintenance and upgrades:

RE-1: *Test existing air handling system dampers and actuators for proper operation*.

Replace dampers and actuators that are not functioning properly.

RE-2: *Clean air handler coils and drain pans.*

RE-4: *Inspect VAV boxes and controllers.*

VAV boxes regulate the supply air delivered to each space. At a minimum, we recommend cycling the damper positions and testing the airflow to verify the maximum and minimum airflow rates are being delivered as designed. Consider cleaning the airflow stations and hot water coils. Any boxes not delivering the expected airflow rates should be rebalanced or replaced.

This testing and cleaning should be done as part of the current renovations and should include both existing and new VAV boxes and heating coils.

RE-5: *Install freeze stat or confirm the existing freeze stat is working correctly on each air handling unit.*

We recommend installing freeze stats, if not already present, in all AHU's and RTU's. While there are no hot water coils within the air handlers, the downstream hot water heating coils could freeze and cause damage to the building if too high an outdoor air percentage was supplied to the heating coils in the event of a sensor failure or incorrect setting.

2.4 Control System Recommendations

We recommend the following for the control system:

RC-1: *Implement a pre and post-occupancy flush sequence.*

This can likely be implemented for the new AHU-A and RTU's with the "i-Vu" control system. For the existing RTU's and AHU-B, consider installing programmable thermostats with occupancy scheduling.

RC-4: *Confirm the economizer control sequence is operational.*

2.5 Additional Filtration and Air Cleaning

We recommend the installation of the following air cleaning devices:

RFC-1: *Install portable HEPA filters.*

If the Courthouse is to operate at a high capacity (i.e. 50% occupancy or greater), we recommend installing portable HEPA filters in high traffic areas, such as entrance lobbies. They should also be considered for courtrooms, depending on the occupancy of the room and how much noise is generated from the filters. The noise levels will vary depending on the manufacturer. Refer to the "Overview of Recommendations" document for further guidance on installing portable HEPA filters.

Due to the inadequate ventilation in the areas below, we recommend the use of portable HEPA filters or similar air purification approaches if these areas are to be occupied in the near term, until adequate ventilation is added to these areas. While all spaces benefit from additional air filtration, this measure is likely not necessary for single occupant offices.

- 034 Secure Corridor
- 035 Secure Corridor
- 048 Jury Assembly
- 052 Common Lobby (Now part of Jury Room)
- 110 Courtroom
- 119 Victim Witness
- 121 Lobby
- 125 Courtroom
- 126 Jury Deliberation
- 131 Judge Conference Room
- 161 Pretrial Conference
- 163 Pretrial Conference
- 164 Pretrial Conference

2.6 Humidity Control

Installing duct mounted or portable humidifiers can help maintain the relative humidity levels recommended by ASHRAE. The feasibility of adding active humidification is determined by the building envelope. Buildings that were not designed to operate with active humidification can potentially be damaged due to a lack of a vapor barrier, adequate insulation, and air tightness.

Duct mounted humidifiers must be engineered, integrated into the building control system, tested, and commissioned. They are available in many configurations but require substantial maintenance and additional controls. They also run the risk of adversely affecting IAQ from growing microorganisms, or leaking water through poorly sealed ductwork damaging insulation and ceilings. Portable humidifiers are easier to install and require less maintenance, but still have the potential to damage the building envelope.

While active humidification is not recommended as a whole building solution due to high installation costs, operational costs, potential to damage the building envelope and adversely affect poor IAQ, it may be warranted as a temporary solution in some areas.

2.7 Other Recommendations

2.7.1 Review HVAC Design for Code Conformance.

We have identified several shortcomings with the HVAC design at the Pittsfield Juvenile Courthouse. Based on these issues, we recommend that the engineer of record, or a third party engineer, provide a thorough code review of the entire HVAC design, to identify any other potential code or operational issues. Below are some concerns that were identified during our review:

AHU-B

AHU-B does not appear to be able to provide adequate outdoor air for the Jury Pool room at full occupancy. If the added open area will be used to house additional jurors, then the issue is exacerbated. In addition, outdoor air is provided through a relatively small (10”x10”) louver. Increasing the airflow rate through a louver can cause rain and snow to be drawn into the ductwork and cause water damage.

We recommend that the engineer of record review the outdoor and supply air flows for AHU-B and rooms served by this unit and make revisions to provide adequate outdoor

airflow. This may require increasing the louver and outdoor air ductwork size, and possibly modifying supply air ductwork and replacing the AHU with a larger unit.

RTU-7

RTU-7 does not appear to provide adequate supply or outdoor airflow for many of the areas served. The required outdoor airflow rates for several spaces was similar to, or above the design supply airflow at the VAV minimum airflow. Per code, VAV systems must supply adequate outdoor air flow under both peak and minimum supply airflow conditions. Our calculations were performed using the 2015 IMC prescriptive method. Note that other calculation methods are permitted by code and may result in different results. However, we are concerned that the total outdoor airflow may be inadequate regardless of the method used.

We recommend that the engineer of record review the outdoor and supply air flows for RTU-7 and the rooms served by this unit and make revisions to provide adequate outdoor airflow to all spaces under all conditions. This may require increasing the supply air ductwork size, and possibly replacing the AHU. In the interim, consider increasing the VAV minimum airflows to help provide adequate outdoor air.

In addition, the outdoor and relief air locations for this unit do not appear to meet code, as they are both in the same enclosed room, and the permanent window openings from this room are directly adjacent to a parking lot.

We recommend the engineer of record revise the design to extend the outdoor air and relief air ductwork to the outdoors and provide the code-required separation from the parking lot and also between the two openings.

RTU-5

RTU-5 appears to be a replacement unit to serve the unmodified areas within the lockup and surrounding areas. However, the outdoor air provided is inadequate to meet the exhaust requirements of the lockup and restroom areas. In addition, there is no provision to rebalance the airflows within the areas served, and the existing airflows are not indicated. While this isn't necessarily required as part of a simple RTU replacement, it is recommended to provide better documentation of the building airflows, especially since all other areas within the courthouse are being modified, and the design airflows for the replacement RTU-5 do not match the airflows indicated on the 1997 drawings. Our analysis of this area is based on the supply airflows in the 1997 drawings.

We recommend that the engineer of record review the outdoor and supply air flows for RTU-5 and rooms served by this unit, and make revisions to provide adequate outdoor and supply air to all areas. We also recommend that the required supply and exhaust airflows for each space be documented on the design drawings.

RTU-3 and RTU-8

These existing units serve areas that have been substantially renovated, and the duct systems and occupancies have been modified extensively. However, the required outdoor airflow for these units is not documented in the drawings.

We recommend that the engineer of record review the required outdoor airflow for these areas and document the required outdoor airflows for each RTU.

2.7.2 Repair or Replace Holding Cell and Toilet Exhaust Fans

We recommend repairing or replacing the holding cell and toilet exhaust fans that are not working or are not exhausting the proper airflow rate.

2.7.3 Run AHU-B Supply Fan Continuously During Occupied Hours

The thermostat for this unit does not feature programmable occupancy periods. We recommend replacing this thermostat with a unit that includes programmable occupancy periods and configuring the supply fan to run continuously during these periods.

2.7.4 Replace Rooftop Air Handling Units RTU-3 and RTU-8

Rooftop air handling units have a life expectancy of 25 years. The two remaining units from the 1997 renovation that serve the courthouse are approximately 24 years old and are near the end of their useful life. Consider replacing these units in the next 5 years, or as part of the current renovations. The replacement units should be specified with controls to interface with the existing "i-Vu" control system or similar controls to improve visibility and controllability.

This recommendation is an energy saving measure and does not increase the indoor air quality of the building. However, integrating these units with the control system would give insight into how the units are operating. Items like filter status and outdoor air damper position can be easily viewed and system alarms can be generated to prompt corrective actions.

2.7.5 Expand Building Control System to Include All Systems

The Carrier "i-Vu" control system appears to be capable of controlling existing equipment with the use of universal controllers, as well as equipment designed to interact directly with the central control system. If RTU-3 and RTU-8 will not be replaced in the near future, we recommend adding controls to these units to integrate them into the control system. Similarly, we recommend adding controls to allow management of all exhaust fans, hot water heating coils, and the boiler system.

This recommendation is an energy saving and maintenance measure and does not affect the indoor air quality of the building.

2.7.6 Test and Balance Duct-Mounted Hot water Coils

We recommend testing and balancing the existing hot water coils within the ductwork to confirm they are receiving the proper water flow rate. As many of the duct-mounted hot water heating coils are existing and do not appear have to be documented, water flow rates will need to be established for these.

This recommendation is primarily a comfort and energy measure and does not affect the indoor air quality of the building. However, if the current water flow rates are inadequate, this may lead to comfort complaints and make providing adequate outdoor air more difficult.

2.8 Pittsfield Juvenile Courthouse Recommendations Checklist

Recommended Immediate Actions

1. ☐ RTB-1: Test and balance air handling unit airflow rates
2. ☐ Code / Design review of HVAC renovation
    a. ☐ RTU-7 outdoor air / VAV minimum airflow
    b. ☐ RTU-7 outdoor and exhaust air relocation
    c. ☐ AHU-B Outdoor air and louver size
    d. ☐ Document existing RTU's-3 and 8 outdoor air
    e. ☐ Document RTU-5 airflows in spaces, including exhaust air
3. ☐ RTB-6: Verify compressor operation and refrigerant charges
4. ☐ RE-1: Test air handling system dampers and actuators for proper operation
5. ☐ RC-1: Implement and pre and post-occupancy flush sequence
6. ☐ Repair restroom exhaust fans and clean / check holding cell exhaust
7. ☐ (AHU-B) Run Supply Fans Continuously During Occupied Hours

Recommended Actions

1. ☐ RF-1: Install MERV 13 filters and install end spacers
2. ☐ RF-3/3a Install filter differential pressure switches
3. ☐ RTB-4: Test and balance VAV box airflow rates
4. ☐ RTB-5: Test and balance all inlets and outlets
5. ☐ RE-2: Clean air handler coils
6. ☐ RE-4: Inspect VAV boxes and controllers
7. ☐ RE-5: Install Freeze Stats in RTU's and AHU's
8. ☐ Confirm economizer control sequence is operational
9. ☐ Install portable HEPA filters

Optional Actions

1. ☐ Test and Balance Duct Mounted Coils

Disclaimer

Tighe and Bond cannot in any way guarantee the effectiveness of the proposed recommendations to reduce the presence or transmission of viral infection. Our scope of work is intended to inform the Office of Court Management on recommendations for best practices based on the guidelines published by ASHRAE and the CDC. Please note that these recommendations are measures that may help reduce the risk of airborne exposure to COVID-19 but cannot eliminate the exposure or the threat of the virus. Implementing the proposed recommendations will not guarantee the safety of building occupants. Tighe & Bond will not be held responsible should building occupants contract the virus. The Office of Court Management should refer to other guidelines, published by the CDC and other governing entities, such as social distancing, wearing face masks, cleaning and disinfecting surfaces, etc. to help reduce the risk of exposure of COVID-19 to building occupants.

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