



## FRANKLIN COUNTY JUSTICE CENTER HVAC SYSTEM EVALUATION SUMMARY

Visited October 13, 2020. Inspected the air handling units and toured the occupied portions of the building to determine if the spaces generally matched usage noted on the architectural plans. The Franklin County Justice Center is a four-story building, originally built in 1931 and renovated in 2017, with a floor area of approximately 105,000 gross

square feet. Ventilation is provided by three variable air volume (VAV) air handling units (AHUs), located in a basement mechanical room, and an energy recovery unit located in a mechanical room on the third floor. The air handling units are in very good to excellent condition, as expected of a relatively new system. All motors, dampers, actuators, and flow stations appear to be operating as intended at the time of the visit. All cooling and ventilation are provided through the AHUs for occupied spaces. In areas with large perimeter loads, finned tube radiation is provided for additional heating.

### 1.0 Airflow Rate per Person (Reduced Occupancy)

#### 2.0

<i>Courtroom</i>	<i>Total People (Reduced Occupancy)</i>	<i>Total Air</i>		<i>Outdoor Air</i>	
		<i>Supply Airflow (CFM)</i>	<i>Airflow Rate (CFM/Person)</i>	<i>Outside Airflow (CFM)</i>	<i>Airflow Rate (CFM/Person)</i>
Jury Pool Room	35	1565	45	465	13
District Arraignment	24	2400	100	1234	51
Juvenile Court	21	1565	75	805	38
Probate & Family	16	1960	123	1008	63
Superior Court	24	2023	84	1040	43
Housing/Shared Court	21	2073	99	1066	51
District Court	21	2051	98	1055	50

### 2.0 Recommendations

<b>Section</b>	<b>Recommendation/Finding</b>	<b>Action</b>
<b>2.1</b>	<b>Filtration Efficiency</b>	
	No actionable items identified	MERV-13 in use
<b>2.2</b>	<b>Testing and Balancing</b>	
<b>RTB-1</b>	Test and rebalance air handling unit minimum outside air flow rate	Complete
<b>2.3</b>	<b>Equipment Maintenance and Upgrades</b>	
<b>RE-2</b>	Clean air handler coils	Complete
<b>2.4</b>	<b>Control System</b>	
<b>RC-3</b>	Install controls to introduce outside air beyond the minimum requirements	In-progress
<b>RC-5</b>	Disable demand control ventilation sequences	Complete

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## Franklin County Justice Center HVAC System Evaluation Continued

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### 2.5 Additional Filtration and Air Cleaning

RFC-1	Install portable HEPA filters in high traffic areas – <i>if courthouse is to operate at a high occupancy (i.e. 50-75% or greater), install portable HEPA filters in high traffic areas.</i>	In-progress
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### 2.6 Humidity Control

No actionable items listed – continuous monitoring for seasonal changes	On-going
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**Franklin County Justice Center  
Greenfield, MA**

## **HVAC SYSTEM EVALUATIONS COVID-19**

Office of Court Management  
December 10, 2020

**Tighe&Bond**

# **Section 1**

## **Existing Conditions and Site Observations**

Tighe & Bond visited the Franklin County Justice Center located in Greenfield, MA on October 13, 2020. While on site, we inspected the air handling units and toured the occupied portions of the building to determine if the spaces generally matched usage noted on the architectural plans.

Site Visit Attendees:

- Office of Court Management:
  - o Bill Ryan
  - o Tom Levasseur
- Tighe & Bond:
  - o Todd Holland, PE, Senior Mechanical Engineer

### **1.1 Existing Ventilation System Description**

The Franklin County Justice Center is a four-story building, originally built in 1931 and renovated in 2017, with a floor area of approximately 105,000 gross square feet. Ventilation is provided by three variable air volume (VAV) air handling units (AHUs), located in a basement mechanical room, and an energy recovery unit located in a mechanical room on the third floor.

The VAV units, AHU-1, AHU-2, and AHU-3, each have a chilled water cooling coil, a heating hot water coil, a supply air fan, a two-stage filter section, and mixing box with return air (RA) and two outdoor air (OA) dampers. The filter section has 2" pleated pre-filters, 12" box-type final filters, and a differential pressure sensor. Both stages of filtration were recently upgraded to MERV-13. Each of the AHUs has an external in-line return fan. There are flow stations measuring airflow in the outdoor air, return air, and supply air streams.

AHU-1, AHU-2, and AHU-3 share common headers for both the supply ducts and return ducts, so they act as a single unit. The supply and return fans are variable speed.

AHU-4 is a constant-volume dedicated outdoor air system (DOAS) that has a total energy (desiccant) energy recovery wheel, located before the chilled water cooling coil and heating hot water coil, and a sensible (heat only) energy recovery wheel located after the coils. There is an outdoor airflow station, exhaust airflow station, supply air fan, exhaust air fan, bypass dampers around each side of both wheels, two-stage filters on the supply, and single stage filters on the exhaust. All filters were recently upgraded to MERV-13. All filters have differential pressure sensors.

The air handling units are in very good to excellent condition, as expected of a relatively new system. All motors, dampers, actuators, and flow stations appear to be operating as intended at the time of the visit. All cooling and ventilation are provided through the AHUs for occupied spaces. In areas with large perimeter loads, finned tube radiation is provided for additional heating.

There are 79 fan coils throughout the space for individual zone temperature control. These are four-pipe units that provide cooling and heating and recirculate 100% of their airflow. These units have also been upgraded with MERV-13 air filters.

**TABLE 1**  
Existing Air Handlers

<i>Unit #</i>	<i>Design Airflow (CFM)</i>	<i>Design Min OA (CFM)</i>	<i>Filters</i>	<i>Condition</i>
AHU-1	27,000	8,000	2" MERV-13 pre/ 12" MERV-13 final	Very Good to Excellent
AHU-2	27,000	8,000	2" MERV-13 pre/ 12" MERV-13 final	Very Good to Excellent
AHU-3	27,000	8,000	2" MERV-13 pre/ 12" MERV-13 final	Very Good to Excellent
AHU-4	3,500	3,500	2" MERV-13 pre/ 12" MERV-13 final	Very Good to Excellent



Photo 1 – Energy recovery wheel in exhaust air stream of AHU-4





Photo 2 – Energy recovery wheel in supply air stream of AHU-4

Supply air is regulated to each zone by variable air volume (VAV) terminals, with hot water reheat coils at each unit. As the building is less than four years old, we assume the VAV boxes are in very good condition.

The basement lockup area is provided with ventilation air at a constant airflow, as VAV boxes have the same maximum and minimum settings. Air is exhausted from the cells through the toilet exhaust risers. Holding cells are held at a negative pressure relative to the corridor because exhaust airflow is greater; 110 cfm exhaust and 85 cfm supply is typical. Observation rooms have only an exhaust grille, air is supplied to the corridors and is exhausted through the room.

Exhaust fans run during occupied hours to serve the lockup area, toilet rooms, and first floor general exhaust. A fan runs continuously to exhaust the trash room.

Chilled water is provided by a pair of 175-ton water-cooled scroll chillers. Heating hot water is provided from three 3,000 MBH (input) gas-fired condensing boilers. Neither the hot nor chilled water systems contain glycol.

## 1.2 Existing Control System

The courthouse has a Schneider Electric EcoStruxure building management control system (BMS). It is tied to the existing boiler & chiller systems, AHUs, VAVs, fan coils, perimeter heating, and exhaust fans. While on site, Tighe & Bond was able to observe various control system screens and setpoints.

Schedules are set to run systems in occupied mode:

- 2:00 AM to 10:00 PM on Mondays,
- 3:00 AM to 10:00 PM Tuesday through Friday, and
- noon to 8:00 PM Saturday and Sunday.

## Section 2

### Recommendations

#### 2.1 Filtration Efficiency Recommendations

The new MERV-13 prefilters and final filters meet the ASHRAE recommendations for filtration during the pandemic. MERV-13 filters on the exhaust air stream of AHU-4 may be excessive, but we agree with facilities staff that this is a good practice to avoid confusion with supply air filters. We recommend maintaining the current level of filtration.

#### 2.2 Testing & Balancing Recommendations

Tighe & Bond has reviewed the engineer's ventilation calculations from the design documents and performed our own calculations. We take no exception with the design ventilation rates.

**TABLE 2**

Recommended Air Handler O.A. Flow Rates

<b>Unit</b>	<b>Original Supply Airflow (CFM)</b>	<b>Original Design Min. O.A. (CFM)</b>	<b>Current Code Min. O.A. Requirements (CFM)</b>	<b>Recommended Minimum O.A. (CFM)</b>
AHU-1	27,000	8,000	4,265	8,000
AHU-2	27,000	8,000	4,265	8,000
AHU-3	27,000	8,000	4,265	8,000
AHU-4	3,500	3,500	2,830	3,500

The airflow rates per person are shown below in Tables 3 and 4. These values are based on the original design supply and outdoor airflow rates shown in Table 2 above.

**TABLE 3**

Airflow Rate per Person

	<b><i>Average for all spaces (CFM/Person)</i></b>	<b><i>Courtrooms (CFM/Person)</i></b>	<b><i>Non-Courtroom Spaces (CFM/Person)</i></b>
Total Supply Air	56	14-18	100
Outdoor Air	18	7-9	33



**TABLE 4**

Airflow Rate per Person (Full Occupancy)

<i><b>Courtroom</b></i>	<i><b>Total People</b></i>	<i><b>Total Air</b></i>		<i><b>Outdoor Air</b></i>	
		<i><b>Supply Airflow (CFM)</b></i>	<i><b>Airflow Rate (CFM/Person)</b></i>	<i><b>Outside Airflow (CFM)</b></i>	<i><b>Airflow Rate (CFM/Person)</b></i>
Jury Pool Room 3702	40	1,565	39	465	12
District Arraignment 2303	140	2,400	17	1,234	9
Juvenile Court 2503	110	1,565	14	805	7
Probate and Family Court 3305	111	1,960	18	1,008	9
Superior Court 4303	142	2,023	14	1,040	7
Housing/Shared Court 4403	145	2,073	14	1,066	7
District Court 4503	143	2,051	14	1,055	7

Note: Courtroom occupant density is based on 70 people/1,000 square feet, per the 2015 International Mechanical Code.

The airflow rate per person for each Courtroom and the Jury Pool Room, based on a reduced occupancy scheduled determined by the Office of Court Management, is shown below in Table 4a. 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 4a**

Airflow Rate per Person (Reduced Occupancy)

<i><b>Courtroom</b></i>	<i><b>Total People (Reduced Occupancy)</b></i>	<i><b>Total Air</b></i>		<i><b>Outdoor Air</b></i>	
		<i><b>Supply Airflow (CFM)</b></i>	<i><b>Airflow Rate (CFM/Person)</b></i>	<i><b>Outside Airflow (CFM)</b></i>	<i><b>Airflow Rate (CFM/Person)</b></i>
Jury Pool Room 3702	35	1,565	45	465	13
District Arraignment 2303	24	2,400	100	1,234	51
Juvenile Court 2503	21	1,565	75	805	38
Probate and Family Court 3305	16	1,960	123	1,008	63
Superior Court 4303	24	2,023	84	1,040	43
Housing/Shared Court 4403	21	2,073	99	1,066	51
District Court 4503	21	2,051	98	1,055	50

**RTB-1:** *Test and rebalance air handling unit supply air and minimum outside air flow rates.*

We recommend reviewing trend logs for the outdoor airflows for all units to confirm that the combined OA flow for AHU-1, AHU-2, and AHU-3 matches the recommended minimum OA amounts shown in the table above. If the airflow rates match, testing and rebalancing is not required.

Because this system uses airflow stations, it is possible that that any required changes can be made with control setpoint adjustments instead of hiring a TAB Contractor.

## 2.3 Equipment Maintenance & Upgrades

**RE-2:** *Clean air handler coils.*

Cooling coils and drain pans were noted to be clean, and the current practice of periodically cleaning coils should continue. The heating coils were not visible so we recommend these be inspected and cleaned as necessary.

Tighe & Bond also recommends cleaning the energy recovery wheels in AHU-4, which had a visible accumulation of dust on the entering and leaving edges of the transfer media. Such buildup can usually be vacuumed, purged with compressed air, or wiped from the rotor surface with a paint brush or soft cloth. Manufacturer's instructions should be followed.

## 2.4 Control System

The Franklin County Justice Center has a sophisticated BMS. We recommend the following control system strategies be implemented into the existing control system:

**RC-3:** *Install controls required to introduce outside air beyond the minimum requirement in a stepped approach.*

**RC-5:** *Disable Demand-Controlled Ventilation Sequences*

For the duration of the COVID-19 pandemic, we recommend disabling any DCV sequences that may reduce the volume of outdoor air into spaces with reduced occupancy.

We recommend the current pre and post occupancy flush sequence that has been implemented be continued.

## 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.

## **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**

We do not have any other recommendations at this time.

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## Section 3 Testing & Balancing

On November 13, 2020, Wing's Testing & Balancing Co. visited the Franklin County Justice Center to test the airflow rates of the air handling units and exhaust fans. The Office of Court Management's Automatic Temperature Controls (ATC) Contractor was also on site to assist in the balancing process. A summary of the tested airflow rates versus the design airflow rates are shown below in Tables 5 and 6. The full testing and balancing report is attached.

**TABLE 5**  
Air Handler Testing & Balancing Results

Unit	Design			Actual		
	Total Supply Fan Airflow (CFM)	Recommended Outdoor Airflow (CFM)	Return Fan Airflow (CFM)	Supply Fan Airflow (CFM)	Outdoor Airflow (CFM)	Return Fan Airflow (CFM)
AHU-1	27,000	8,000	19,000	28,800	Not measured	24,236
AHU-2	27,000	8,000	19,000	25,725	Not measured	23,384
AHU-3	27,000	8,000	19,000	26,775	Not measured	21,388
AHU-4	3,500	3,500	3,500	3,877	3,877	3,210

**TABLE 6**  
Return & Exhaust Fan Testing & Balancing Results

Unit	Serving	Design Return/Exhaust Airflow (CFM)	Actual Return/Exhaust Airflow (CFM)
RF-1	AHU-1	19,000	24,236
RF-2	AHU-2	19,000	23,384
RF-3	AHU-3	19,000	21,388
RF-4	AHU-4	3,500	3,210
EF-5	Toilet Exhaust	450	584

In reviewing the airflow report data, the following should be noted:

1. AHU 1-3 are performing within the acceptable airflow range of design ( $\pm 10\%$ ) for the supply fans.

2. AHU 1-3 are performing well outside the acceptable range for the return fans, averaging 21% above the design airflow.
3. The OA flow for AHU 1-3 could not be measured due to a major shortcoming with the design. Each AHU has two OA dampers but only one airflow station. The smaller top section opens fully to provide the minimum OA, while the bottom section modulates to provide more than minimum when commanded. The flow stations are located in only the top section, and show a decrease in flow when the bottom sections are opened. This issue must be addressed before OA flows on AHU 1-3 can be properly measured and controlled.
4. If the OA for AHU 1-3 is estimated by subtracting the return airflows from the supply airflows in the TAB report, the total ventilation air is well short of the design and recommended levels. This underscores the importance of fixing the OA flow measuring stations.
5. AHU-4 is performing just outside the acceptable airflow range of design for the supply fan. Since the flow is just slightly higher, and this is a heat recovery unit, we feel this is not an issue. However, since the total OA flow and pressurization of the building will be determined by the OA provided by AHU 1-3, both fans in this unit should be retested after addressing the issues noted above.
6. The measured airflow for EF-5, toilet exhaust, is 30% above the design airflow. While this is above the acceptable range, we do not feel it is necessary to address this if the noise level is acceptable, because of the relatively small amount, and it is beneficial from a health standpoint.

## **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.



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

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# **Franklin County Justice Center HVAC/Ventilation Survey**

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Tighe & Bond  
Attn: Jason Urso  
53 Southampton Road  
Westfield, MA 01085

November 13, 2020



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

November 13, 2020

Tighe & Bond  
Attn: Jason Urso  
53 Southampton Road  
Westfield, MA 01085

Re: Franklin County Justice Center/HVAC Ventilation Survey

Dear Jason,

We have completed our HVAC survey for the above referenced. Though our testing we discovered a major issue with the outside air probes. Each unit has an outside air inlet that is divided into two parts. The top opening measures 12" x 102" while the bottom measures 30" x 102". The Electra-Flo sensors are only located in the top section of the inlets. Therefore, when the bottom starts to open the computer reading actually starts going down. This issue needs to be fixed before outside airs can be set.

We would highly recommend that you have us present for the install and calibration of these devices.

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

Very truly yours,

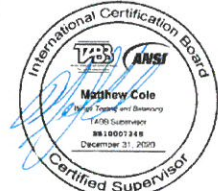
**Wing's Testing & Balancing Co., Inc.**

*ICB Certified Contractor for:*

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

**Barry Stratos**

Certified TABB Technician BB996928T



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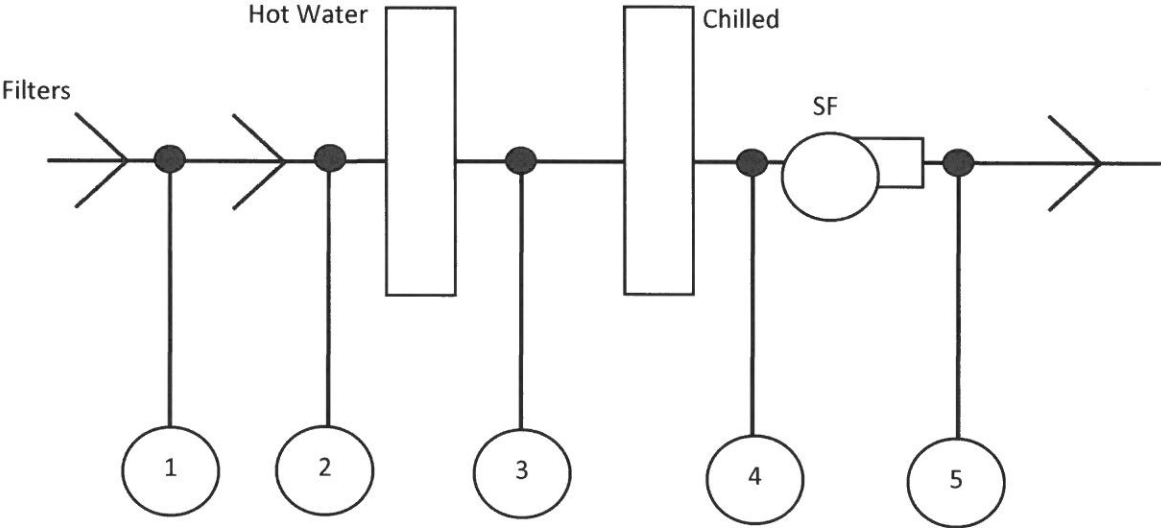
SM-1 License #6803

www.wingstesting.com



<b>SUPPLY FAN REPORT</b>						
<b>PROJECT:</b> Franklin County Justice Center				<b>DATE:</b> 11/13/20		
<b>AREA SERVED:</b> Various				<b>TECH:</b> BS		
<b>FAN DATA</b>						
FAN NUMBER	AHU-1		AHU-2		AHU-3	
LOCATION	Mech Room		Mech Room		Mech Room	
AREA SERVED	All Floors		All Floors		All Floors	
MANUFACTURER	York		York		York	
MODEL OR SIZE	XTI-102X132		XTI-102X132		XTI-102X132	
	<b>DESIGN</b>	<b>ACTUAL</b>	<b>DESIGN</b>	<b>ACTUAL</b>	<b>DESIGN</b>	<b>ACTUAL</b>
TOTAL CFM	27000	28800	27000	25725	27000	26775
RETURN AIR	19000	(1)	19000	(1)	19000	(1)
OUTSIDE AIR	8000	(1)	8000	(1)	8000	(1)
DISCH. STATIC	---	+1.87"	---	+1.54"	---	+1.46"
SUCTION STATIC	---	-1.07"	---	-1.12"	---	-1.16"
TOTAL STATIC	7.0	2.91	7.0	2.66	7.0	2.66
FAN RPM	1182	850	1182	789	1182	808
PULLEY O.D.	14"		14"		14"	
ESP	NA		NA		NA	
VFD SPEED	46 Hz		43 Hz		43.5 Hz	
O.A.D.MIN POS	(1)		(1)		(1)	
<b>MOTOR DATA</b>						
MANUFACTURER	Baldor		Baldor		Baldor	
MODEL OR FR.	326T		326T		326T	
HORSEPOWER	50	50	50	50	50	50
MOTOR RPM	1800	1775	1800	1775	1800	1775
VOLTAGE / PH.	460/3	460/3	460/3	460/3	460/3	460/3
AMPS	LEG 1	58.0	33.6	58.0	31.6	58.0
	LEG 2	---	33.5	---	31.7	---
	LEG 3	---	33.7	---	31.9	---
SHEAVE O.D.	9.0"		9.0"		9.0"	
BELTS - QTY / SIZE	3/5Vx710		3/5Vx710		3/5Vx710	
SHEAVE POSITION	Fixed		Fixed		Fixed	
<b>REMARKS</b>						
(1) Outside air probes not set up properly						
NA-Not Available ND-No Design DD-Direct Drive						

<b>SUPPLY FAN REPORT</b>						
<b>PROJECT:</b> Franklin County Justice Center					<b>DATE:</b> 11/13/20	
<b>AREA SERVED:</b> Various					<b>TECH:</b> BS	
<b>FAN DATA</b>						
FAN NUMBER	AHU-4					
LOCATION	3rd Fl Mech					
AREA SERVED	Old Building					
MANUFACTURER	York					
MODEL OR SIZE	XTI-051X078					
	<b>DESIGN</b>	<b>ACTUAL</b>	<b>DESIGN</b>	<b>ACTUAL</b>	<b>DESIGN</b>	<b>ACTUAL</b>
TOTAL CFM	3600	3877				
RETURN AIR	0	0				
OUTSIDE AIR	3600	3877				
DISCH. STATIC	---	2.08	---		---	
SUCTION STATIC	---	-0.64"	---		---	
TOTAL STATIC	5.0	2.72				
FAN RPM	1755	NA				
PULLEY O.D.	DD					
ESP	1.14"					
VFD SPEED	80 Hz					
O.A.D.MIN POS	100%					
<b>MOTOR DATA</b>						
MANUFACTURER	TOCO					
MODEL OR FR.	213T					
HORSEPOWER	7.5	7.5				
MOTOR RPM	1750	1755				
VOLTAGE / PH.	460/3	460/3				
AMPS	LEG 1	18.8	4.9			
	LEG 2	---	4.9	---	---	
	LEG 3	---	4.9	---	---	
SHEAVE O.D.	DD					
BELTS - QTY / SIZE	DD					
SHEAVE POSITION	DD					
<b>REMARKS</b>						
<p>NA-Not Available</p> <p>ND-No Design DD-Direct Drive</p>						

<b>SYSTEM STATIC PRESSURE PROFILE</b>								
<b>PROJECT:</b> Franklin County Justice Center					<b>DATE:</b> 11/13/20			
<b>SYSTEM/AREA SERV:</b> AHU's					<b>TECH:</b> BS			
								
STATIC PRESSURE READINGS "wc								
POS. (+) / NEG.(-)	1	2	3	4	5	6	7	NOTES
AHU-1	-0.21"	-0.72"	-0.80"	-1.04"	+1.82"			
AHU-2	-0.37"	-0.85"	-0.91"	-1.12"	+1.54"			
AHU-3	-0.39"	-0.90"	-0.97"	-1.16"	+1.16"			
REMARKS								

<b>SYSTEM STATIC PRESSURE PROFILE</b>								
<b>PROJECT:</b> Franklin County Justice Center						<b>DATE:</b> 11/13/20		
<b>SYSTEM/AREA SERV:</b> AHU-4 Supply						<b>TECH:</b> BS		
<p style="text-align: center;">Heat Wheel                      Heat Wheel</p> <p style="text-align: center;">Chilled Water      Hot Water</p> <p style="text-align: center;">SF                      Filters</p> <p style="text-align: center;">1                      2                      3                      4                      5                      6                      7</p>								
STATIC PRESSURE READINGS "wc								
POS. (+) / NEG.(-)	1	2	3	4	5	6	7	NOTES
AHU-4 Supply	+0.94"	+1.37"	+1.52"	+2.04"	+2.08"	-0.64"	-0.20"	
REMARKS								

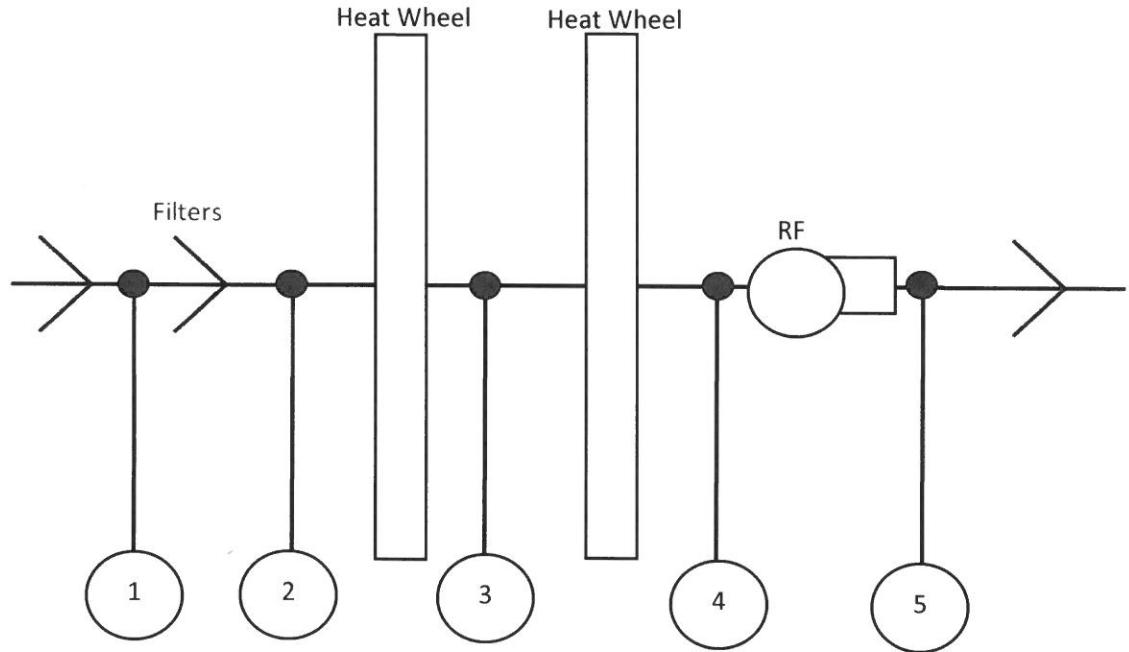
## SYSTEM STATIC PRESSURE PROFILE

PROJECT: Franklin County Justice Center

DATE: 11/13/20

SYSTEM/AREA SERV: AHU-4 Exhaust

TECH: BS



### STATIC PRESSURE READINGS "wc

POS. (+) / NEG.(-)	1	2	3	4	5	6	7	NOTES
AHU-4 Exhaust	-0.63"	-0.78"	-0.87"	-1.35"	+0.19"			

### REMARKS

**EXHAUST FAN REPORT****PROJECT:** Franklin County Justice Center**DATE:** 11/13/20**AREA SERVED:** Various**TECH:** BS**FAN DATA**

FAN NUMBER		RF-1	RF-2	RF-3	RF-4	EF-5
LOCATION		Mech Room	Mech Room	Mech Room	3rd Fl Mech Rm	Level 4 Roof
AREA SERVED		All Floors	All Floors	All Floors	Old Building	1st Fl Room
MANUFACTURER		York	York	York	York	Greenheck
MODEL OR SIZE		XTI-102x132	XTI-102x132	XTI-102x132	XTI-051x078	GB-101HP
TOTAL	DESIGN	19000	19000	19000	3500	450
CFM	ACTUAL	24236	23384	21388	3210	584
FAN	DESIGN	NA	NA	NA	DD	216
RPM	ACTUAL	NA	NA	NA	DD	1916
PULLEY	O.D.	NA	NA	NA	DD	3.0"
SERVICE		1.15	1.15	1.15	1.15	---

**MOTOR DATA**

MANUFACTURER		Weg	Weg	Weg	Taco	Tiangan
MODEL NUMBER		284T	284T	284T	184T	56
MOTOR	DESIGN	25	25	25	5	1/2
HP	ACTUAL	25	25	25	5	1/2
MOTOR RPM		1770	1770	1770	1740	1725
VOLTAGE/PHASE		460/3	460/3	460/3	460/3	460/3
	DESIGN	29.9	29.9	29.9	6.2	0.9
MOTOR	ACT. LEG 1	17.2	17.5	16.7	3.3	0.9
AMPS	ACT. LEG 2	17.3	17.2	16.5	3.4	0.9
	ACT. LEG 3	17.1	17.7	16.5	3.4	0.9
SHEAVE		NA	NA	NA	DD	4.0"
BELTS-QTY/SIZE		NA	NA	NA	DD	1/AP20
SHEAVE POSITION		NA	NA	NA	DD	100% Open

**REMARKS**

[illegible]