DORCHESTER DIVISION, BOSTON MUNICIPAL COURT (BMC)
HVAC SYSTEM EVALUATION SUMMARY

Visited September 10, 2020. While on site, inspected the basement and penthouse 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 Dorchester BMC Courthouse is a three-story building (including the basement), constructed in 1925 with a major renovation in 1994, with a floor area of approximately 77,000 Gross Square feet. The HVAC system includes eight air handling units (AHU), with AHU's 1 through 3 located in the basement mechanical room, and AHU's 4-8 located in mechanical penthouses.

1.0 Airflow Rate per Person (Reduced Occupancy)

		Total Air		*Outdoor Air*	
Courtroom	*Total People*	*Supply Airflow (CFM)*	*Airflow Rate (CFM/Person)*	*Outside Airflow (CFM)*	*Airflow Rate (CFM/Person)*
Jury Pool Room	15	480	32	150	10
Arraignment Courtroom	19	4,300	226	1,375	72
Medium Courtroom C204	17	2,930	172	760	45
Medium Courtroom C225	19	2,930	154	760	40
Small Courtroom C207	15	2,600	173	570	38
Small Courtroom C221	14	2,600	186	570	41
Large Courtroom 216	18	4,500	250	1,000	56

2.0 Recommendations

3.0

Section	Recommendation/Finding	Action
2.1	**Filtration Efficiency**	
RF-1	Replace filters with a MERV 13 filter	Complete
RF-3	Install a differential pressure sensor (switch) across the filter banks	Complete
RF-3b	Pressure sensor (switch) shall have a display and be connected to the BMS system	Complete
2.2	**Testing and Balancing**	
RTB-1	Test and rebalance air handling unit supply air and minimum outside air flow rates	Complete
RTB-3	Increase outside air flow rate beyond minimum under non-peak conditions	Complete
RTB-5	Consider rebalancing all air inlets and outlets	N/A
RTB-6	Test and balance all air handler chiller and hot water coils	Complete
2.3	**Equipment Maintenance and Upgrades**	
RE-1	Test existing air handling system dampers and actuators for proper operation	Complete
RE-2	Clean air handler coils and drain pans	Complete
RE-4	Inspect VAV Boxes and controllers	Complete

2.4	Control System	
RC-1	Implement a pre and post-occupancy flush sequence	In-progress
RC-3	Install controls required to introduce OA beyond the minimum requirement in a stepped approach	In-progress
RC-5	Disable demand-controlled ventilation sequences	Complete
2.5	Additional Filtration and Air Cleaning	
RFC-1	Install portable HEPA filters – *if courthouse is to operate at a high occupancy (i.e. 50% or greater), install portable HEPA filters in high traffic areas.*	Complete
2.6	Humidity Control	
	No actionable items listed – continuous monitoring for seasonal changes	On-going
2.7	Other Recommendations	
2.7.1	Replace toilet exhaust fans and controls	Complete
2.7.2	Add condensate traps to AHU condensate piping	Complete
2.7.3	Increase the filter replacement frequency for AHU-1	Complete
2.7.4	Make AHU adjustments to reduce air leakage	Complete
2.7.5	Improve the control sequence of the chillers and bypass valve	In-progress
2.6.6	Relocate AHU Exhaust Discharge	Deferred – included in 5 year Capital Plan

Dorchester District Court
Dorchester, MA

HVAC SYSTEM EVALUATIONS COVID-19

Office of Court Management

July 26, 2021

Tighe&Bond

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Section 1
Existing Conditions and Site Observations

Tighe & Bond visited the Dorchester District Courthouse on September 10, 2020. While on site, we inspected the basement and penthouse 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:
    - Jeff Daru, Facilities Management and Capital Planning
    - Tyrone Whitley, Courthouse Facilities Staff

- Tighe & Bond:
    - Sean Pringle, PE, Project Mechanical Engineer
    - Timothy Bill, Staff Engineer

1.1 Existing Ventilation System

The Dorchester District Courthouse is a three-story building (including the basement), constructed in 1925 with a major renovation in 1994, with a floor area of approximately 77,000 Gross Square feet. The HVAC system includes eight air handling units (AHU), with AHU's 1 through 3 located in the basement mechanical room, and AHU's 4-8 located in mechanical penthouses.

All AHU's have a heating hot water coil, a chilled water coil, and supply air fan. All AHU's except for AHU-1 also have a return air fan and return, outside, and exhaust air dampers, with economizer capability. AHU-1 is a 100% outdoor air, constant volume unit that serves the lockup area and provides ventilation air to conference rooms throughout the building. This unit has a face and bypass damper arrangement for the hot water coil.

The air handling units are generally in fair condition. They appear to have been installed as part of the 1994 renovation. Motors, actuators, bearings, and other wear items appear to have been replaced as they failed. Most outdoor air dampers are in poor condition and are rusty but appear to be operational. Also, several filters were poorly fitted, and coils had dirty areas around the edges indicating possible bypass air around the filters.

Most AHU's are missing a trap on the cooling coil condensate drain piping. Only AHU-1 has a trap condensate drainage piping. All other AHU's have condensate drain piping without a trap. Without a trap, the negative pressure in the AHU causes the drain pan beneath the cooling coil to pool up with water, and in some cases has caused it to overflow and flood the downstream motor section. This excess water corrodes the equipment and can result in mold growth within the AHU, affecting indoor air quality. In AHU's 4 and 6, the blower sections were flooded at the time of the visit. In AHU-4, the cooling coil drain pan may have failed, as there was very little water in the condensate tray even though the blower section was flooded.

Condensate drains are piped from the hot water coils on all AHU's to nearby floor drains. These do not need to be piped, as the hot water coils do not produce condensate. This is an unnecessary opening that allows unfiltered mechanical room air to be drawn into the system.

The three basement AHU's draw outside air from, and exhaust air to, a confined mechanical pit. This causes some cross-contamination of exhausted air into the fresh air. Similarly, the penthouse AHU's draw outside air from, and exhaust air to, a combined exhaust/intake louver. The exhaust and intake openings are side by side. While partitions exist up to the louver face, this arrangement also can cause cross-contamination of exhausted air into the fresh air.

AHU-7 was missing a latch on the cooling coil access section, which appeared to be causing an air leak, allowing unfiltered air to be drawn into the system.

At the time of the visit, exhaust fans EF-9 and EF-10 were not operating. The drawings indicate that these fans serve toilet exhausts in the areas directly below these fans. All other roof exhaust fans were operating at the time of the visit.

Chilled water is provided by a pair of 130-Ton Daikin Air-cooled chillers located outside on grade. Hot Water is provided from a pair of 2.35 MMBH Smith cast iron boilers. Staff noted that the chillers shut off frequently because of alarms related to inadequate water flow, especially on moderate days. This happened several times while we were onsite. This may cause performance issues during the next cooling season.

All areas except the courtroom and the lockup area are served by the AHU-3 variable air volume (VAV) system. Supply air is regulated to each zone by VAV boxes. The VAV units do not have reheat. We assume the VAV boxes are original and have not been replaced. VAV boxes typically operate between a maximum and minimum position. The minimum position prevents the VAV box damper from fully closing, which allows constant airflow to the space when occupied, which is a code requirement for ventilation purposes. The 1994 design drawings do not list a minimum supply airflow for each VAV, so it is unknown if supply air is always being provided or if the minimum positions provide adequate ventilation air. The working condition of these boxes is also unknown.

For high density spaces such as conference rooms, constant 100% OA ventilation air is provided via separate diffusers from AHU-1 in addition to, and independently of, the air from the VAV system.

The lockup areas are provided with 100% outside air supply from AHU-1, supplied into the corridors and the cells. Air is exhausted from the cells through the toilet exhaust risers.

Each of the six courtrooms are served by a dedicated AHU. These AHU's (AHU-2 and AHU's 4-8) are constant airflow systems, with demand-controlled ventilation (DCV) This allows the outside air to be modulated based on CO2 concentrations within the space.

Around the perimeter, fan coil units provide heating and cooling for additional control. These units are in fair to poor condition and have 1" MERV 8 filters. Staff indicated that all hot water coils have been cleaned within the last three years.

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

TABLE 1
Existing Air Handlers

Unit	Original Design Airflow (CFM)	Original Design Min. O.A. (CFM)	Filters	Condition
AHU-1	5,100	5,100	2" MERV 8	Fair
AHU-2	4,300	1,375	2" MERV 8	Fair
AHU-3	32,500	6,600	2" MERV 8	Good
AHU-4	2,930	760	2" MERV 8	Fair
AHU-5	2,600	570	2" MERV 8	Fair
AHU-6	2,600	570	2" MERV 8	Fair
AHU-7	2,930	760	2" MERV 8	Fair
AHU-8	4,500	1,000	2" MERV 8	Fair

Photo 1 – Representative Air Handler

1.2 Existing Control System

The Courthouse has an Automated Logic building management control system (BMS). It monitors and controls the existing boiler, chiller, AHU's, VAV's, fan coils, and exhaust fans. The BMS and AHU control devices appear to have been upgraded more recently than the 1994 renovation and were likely upgraded within the last 10 years. While onsite, Tighe & Bond was able to observe various control system screens and setpoints and discussed the operation with staff. In addition to typical controls, we understand that the system provides the following key features for the AHU's:

1. All units:
    a. Economizer mode – 100% outdoor air.
    b. Safeties and alarms, including freeze stats.
2. Courtroom units (AHU's 2 & 4-8):
    a. Demand Controlled Ventilation (DCV) – varies the outside air percentage from a minimum to a maximum limit in response to CO2 concentration in the return air.
3. 100% outside air unit (AHU-1):
    a. Face and bypass damper control for hot water coil (note the hot water coil does not have a hot water control valve).

Section 2
Recommendations

Below is a list of recommendations that we propose for the Dorchester District Courthouse. Please refer to the "Master Recommendation List" for further explanation and requirements of the stated recommendations.

2.1 Filtration Efficiency Recommendations

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

RF-1: *Replace filters with a MERV 13 filter.*

TAB Contractor and Engineer shall verify that the existing air handlers can accommodate MERV-13 filters. Replace filters in AHU's and fan coils with 1" or 2" filters as applicable.

RF-3: *Install a differential pressure sensor (switch) across the filter banks.*

We recommend this measure for the air handers, but not the fan coil units. The existing automated logic controllers associated with the AHU's appear to have spare binary inputs to accommodate the addition of a differential pressure switch.

RF-3b: *Pressure sensor (switch) shall have a display and be connected to the BMS system.*

2.2 Testing & Balancing Recommendations

The air handlers are approximately 27 years old and it is unknown to Tighe & Bond when the last time this units were tested and balanced to the proper airflow. Also, the code required outside air flow rates that were used to design the system in 1994 are different than the 2015 IMC and ASHRAE Standard 62.1 requirements.

We recommend the following measures:

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

We recommend rebalancing the air handlers to the recommended minimum O.A. values shown in Table 2. After rebalancing, the spaces should be monitored during peak heating and cooling conditions to confirm space temperature can be maintained.

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-1	5,100	5,100	5,100	5,100
AHU-2	4,300	1,375	1,160	1375
AHU-3	32,500	6,600	6,200	6,600
AHU-4	2,930	760	670	760
AHU-5	2,600	570	530	570
AHU-6	2,600	570	530	570
AHU-7	2,930	760	670	760
AHU-8	4,500	1,000	830	1,000

Based on this comparison, it appears that the original design outdoor airflows are adequate. Where the outside airflows calculated by Tighe & Bond are less than the original design values, we recommend using the original designed values, as these exceed the calculated code minimums and will likely result in improved indoor air quality (IAQ).

The airflow rate per person is shown below in Table 3. These values are based on the recommended outdoor airflow and the original design supply airflow rates shown in Table 2 above. The airflow rate per person also 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 3
Average Airflow Rate Per Person

	All Spaces	***Courtrooms***	***Non-Courtroom spaces***
Total Occupancy (People)	756	422	334
Total Supply Air (CFM/Person)	75	47	118
Outdoor Air (CFM/Person)	22	12	35

The airflow rate per person for each Courtroom is shown below in Table 4. These values are based on full occupancy without taking diversity into account, the original design supply airflow rate, and the recommended outdoor airflow rate. 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 4
Airflow Rate per Person - (Full Occupancy)

		Total Air		*Outdoor Air*	
Courtroom	***Total People***	***Supply Airflow (CFM)***	***Airflow Rate (CFM/Person)***	***Outside Airflow (CFM)***	***Airflow Rate (CFM/Person)***
Jury Pool Room	38	480	13	150	4
Arraignment Courtroom	159	4,300	27	1,375	9
Medium Courtroom C204	92	2,930	32	760	8
Medium Courtroom C225	92	2,930	32	760	8
Small Courtroom C207	73	2,600	36	570	8
Small Courtroom C221	73	2,600	36	570	8
Large Courtroom 216	114	4,500	39	1,000	9

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 schedule 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)

		Total Air		*Outdoor Air*	
Courtroom	***Total People***	***Supply Airflow (CFM)***	***Airflow Rate (CFM/Person)***	***Outside Airflow (CFM)***	***Airflow Rate (CFM/Person)***
Jury Pool Room	15	480	32	150	10
Arraignment Courtroom	19	4,300	226	1,375	72
Medium Courtroom C204	17	2,930	172	760	45
Medium Courtroom C225	19	2,930	154	760	40
Small Courtroom C207	15	2,600	173	570	38
Small Courtroom C221	14	2,600	186	570	41
Large Courtroom 216	18	4,500	250	1000	56

RTB-3: *Increase outside air flow rate beyond minimum under non-peak conditions*.

We recommend increasing the outdoor air flow rate beyond the recommended outdoor air flow rates under non-peak conditions. We do not believe this would cause a threat of a potential coil to freeze based on the total percentage of outside air vs. the total amount of outside air, however cold spots on the coil may develop due to poor mixing.

Refer to the Control System upgrades section for the required controls to implement this strategy.

RTB-5: *Consider rebalancing all air inlets and outlets.*

Lockup Spaces
The lockup ventilation strategy is based on maintaining a slight negative airflow pattern in the cells relative to the corridors in the lockup area. If any exhaust grilles have been accidently closed or if the supply air flow is too high in these areas, the likelihood of cross contamination from one cell to another increases.

Whole building or spaces with airflow/temperature issues
If the Courthouse experiences regular cooling and heating comfort complaints, we recommend exploring rebalancing all air inlets and outlets throughout the building. Prior to rebalancing the building, we recommend verifying the chiller and boiler plants are maintaining the correct supply water temperatures.

RTB-6: *Test and balance all air handler chilled and hot water coils.*

Testing and balancing the air handler hot and chilled water coils will help ensure the coils are receiving the proper water flow rates. We understand that the chilled water coils were rebalanced as part of the recent chilled water replacement. Based on the test and balance report we were provided, the chilled water coils on AHU's 2-8 do not need to be rebalanced.

The chilled water flow rate for AHU-1 was reported at 55 GPM on the balance report and left unchanged. However, the original scheduled flow rate from the 1994 drawings is 38 GPM. This may have been left at a higher flowrate to improve the dehumidification capacity of this 100% OA unit. The justification for this flowrate should be determined prior to revising the flowrate of this AHU.

2.3 Equipment Maintenance & Upgrades

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

Replace dampers and actuators that are not functioning.

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

While most air handler coils were in good condition, several showed some signs of corrosion or buildup. These should be cleaned to ensure the airflow and heating/cooling capacity can be maintained. In addition, several drain pans were in poor condition due to the lack of condensate traps. These should be cleaned or replaced if damaged.

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 airflow stations and reheat coils. Any boxes not delivering the expected airflow rates should be rebalanced.

2.4 Control System

We recommend the following control system strategies be implemented into the existing control system:

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

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

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

This measure applies to AHU's that serve individual courtrooms (AHU's 2, 4-8).

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.

The lockup area and other areas that receive a large amount of supply air from AHU-1 may benefit from local humidification. AHU-1 is a 100% outside air system. This lockup area has a relatively high ventilation rate and will tend to have a lower humidity than other areas. Studies indicate that as relative humidity is reduced below 40%, susceptibility to viruses such as COVID-19 progressively increases.

2.7 Other Recommendations

2.7.1 Replace Toilet Exhaust Fans and Controls

We recommend replacing the failed toilet exhaust fans. At the time of the visit, EF-9 and EF-10 were not functioning. After replacement, rebalance the toilet exhaust fans to the airflows shown on the drawings.

2.7.2 Add Condensate Traps to AHU Condensate Piping

The addition of condensate traps will prevent stagnant water from accumulating in the cooling coil tray due to negative internal AHU pressure inhibiting drainage, and also reduces unfiltered air leakage into the supply air stream. Also consider installing a removable cap on this piping during the winter when the chillers are shut down to reduce air leakage when the trap dries out.

Consider removing the condensate drain piping from the hot water coil. This piping is unnecessary and creates an air leakage path that is a source of unfiltered air in the supply air stream. Alternately, consider adding a valve or a removable cap to the end of the drain to allow the piping to be used during cleaning while preventing air leakage.

2.7.3 Increase the filter replacement frequency for AHU-1

Because this unit is 100% outside air, the filters will load 3-4 times faster than other units. The use of a filter differential pressure switch will help to inform the best frequency. Staff indicated that the current frequency is roughly monthly, compared to every 3 months for the other units.

2.7.4 Make AHU Adjustments to Reduce Air Leakage

In several units it was noted that the there was a small gap in the filter tray around the filters. Also, AHU-7 had missing door hardware that prevented the door from closing fully. These fitment issues cause unfiltered outside air to be drawn into the AHU supply air system and will clog and damage coils over time.

2.7.5 Improve the Control Sequence of the Chillers and Bypass Valve

The chilled water coils are all controlled by two-way valves, and a pair of 3-inch bypass valves are used to maintain minimum flow through the chillers. Staff stated that when the chillers are enabled, the operating unit often requires a minimum flow higher than what the building requires. This causes the bypass valve to start to open to maintain this flow. However, by the time the bypass valve has opened enough to generate the correct flow through the chiller, the chiller has generated an alarm and shut down. This issue should be reviewed in greater detail, and modifications made quickly. Proper operation of the

chillers is imperative to avoid excessive wear and tear on the equipment, and adverse effects on the building occupants and materials due to unstable temperature and humidity conditions.

2.7.6 Relocate AHU Exhaust Discharge

To comply with current code requirements, we recommend the location of the AHU exhaust air discharge be relocated a minimum of ten feet away from the air handling unit outside air intake louvers. The current locations present a risk of recirculating building air back into the intake air louvers. If this is occurring, the air handlers are bringing in less outside air and recirculating more.

Section 3
Testing & Balancing Results

Wings Testing & Balancing Co., INC. visited the Dorchester District Courthouse on March 26, 2021 to test the airflow rates of the air handling units and the exhaust fans. 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

	Design			Actual		
Unit	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	5,100	5,100	0	4,991	4,991	0
AHU-2	4,300	1,375	2,925	3,470	1,067	2,403
AHU-3	32,500	6,600	25,900	29,316	6,568	22,748
AHU-4	2,930	760	2,170	2,854	691	2,163
AHU-5	2,600	570	2,030	2,489	553	1,936
AHU-6	2,600	570	2,030	2,519	544	1,975
AHU-7	2,930	760	2,170	3,195	809	2,386
AHU-8	4,500	1,000	3,500	4,582	973	3,609

TABLE 6
Exhaust Fan Testing & Balancing Results

Unit	Serving	Design Exhaust Airflow (CFM)	Actual Exhaust Airflow (CFM)
EF-2	Toilets	1,830	1,673
EF-4	Jury Pool	270	177
EF-5	Lockup	2,475	1,885
EF-6	Toilets	900	916
EF-8	Toilets	1,050	Inoperable
EF-9	Toilets	1,620	1385
EF-17	Conference Room	270	289

Typical balancing tolerances for air systems is ±10% of the design airflow.

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

1. AHU-1, 3, 4, 5, 6, 7, and 8 are performing within the acceptable airflow range, with MERV 13 filters installed.
2. AHU-2 is operating approximately 20% below design capacity, with MERV13 filters installed. Based on the measured brake horsepower and motor horsepower, the unit is likely capable of meeting the design airflow if the fan speed is adjusted by changing the sheaves. The unit currently has fixed sheaves.
3. Lockup exhaust fan EF-5 is operating approximately 20% below design capacity, with the existing 1/2 horsepower motor operating slightly above nameplate capacity. We recommend investigating the cause of the low airflow. If no obvious obstructions or balancing issues are found, larger capacity fan should be selected by an engineer. As a larger horsepower motor will likely be necessary, an electrical engineer will need to determine if the existing circuit and controls can support the increased load.
4. EF-4 is operating at 66% of design capacity. A sheave change would improve the airflow but would not bring the airflow within acceptable tolerances. We recommend investigating the cause of the low airflow. If no obvious obstructions or balancing issues are found, larger capacity fan should be selected by an engineer. As a larger horsepower motor will likely be necessary, an electrical engineer will need to determine if the existing circuit and controls can support the increased load.
5. EF-8 has no power at the fan. There is a command to run from the BMS and the motor and sheaves are brand new. We recommend having an electrician investigate this issue.

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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