



July 8, 2022

Mr. Michael Lane
Environmental Health & Safety Manager
Office of Court Management / Facilities Management & Court Capital
Lowell Justice Center
370 Jackson Street
Lowell, MA 01852

RE: Filter Media Selection Support, Roderick L. Ireland Courthouse, 50 State Street, Springfield, Massachusetts (EH&E 25663)

Dear Mr. Lane:

Environmental Health & Engineering, Inc. (EH&E) provides this report to the Massachusetts Trial Court Office of Court Management regarding the findings from the filter media selection support project for the Roderick L. Ireland Courthouse located at 50 State Street, Springfield, Massachusetts (the Building).

AIR FILTER TESTING

As an interim measure in controlling the potential release of materials from inside surfaces of supply air ductwork, air filter media is being considered for installation at all ceiling supply air diffusers throughout the Building. Given that the installation of filter media on supply air diffusers will add a certain restriction to airflow, EH&E assessed the performance of different types of air filter media and its relative impact to airflow. EH&E's testing was conducted on June 30, 2022, and included airflow testing at select supply air diffusers serving the Registry of Deeds file area on the Fourth Floor. Ventilation supply air delivery for zones within this area is provided by air handling unit AC-2, which is located in the mechanical room on the Fourth Floor.

Media Selection

The air filter media that was considered by EH&E for use at supply air diffusers included polyester type filter material as this material is readily available in bulk rolls and can be easily field cut by installers to accommodate different diffuser sizes. Although bulk roll fiberglass filter material is also available, this media was not considered given concerns associated with fiberglass shedding. The filter media considered by EH&E for assessment is outlined in Table 1 and includes physical information and filter performance metrics.

Table 1 Air Filter Material Considered for Installation at Supply Air Outlets at Roderick L. Ireland Courthouse, 50 State Street, Springfield, Massachusetts

ID (Model #)*	Media Thickness (inches)	Media Color	Surface Tackifier	Performance Rating**	Pressure Drop (inches of water @500 fpm)
A (6B772)	1.5	Blue/White	No	MERV 8	0.44
B (2JTC1)	1.5	Orange/White	Yes	MERV 8	0.44
C (2JRV7)	0.75	Orange/White	Yes	MERV 8	0.32
D (2JUR9)	0.75	Blue/White	No	MERV 7	0.32
E (4WZ62)	0.50	Blue/White	No	MERV 7	0.28

fpm feet per minute
 MERV Minimum Efficiency Reported Value

* Air filter bulk rolls were obtained by EH&E from W.W. Grainger Inc. All air filter model numbers tested are manufactured under the brand "Air Handler"

** MERV 7 filters provide 50% capture efficiency for particles of size ranges between 3-10 microns.
 MERV 8 filters provide 70% capture efficiency for particles of size ranges between 3-10 microns.

Test Method and Results

Testing was conducted at four individual supply air diffusers within the Registry of Deeds file area and airflow measurements were recorded at each of the diffusers using an airflow capture hood (balometer) manufactured by TSI Incorporated. The location of the supply air diffusers tested is as shown on a section of the Fourth Floor duct drawings presented in Figure 1.

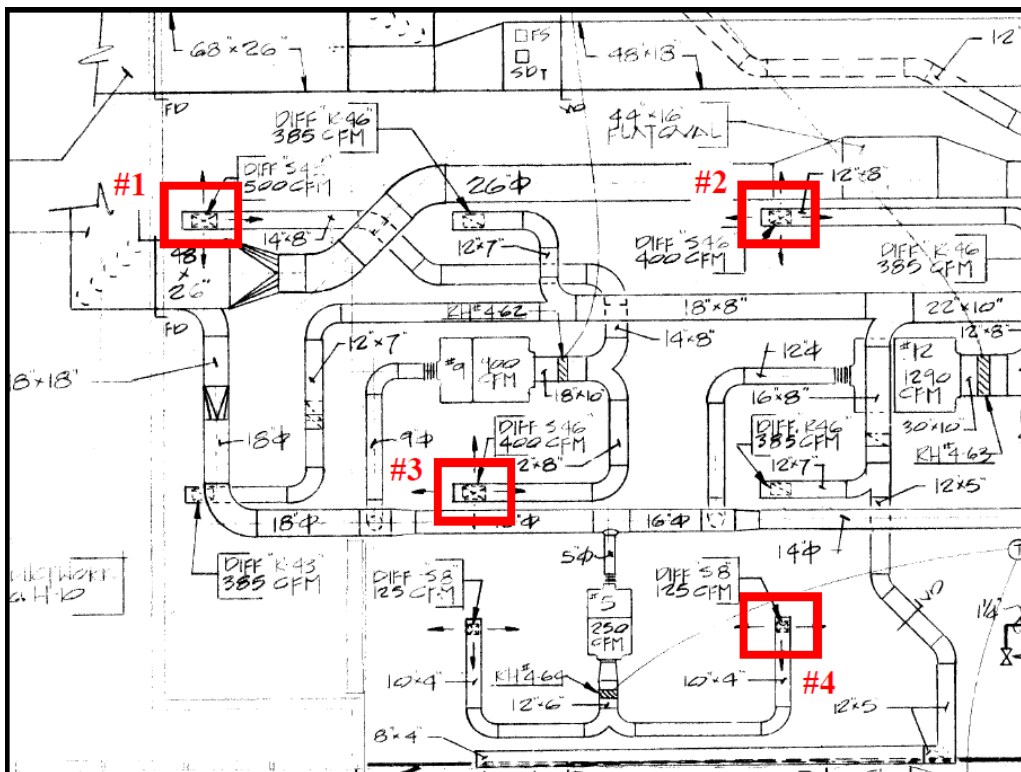


Figure 1 Supply Air Diffuser Test Locations, Fourth Floor Registry of Deeds File Area

Baseline diffuser airflow was measured at each of the four diffusers in the “as found” condition with no air filters installed, and again with the air filters installed. Airflow measurements were repeated for each type of filter media. Results of this testing is presented in Table 2 and shaded cells denote the filter(s) showing the lowest drop in airflow at each diffuser.

Table 2 Results of Airflow Measurements Collected at Select Supply Air Diffusers in the Registry of Deeds File Area, June 30, 2022				
Filter ID	Diffuser 1 (cfm)	Diffuser 2 (cfm)	Diffuser 3 (cfm)	Diffuser 4 (cfm)
No Filter (cfm)	385	195	460	77
Air Filter A	330	120	385	45
Air Filter B	355	116	330	43
Air Filter C	352	130	320	50
Air Filter D	375	130	410	50
Air Filter E	375	130	408	50

cfm cubic feet per minute

Shaded data cells denote filter(s) showing lowest drop in airflow in diffuser.

CONCLUSION

The results of airflow testing show filters C, D, and E to exhibit the lowest reduction to airflow which is expected given that these filters are less restrictive to airflow. Based on the measurement results, EH&E recommends use of air filter D, which is the MERV 7, 3/4-inch, blue/white filter with the model number 2JUR9. Although air filter E showed similar results and a comparably low reduction in airflow, air filter E is a 1/2-inch thick filter and as such, installation in the diffusers may result in some leakage of air around the filter, particularly at diffusers that exhibit higher airflows.

If you have any comments or questions regarding this report, please contact either of us at 1-800-TALK EHE (1-800-825-5343).

Sincerely,



Brian J. Baker, P.E.
Principal Engineer



Matt A. Fragala, M.S., CIH, CSP
Managing Principal Consultant

Appendix A Limitations

APPENDIX A LIMITATIONS

1. Environmental Health & Engineering, Inc.'s (EH&E) indoor environmental quality assessment described in the attached report number 25663, *Filter Media Selection Support, Roderick L. Ireland Courthouse, 50 State Street, Springfield, Massachusetts* (hereafter "the Report"), was performed in accordance with generally accepted practices employed by other consultants undertaking similar studies at the same time and in the same geographical area; and EH&E observed that degree of care and skill generally exercised by such other consultants under similar circumstances and conditions. The observations described in the Report were made under the conditions stated therein. The conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services.
2. Observations were made of the site as indicated within the Report. Where access to portions of the site was unavailable or limited, EH&E renders no opinion as to the condition of that portion of the site.
3. The observations and recommendations contained in the Report are based on limited environmental sampling and visual observation and were arrived at in accordance with generally accepted standards of industrial hygiene practice. The sampling and observations conducted at the site were limited in scope and, therefore, cannot be considered representative of areas not sampled or observed.
4. When an outside Rooms conducted sample analyses, EH&E relied upon the data provided and did not conduct an independent evaluation of the reliability of these data.
5. The purpose of the Report was to assess the characteristics of the subject site as stated within the Report. No specific attempt was made to verify compliance by any party with all federal, state, or local laws and regulations.