**WATER DAMAGE ASSESSMENT**

**State Office Building**

**436 Dwight St., Springfield, MA**

Exterior view of State Office Building
436 Dwight St., Springfield, MA


Prepared by:

Massachusetts Department of Public Health

Bureau of Environmental Health

Indoor Air Quality Program

September 2021

# Background

|  |  |
| --- | --- |
| Building: | Springfield State Office Building (SSOB) |
| Address: | 436 Dwight St., Springfield, MA |
| Assessment Requested by: | Jason Kruckas, Division of Capital Asset Management and Maintenance |
| Reason for Request: | Water damage from roof leak and pipe leak from high capacity, wind-driven rainstorm |
| Date of Assessment: | August 27, 2021 |
| Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment: | Michael Feeney, Director, Indoor Air Quality (IAQ) Program |
| Building Description: | The building is a five-story stone and cement building originally constructed as a post office in 1937 |
| Windows: | Not openable |

# Methods

To determine the extent and future likelihood of water damage to building components, several water-related sampling techniques were conducted. Moisture content of cement flooring beneath carpet tile and furniture was measured using a moisture meter. To determine if a room/location inside a building may be prone to moistening from condensation during weather extremes, air testing of temperature and relative humidity was done with a TSI Q-Trak set to calculate dew point. Surface temperature testing of building surfaces and equipment was performed using a laser thermometer. Temperature of floors were measured in each corner, center of the area and any area demonstrating possible moisture damage/staining. Building components in direct airflow from the HVAC system coated with water droplets or have either rust or water stains all had surface temperature measured.

Please refer to the IAQ Manual for methods, sampling procedures, and interpretation of results (MDPH, 2015). The moisture content of building materials was tested using a moisture meter, and visual observations were made of water damage and related conditions.

This building has been visited previously by the IAQ program. Reports from those visits are available on the MDPH website at: <https://www.mass.gov/info-details/indoor-air-quality-reports-cities-and-towns-s> or on request.

# IAQ Testing Results

The following is a summary of testing results (Table 1):

* Carpet tiles, floor, suspended ceiling, and furniture were examined.

## Ventilation

Fresh air is provided by air-handling units (AHUs). Fresh air is ducted to supply air diffusers located throughout the space. Air is returned to the AHUs via ceiling plenum.

Since the offices in question were minimally occupied at the time of the visit, no air testing for carbon dioxide and other parameters was conducted.

## Microbial/Moisture Concerns

As a result of a heavy rainstorm, a window leak resulted in water entering office space via a roof leak on the third floor and pipe leaks in the basement areas, resulting in wetting of ceiling tiles, carpet tile and materials on the floor. In general, the US Environmental Protection Agency (US EPA) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommends that porous materials (e.g., gypsum wallboard, ceiling tiles and carpeting) be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2008; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur.

As reported by office and facilities staff, efforts to dry building components began within 24 hours after the water leak began. As described by facility’s staff, remediation methods were consistent with US EPA water damage restoration guidelines. All areas examined were free of standing water and musty odors. Furniture in offices did not appear to have water damage.

To determine if water had travelled beneath carpet tile, moisture sampling of carpet was conducted in each of the affected offices. Locations that were not affected by water leaks were measured for moisture as control measurements for comparison. Sampling of cement and carpet had similar measurements indicating that all locations were dry. In addition, no floor had a surface temperature below the dew point, indicating that the offices are not subject to possible moistening by condensation during hot, humid weather.

**Conclusions/Recommendations**

Based on observations at the time of assessment, the following is recommended:

1. Continue with efforts to repair window leaks.
2. If future water leaks occur, examine carpet tile along walls in water leak-affected offices to ascertain if tile can be readily removed by hand. If tiles can be removed, consider leaving cement floor in these areas to allow water vapor to migrate from cement. Reinstall carpet tile in a manner consistent with manufacturer’s recommendations.
3. Until permanently repaired, storage of materials that can support mold growth should not be stored on the floor or windowsills in these locations, specifically cardboard and paper. In addition, consideration should be given to temporarily elevating hardwood furniture on waterproof pads (or similar materials).
4. Operate supply and exhaust ventilation continuously in all areas during occupied periods. Ensure all HVAC equipment is cleaned/maintained in accordance with manufacturer’s instructions.
5. Refer to resource manual and other related IAQ documents located on the MDPH’s website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: <http://mass.gov/dph/iaq>.

# References

ACGIH. 1989. Guidelines for the Assessment of Bioaerosols in the Indoor Environment. American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

MDPH. 2015. Massachusetts Department of Public Health. Indoor Air Quality Manual: Chapters I-III. Available at: http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/iaq/iaq-manual/.

US EPA. 2008. “Mold Remediation in Schools and Commercial Buildings”. Office of Air and Radiation, Indoor Environments Division, Washington, DC. EPA 402-K-01-001. September 2008. Available at: <http://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>.

| **Location** | **Air Temp**  **(oF)** | **Relative Humidity**  **(%)** | **Dew Point**  **(oF)** | **Floor Temp**  **(oF)** | **Water Damaged/Missing Ceiling Tiles**  **(#)** | **Moisture measurement of carpet tile/ cement floor**  **(%)** | **Ventilation** | | | **Air to Floor Temp**  **Difference**  **(oF)** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Windows openable** | **Supply** | **Exhaust** |
| Background (outdoors) | 89 | 55 | 71 |  |  |  |  |  |  |  |  |
| BO4O | 76 | 57 | 59 | 64 | 4 | 41-64 | N | Y | Y | 12 | Below grade basement space  . |
| BO24A (control) | 74 | 62 | 60 | 65 | 0 | 23-50 | N | Y | Y | 9 | Below grade basement space |
| B42 | 74 | 63 | 60 | 64 | 0 | 21-44 | N | Y | Y | 10 | Below grade basement space |
| 205 NW Corner | 75 | 56 | 59 | 68 | 6 | 11-15 | N | Y | Y | 7 |  |
| 205A (control) | 75 | 59 | 59 | 69 | 0 | 9-17 | N | Y | Y | 6 |  |