

MOLD ASSESSMENT

**Access and Activation Civic Improvement Project
Buffalo Outer Harbor
Terminal B
Fuhrman Boulevard
Buffalo, New York 14203**

Volume 3 of 4

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MOLD ASSESSMENT

Access and Activation Civic Improvement Project Buffalo Outer Harbor Terminal B Fuhrmann Boulevard Buffalo, New York 14203

Volume 3 of 4

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EXECUTIVE SUMMARY

A Mold Assessment was performed at the Buffalo Outer Harbor Terminal B. The assessment was performed by New York State Department of Labor Certified Mold Assessor Mr. Geoff Bijak on February 17, 2017.

Substantial water intrusion and subsequent mold growth was identified on the west interior wall of the building. The predominant area of concern is between columns four through thirteen, and nineteen through twenty four.

The cause of water infiltration to this portion of the building is from failing gutters and downspouts on the exterior of the building. Based on moisture mapping and thermal imagery, water is becoming trapped between the metal façade and the concrete masonry units, thus entering the building.

1.0 INTRODUCTION

Ravi Engineering and Land Surveying, P.C. (RE&LS) was retained by Trowbridge Wolf Michaels Landscape Architects, LLP to perform a Mold Assessment at the Buffalo Outer Harbor Terminal B.

Our scope of services included visual identification of suspect mold amplification sites, moisture mapping and thermal imaging to determine locations of moisture intrusion to the subject building. Indoor air sampling for the presence of mold spores was not conducted due to extreme water loss, dominant mold growth and high variability in sample results.

This report combines the approaches of a visual assessment, moisture mapping and thermal imagery to form a relationship between water intrusion through the building envelope and the presence of mold contaminated building materials.

2.0 BACKGROUND

The Mold Assessment is based on Article 32 of the New York State Labor Law and recognized literature and guidelines in the current mycology field. The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) and the U.S. Environmental Protection Agency (USEPA) have yet to publish enforceable regulations as they pertain to mold assessment procedures or public mold exposures.

Agencies such as the U.S. Centers for Disease Control and Prevention, the Institute of Medicine of the United States National Academy of Sciences, the World Health Organization, and Health Canada have recognized a relationship between living or working in damp buildings and the increased risk of respiratory disease due to the presence of mold.

Studies by these agencies found that inhalation of mold spores may contribute to adverse health effects including allergic reactions, asthma and other respiratory complaints. Sensitive populations such as the elderly, children and individuals with suppressed immune systems, are most susceptible to mold inhalation hazards. These sensitive populations may experience symptoms such as nasal stiffness, eye irritation, wheezing, or skin irritation. Acute reactions can include fever and shortness of breath. Individuals with a history of chronic lung disease could develop mold infections in their lungs such as Aspergillosis in rare instances.

3.0 THE IMPACT OF WATER INFILTRATION ON BUILDING SYSTEMS

Building dampness caused by water infiltration through the building envelope is directly related to indoor mold amplification sites. Areas possessing high relative humidity, condensation, temperature differentials and visible water accumulation promote mold growth. When dampness is added to the indoor environment, mold species thrive because proper temperature and organic nutrient sources are present. The most effective way to correct building dampness is to completely eliminate water intrusion through the building envelope. Mold species associated with water damaged building materials will continue to flourish until dampness is eliminated.

4.0 VISUAL ASSESSMENT

A comprehensive site assessment and building review was conducted at Terminal B on February 17, 2017.

The Mold Assessment in Terminal B primarily focused on the west wall where visible mold growth and standing water was observed. Terminal B is presently unoccupied and the utilities are only servicing the building on an as needed basis. The building is mainly block and steel construction with very few finish building materials. Black mold colonies were observed on the upper and lower portions of the west wall. The upper wall is constructed of gypsum board and the lower wall is constructed of plywood. The mold colonies on the west wall generally correlate to the locations of standing water. Mold remediation work will be required in select locations on the west wall. Minor locations of mold colonies were observed in the conference room. There was no visual evidence of water intrusion in conference room.

5.0 MOISTURE METER READINGS

In conjunction with the visual assessment, an Extech MO297 Moisture Meter was used to determine wood moisture equivalents in building materials, air temperature and relative humidity. Moisture meter investigations collect data and create a virtual map of locations where water damaged building materials are located. The following table illustrates moisture, temperature and relative humidity readings for the building as recorded on February 17, 2017 and March 1, 2017.

According to the Institute of Inspection Cleaning and Restoration (IICRC), S520 Standard and Reference Guide for Professional Mold Remediation, 2008, building materials having wood moisture content equivalents (WME) above 16% can support mold growth.

Table 1 – Terminal B Moisture Meter, Temperature and Relative Humidity Readings

Terminal B					
<i>Test Locations</i>	<i>Substrate</i>	<i>Moisture Content</i>	<i>Temperature</i>	<i>Relative Humidity</i>	<i>Visible Mold Growth</i>
West Wall Columns #4 - #7	Wood	Range 8% to 10%	37 ⁰ F	41%	Yes
West Wall Columns #7 - #11	Wood	70%	37 ⁰ F	41%	Yes
	Drywall	90%	37 ⁰ F	41%	Yes
West Wall Columns #11 - #12	Wood	10%	37 ⁰ F	41%	Yes
West Wall Columns #12 - #13	Wood	Range 24% to 65%	37 ⁰ F	41%	Yes
West Wall Columns #13 - #19	Wood	Range 9% to 16%	37 ⁰ F	41%	No
West Wall Columns #19 - #24	Wood	Range 12% to 16%	41 ⁰ F	55%	Yes
	Gypsum	11%	41 ⁰ F	55%	Yes
West Wall Columns #24 - #27	Wood	Range 12% to 16%	41 ⁰ F	55%	No
	Concrete Block	21%	41 ⁰ F	55%	No
Conference Room	Gypsum Boards	Range 6% to 12%	41 ⁰ F	55%	Yes – North and South wall only

The underlying moisture problem in the building must be corrected to prevent recurring mold growth.

6.0 THERMAL IMAGERY FINDINGS

A final inspection tool used to map the location of water infiltration was a Flir E-50 Thermal Camera. The camera was used to detect building heat loss and potential areas of water infiltration to the building envelope. Images in blue color indicate cool surface temperatures and correlate with heat loss and water infiltration. Red color images represent warm surface temperature and are indicative of sealed building conditions.

The images captured from the Flir E-50 Thermal Camera match the visual and moisture meter findings on where water infiltration was identified. Please refer to Appendix A for site photos and thermal images.

7.0 LIMITATIONS

Assessment procedures and recommendations provided in this report are based on the following literature currently available in the mycology field:

- Article 32 of the New York State Labor Law
- American Industrial Hygiene Association (AIHA), *Facts about Mold*. July, 2011.

- American Industrial Hygiene Association (AIHA) *Field Guide for the Determination of Biological Contaminants in Environmental Samples*. 1996.
- American Conference of Industrial Hygienists (ACGIH), *Bioaerosols Assessment and Control*. 1999.
- American Society for Testing and Materials (ASTM), *Standard Guide for Readily Observable Mold and Conditions Conducive to Mold in Commercial Buildings: Baseline Survey Process. Designation E2418-06*. March, 2006.
- Institute of Inspection Cleaning and Restoration (IICRC), *S520 Standard and Reference Guide for Professional Mold Remediation*, 2008.
- New York City Department of Health, *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. May, 1993.
- U.S. Environmental Protection Agency (USEPA), *Mold Remediation in Schools and Commercial Buildings*. September, 2008.

Observations noted and recorded are intended to represent the conditions that existed at the subject site at the time and date that the observations were made. If moisture in these spaces is not immediately addressed, mold growth may extend beyond the locations identified in this report.

A Mold Remediation Work Plan is not included in this Mold Contaminated Building Materials Assessment Report since there is no current scope of renovation. Preparation of a Mold Remediation Work Plan is recommended once a project scope is developed.

Site Limitations

- Air sampling and tape lift sampling was not performed for the purpose of this assessment due to wide spread water damage and subsequent mold growth. Air and tape lift sampling will not provide superior information that will change the findings described in this report.
- Internal wall cavities were not assessed. Any building substrates that recorded WME above 16% shall be assumed to contain mold growth on the back side of that substrate.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Ravi Engineering & Land Surveying, P.C. was retained by Trowbridge Wolf Michaels Landscape Architects, LLC to perform a Mold Assessment at the Buffalo Outer Harbor Terminal B. The assessment was performed on February 17, 2017. The following assessment techniques were utilized to develop our conclusions and recommendations:

- Interviews with knowledgeable building personnel;
- Visual assessments;
- Moisture meter readings; and
- Thermal -Imaging camera

ACMs and lead paint are present in Terminal B, but are not located where water damage and mold contaminated building materials are present. The west wall of Terminal B contains select locations of water damage and mold growth. The water damaged gypsum wall boards and plywood on the west wall are recommended for removal and disposal after water intrusion from the failing gutters and downspouts are resolved.

Attachment A

*Site Photos and Thermo-Imaging
Terminal B*

MOLD ASSESSMENT

**Buffalo Outer Harbor
Fuhrmann Boulevard
Buffalo, New York**



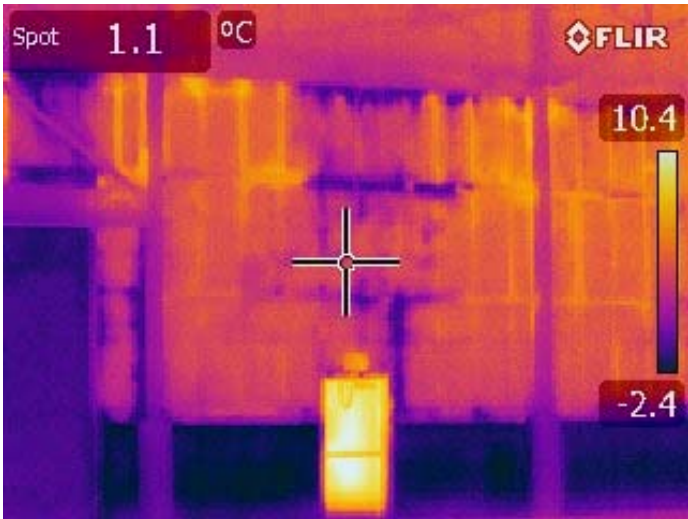
Intact Roof System



Missing Downspout and Wet Façade



West Wall, Standing Water, Elevated Moisture Readings



West Wall Thermal Imagery Matching Moisture Meter Readings



West Wall Overview



West Wall Thermal Imagery Readings, Evidence of Infiltration



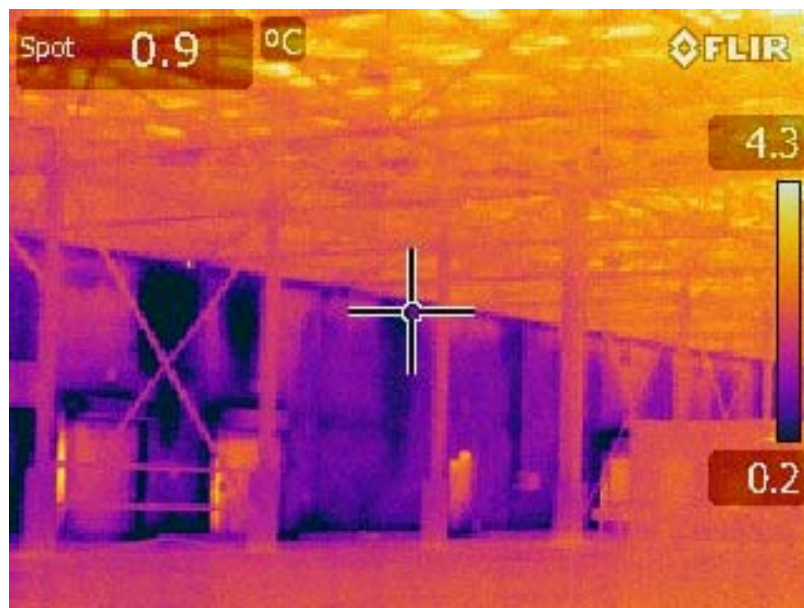
West Wall, North Corner, Past Standing Water



West Wall, North Corner, No Evidence of Infiltration



East Wall Overview



East Wall Thermal Imagery Readings, Evidence of Minor Infiltration



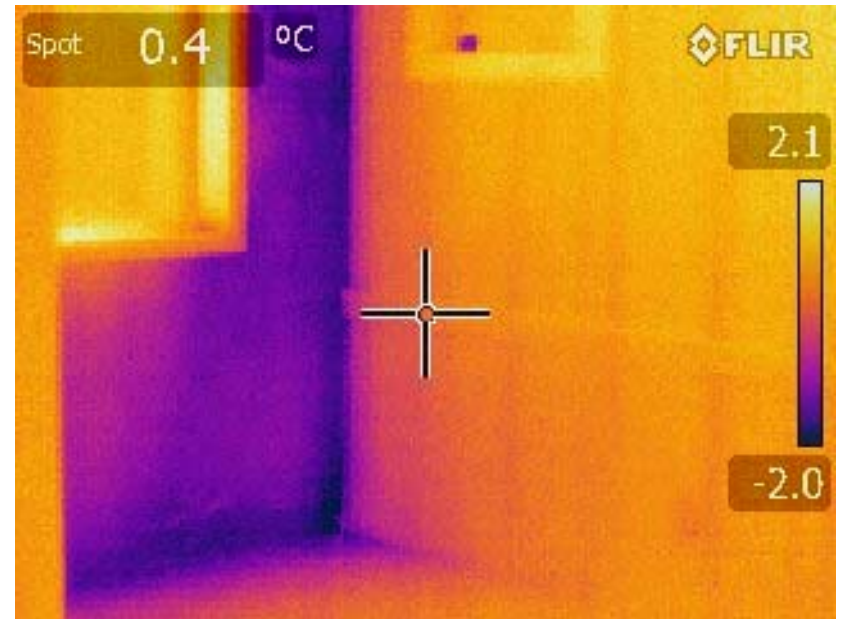
West Wall Overview Looking South



West Wall Thermal Imagery Readings, Evidence of Infiltration



Break Room #1 Minor Mold Growth



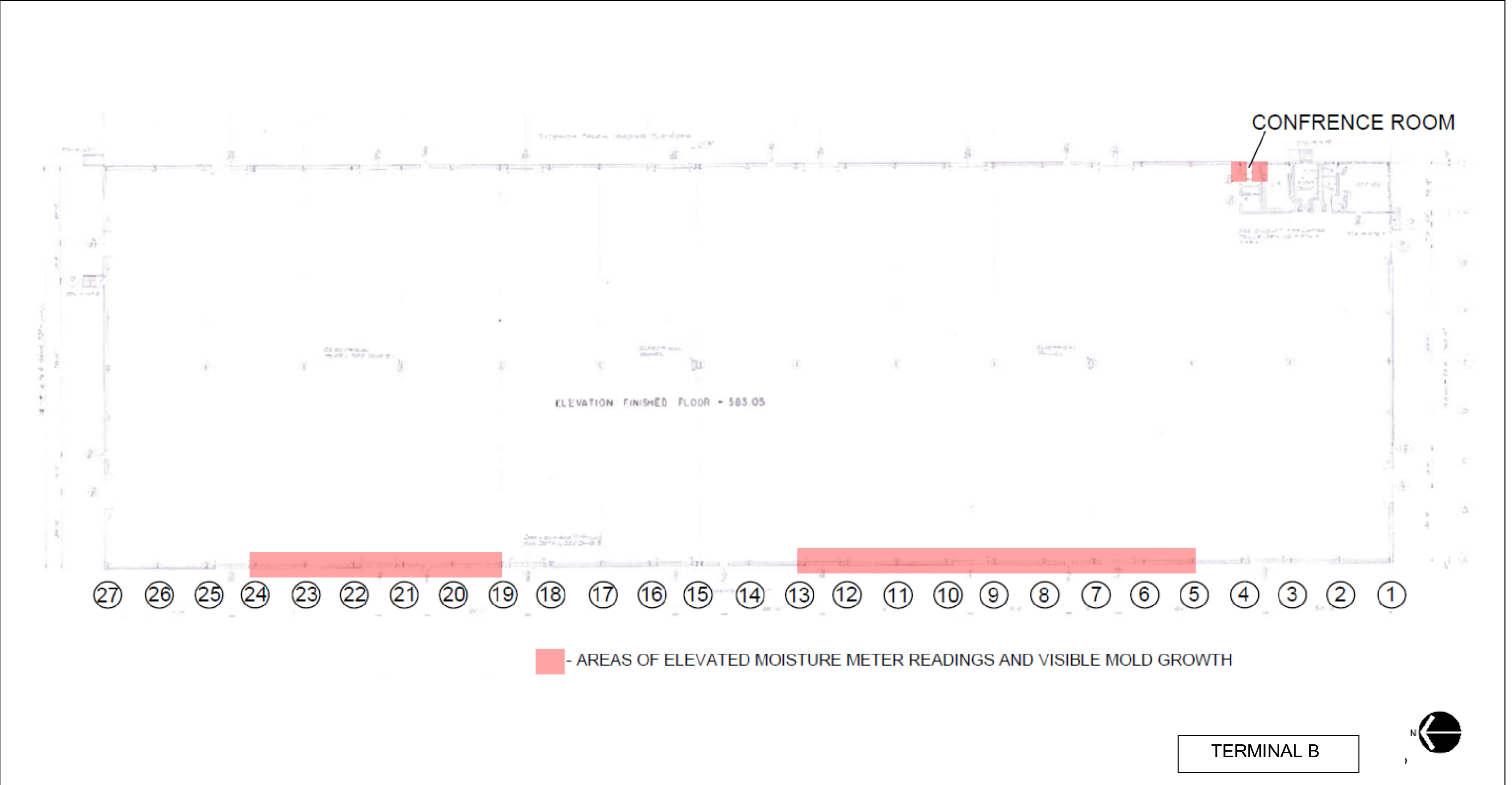
Thermal Imagery Showing Water Infiltration in Corner


Attachment B

Drawings
Terminal B

MOLD ASSESSMENT

**Buffalo Outer Harbor
Fuhrmann Boulevard
Buffalo, New York**



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	ATTACHMENT B: DRAWINGS		SCALE: N.T.S.	DRAWING NO: DWG-01

Attachment C

Certifications
Terminal B

MOLD ASSESSMENT

**Buffalo Outer Harbor
Fuhrmann Boulevard
Buffalo, New York**

STATE OF NEW YORK - DEPARTMENT OF LABOR
MOLD ASSESSOR



GEOFFREY R. BUAK

EXPIRES: 01-18

CERT# MA00239



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NYS DOL - L&C UNIT
ROOM 161A BUILDING 12
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ALBANY NY 12240

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HAIR BRN

HGT 6' 3 "

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