



Accredited Environmental Technologies, Inc.

October 15, 2018

Mr. Frank Randza
Mars Area School District
545 Route 228
Mars, PA 16046

sent via email: frandza@marsk12.org

RE: Visual Inspection
Mars Elementary School – Classrooms C126, C128, B105, B113 and B012
AET Project #PGH141

Dear Mr. Randza:

This letter report is to document Accredited Environmental Technologies, Inc. (AET's) 10/2/18 Visual Inspection related to teacher concerns regarding poor Indoor Air Quality (IAQ) at the Mars Elementary School. AET's visual inspection was not related to recent/past water infiltration episode or specific occupancy complaint of odors or mold-related health symptoms.

AET's 10/2/18 visual inspection was limited to five (5) classrooms (C126, C128, B105, B113 and B012). Interior finishes in these classrooms are plaster walls, drop ceilings and vinyl floor tile. Area carpeting and/or area rugs were present in Room B113 and B105. HVAC to each classroom is provided by both overhead supply and return diffusers within the drop ceilings.

Results of AET's 10/2/18 Visual Inspection include:

- 1. Visual Inspection (Surface Staining/Mold Growth) – Classroom B105:** Visual inspection found surface moisture staining within Classroom B105 on the ceiling tiles. A slight amount of dust accumulation was observed above the drop ceilings and within the Air Handling Unit (AHU).
- 2. Thermal Imaging (IR)/Moisture Meter Measurements:** Thermographic inspection was conducted for ongoing temperature anomalies. Temperature differences may be attributable to areas of moisture infiltration. A moisture meter was used to confirm suspect wet/damp building materials within the designated Classrooms. No areas of elevated moisture content were identified.

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- 3. IAQ Comfort Parameters (Temperature and Relative Humidity):** Temperature and relative humidity levels were measured by spot check measurements in each of the 5 classrooms. Levels were within the thermal comfort recommended guidelines by OSHA and ANSI/ASHRAE 55. Interior temperatures ranged from 70°F to 78°F. Relative humidity ranged from 51% to 72% (outdoor temperatures 75°F and 77°F; relative humidity 72% and 77%). Interior relative humidity conditions in excess of 60-65% can promote mold growth.

Conclusion: AET recommends continuous surveillance within classrooms, as part of preventative maintenance, to identify water infiltration areas or surface staining. AET's visual inspection was limited to exposed, accessible (within view) building materials; building materials in concealed locations can harbor hidden mold which can cause future problems. Replace moisture damaged ceiling tiles. Reduce and maintain relative humidity levels within the building below 60% to prevent favorable conditions for mold growth.

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STANDARDS

Moisture Testing

Moisture testing was performed utilizing a Delmhorst moisture meter to assess the residual moisture level of various building materials at the time of inspection. The Delmhorst meter works via electrical conductance; the prongs (2) of the meter are inserted into the material to be investigated (typically between 1/8" to 1/4" depth). This Delmhorst moisture meter operates on 3 unique scales to differentiate moisture content in different building materials. Building materials are considered dry when moisture content on the following scales are not exceeded:

- Scale 1 - Wood 6% to 15% moisture content
- Scale 2 - Concrete/Masonry 0% to 85% moisture content
- Scale 3 - Gypsum..... 0.1% to 0.5% moisture content

The Delmhorst meter also incorporates a set-point buzzer to indicate wet conditions (excessive moisture content) in building materials. The set-point by scale is as follows:

- Scale 1 - Wood >17% moisture content
- Scale 2 - Concrete/Masonry > 95% moisture content
- Scale 3 - Gypsum..... > 1% moisture content

Moisture content levels between the established dry zone and the set point indicate borderline conditions.

Variations or interferences to moisture readings can occur resulting from changes in electrical resistance due to temperature, the presence of calcium salts in plasters and some adhesives. The determination of excess residual moisture content is obtained by comparison of the measured percent moisture of the material to that of known, non-impacted reference materials at the site as well as comparison to the instruments aforementioned set points. Materials with moisture levels above background are noted.

Thermal Imaging Survey: Thermographic inspection for ongoing water infiltration was performed utilizing an FLIR Systems ThermaCAM, B2 model infrared (IR) camera. The IR camera measures and images the emitted infrared radiation from an object's surface temperature. The unit provides a normal operating temperature range of 5F to 122F and is equipped with a 9.2 mm lens to allow for an increased field of view. This non-intrusive method of investigation results in an illustrative presentation of findings to confirm moisture migration paths and deficiencies in building insulation. Operation of the IR camera involved viewing exposed wall, floor and ceiling surfaces to identify temperature pattern variations indicative of active water infiltration. IR Camera inspection showed no signs of moisture.

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RESTRICTIONS/LIMITATIONS OF SERVICES

Visual Inspection: AET's findings and conclusions are based on the conditions present (both outdoors and inside accessible interior areas of the designated building areas) during AET's time on-site (snapshot in time). Visual inspection was performed on readily observable, exposed/accessible (within view) interior building materials present at the time of inspection and within the areas/locations cited. Intrusive inspection within wall cavities, HVAC systems, limited ceiling plenums and/or similar concealed locations was not performed. Further, review/inspection of building contents, furnishings and personal belongings was not included in AET's services. Accessible is defined as readily reachable with a 6' ladder; OSHA's Construction Standard requires fall protection at heights above 6 feet above the lower level (typical maximum reachable height 9 feet).

AET's mold assessment services are based on standard industry practice for inspection and sampling protocols exhibited by the members of the mold consulting profession. There are no federal (OSHA or EPA) standards (only guidelines) for mold investigation, evaluation and remediation. AET's mold professional decision-making is based on inspection of building materials for visible mold growth, signs of water damage, a history indicating previous water leaks and/or elevated humidity levels or condensation. Indoor mold needs moisture to grow. Mold growth will occur if favorable conditions exist; amplification will continue until the underlying source(s) are eliminated and remediation performed. Where moisture intrusion has occurred, drying is an essential component of moisture remediation. Continuous surveillance of walls, floors and ceilings for water damage/staining and signs of mold amplification is recommended.

AET was not contracted to identify or rectify sources of water infiltration (such as subsurface, window, roof, or plumbing leaks). AET's policy is to identify mold-impacted building materials and affected building locations which require mold remediation; not identify specific quantities. Mold remediation (removal, cleaning, drying) requires progressive visual inspections and moisture testing during remediation. Standard practice is to remove affected building materials including a 2 to 3-foot buffer area surrounding the impacted building materials. Without complete removal of mold colonization, as well as repair of moisture sources, mold will grow back. AET recommends mold remediation work be performed by a licensed mold remediation contractor; contact AET's project manager for specific guidelines and assistance (where required).

The purpose of AET's mold assessment was not to determine if water infiltration has resulted in structural damage to the integrity of the roof, walls, ceilings or foundation at the site. This is an engineering function which must be completed by appropriate engineering professionals.

Health Concerns: The CDC, EPA and OSHA agree that living or working in a building with mold damage can result in increased risk of respiratory disease. However, each person's response to mold exposure is unique; individual susceptibility can range from no reaction to allergic or irritation responses to flu-like symptoms. In very rare cases, fungal infections may occur. The wide variability in how people are affected by airborne mold is one of the reasons why there are no airborne exposure standards for mold. According to the ACGIH, a minimum of 36 samples are necessary for comparative purposes in worst case scenarios when determination of health effects is required. AET recommends the use of a qualified occupational physician where health effects have been reported by building occupants.

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Warranty: AET's services were performed in a manner consistent with the level of skill and standard industry practices exhibited by members of the mold consulting profession. No other representations or warranties, expressed or implied, are included in connection with this report due to the restrictions/limitations detailed herein. AET's services were performed in accordance with the project intent identified in AET's proposal and subject to AET's terms and conditions dated April 2018. AET's findings/conclusions are not intended to be all inclusive; conditions which were not permitted, were undocumented, not observed or otherwise concealed on the subject property could exist (which may result in a modification of our conclusions or recommendations presented). The conclusion portion of this report is not intended to identify all areas of the structure which may have exposed or concealed mold contamination. Further, mold contamination is only one of the many IAQ sources which can exist at the site (investigation of which is not part of AET's scope of services). Liability on the part of AET is limited to the monetary value paid for this report.

If you have any questions or require additional information, please do not hesitate to contact our office.

Thank you for the opportunity to be of service.

Sincerely,



Alan J. Sutherland, CIH Ret.
President

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