

September 5, 2014

Mr. Mike Williams
Knight, Bagge and Anderson, Inc
6 Thirteenth Street
Charlestown Navy Yard
Charlestown, MA 02129

Reference: Indoor Air Quality Study and Asbestos Testing
Greater Lowell Technical High School, Tyngsborough, MA

Dear Mr. Williams:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

UEC was contracted to perform an Indoor Air Quality Study and Asbestos Testing at the Greater Lowell Technical High School, Tyngsborough, MA. Testing was performed during the on-going renovation and demolition project at the school. Testing was performed on Wednesday, August 27, 2014. Some of the HVAC units were not fully functional during testing, which may affect parameters of some of the readings.

Air testing was conducted for the following parameters.

- Total Volatile Organic Compounds (TVOCs).
- Carbon Dioxide (CO_2), Carbon monoxide (CO), Temperature ($^{\circ}F$) and Relative Humidity (RH %).
- PM (Particulate matter) - PM_{10} (particles less than 10 micrometers in diameter) and $PM_{2.5}$ (particles less than 2.5 micrometers in diameter).

Overall, all Indoor Air Quality parameters tested were within the acceptable ranges and very common for this type of building.

Massachusetts Department of Public Health (MDPH) recommends that indoor air temperatures be maintained in a range of 70 - 78 $^{\circ}F$ for temperature and 40 to 60 % for indoor air relative humidity in order to provide for the comfort of building occupants.

The interior temperature and relative humidity were in most cases right within the MDPH recommended range.

TVOC tests on this day were mostly higher than recommended guidelines and this was not unexpected, due to the fact that the HVAC units were still being installed. These units provide the multiple air changes required for a building of this size. Test levels were originally within the multifactorial exposure range, and may cause irritation and discomfort, but should significantly improve and levels dissipated as each HVAC unit comes on line.

No CO levels were detected during testing.

CO_2 levels in all areas were well below the OSHA/NIOSH limit of 5000 ppm and mostly lower than the MDPH guideline of 800 ppm for publicly occupied buildings. Although the air quality relative to these tests are strictly

comfort based, CO_2 for prolonged periods could cause building occupants to become lethargic until the remainder of the HVAC units can be placed into full operation.

PM_{10} and $PM_{2.5}$ tests were all well below the OSHA PNOR (Particulates Not Otherwise Regulated).

The Asbestos Containing Materials (ACM) found in the transite wall panels (peg board) were scheduled for removal during the summer of 2014 and approximately 80% of the material has been removed. All work relative to the transite wall panels was performed by a Massachusetts Licensed Asbestos Abatement Contractor under the complete supervision of Massachusetts licensed project monitored in accordance with the Environmental Protection Agency (EPA) and Commonwealth of Massachusetts Department of Labor Standard (DLS) regulations.

EPA requires once an abatement project has been completed, that a visual inspection is performed to insure that there are no visible ACM and then aggressive clearance air sampling is performed to determine if levels are below EPA limit. EPA requires clearance air sampling to be lower than 0.010 fibers/cubic centimeters (f/cc) using Phase Contrast Microscopy (PCM).

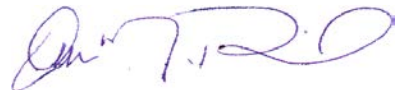
At all areas where ACM Transite wall panels were removed, air samples results were well below the EPA limit.

As requested, UEC conducted an indoor air quality study and testing at various locations within the school. These tests were conducted in accordance with EPA protocol. All levels encountered during the study were acceptable and common for this type of building. Once the HVAC system is working, air quality in the school will be significantly improved. Based on the study and the test results, our professional opinion is that the building can be occupied as usual and without delay.

Please do not hesitate to call should you have any questions.

Very truly yours,

Universal Environmental Consultants



Ammar M. Dieb
President