



**Department of Facilities Management
Division of Maintenance**

POOLESVILLE HS STAFF MEETING IAQ UPDATE

April 18th, 2007



**Department of Facilities Management
Division of Maintenance**

AGENDA

HVAC System Update - Building Dynamics

- Description of existing HVAC conditions**
- Work accomplished to date**
- Planned HVAC work**
- How new HVAC system will improve building environment**

Interim Measures

UV Light Proposal

Discussion



DESCRIPTION - EXISTING HVAC CONDITIONS

- **The HVAC systems at PHS are about 30 years old & in need of replacement**
- **Specific causes of high humidity and mold growth include:**
 - **Exhaust exceeds design ventilation rates causing negative pressurization**
 - **The control system is antiquated and does not promote good humidity control**
 - **Reduced flow in chilled water piping system**



DESCRIPTION - EXISTING HVAC CONDITIONS

- **Specific causes of high humidity and mold growth include:**
 - **The chilled water system cannot be properly balanced at individual coils**
 - **Some air units are not controlled by the Energy Management System and did not shut down when chillers were shut down during nights and over weekends**
- **Other moisture issues include:**
 - **Branch pipes are developing leaks.**
 - **Old pipe insulation vapor barrier is not completely sealed, allowing condensation on pipes**



WORK ACCOMPLISHED TO DATE

- **Plans are to upgrade HVAC and control system in the building through a phased approach.**
- **Initial work began during the Summer of 2006.**
- **Work completed to date includes:**
 - Internally insulated ducts in the science labs were replaced with externally insulated ducts.
 - Air units in the Media Center, Guidance, and Main Office were replaced with dehumidification units and the ducts were cleaned.
 - Dehumidification unit was installed in the editing area.



WORK ACCOMPLISHED TO DATE

- **Work completed to date includes:**
 - Design to replace most unit ventilators and some branch piping is complete.
 - Design for initial control systems upgrade is complete.
 - The chiller barrel was repaired and will be operational for the next cooling season.



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PLANNED HVAC WORK

HVAC systems will be upgraded based on the following schedule:

Summer 2007

- Replace most unit ventilators**
- Initial upgrade of control system**
- Replace some branch piping and pipe insulation**

Summer 2008

- Replace most air units**
- Replace VAV boxes**
- Further upgrade of control system**
- Replace additional branch piping and pipe insulation**



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PLANNED HVAC WORK

HVAC systems will be upgraded based on the following schedule:

Summer 2009

- Replace remaining air units**
- Replace fan coil units**
- Finish replacement of branch piping and pipe insulation**
- Complete control system**
- Rebalance chilled-hot water system**
- Other renovations will also occur to facilitate upgrade of educational program requirements, including computer classrooms, Tech Ed, and Classroom 11.**



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HOW NEW HVAC SYSTEM WILL IMPROVE BUILDING ENVIORNMENT

- **Once all phases are complete, Poolesville High School will have a modernized HVAC system that will improve temperature and humidity control in the building.**
- **Improvements will include:**
 - **Positive pressurization of building, significantly reducing outdoor infiltration**
 - **State-of-the-art direct digital control system**



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HOW NEW HVAC SYSTEM WILL IMPROVE BUILDING ENVIORNMENT

- **Improvements will include:**
 - **Air and water systems balanced**
 - **Intact pipe systems**
 - **Intact pipe insulation with sealed vapor barrier**
 - **Humidity control to prevent mold growth**



INTERIM MEASURES

Until all phases of work are completed, interim measures will need to be implemented:

- Use portable dehumidification where relative humidity is excessive.**
- Monitor for mold growth on surfaces and clean and sanitize if it occurs.**
- Reduce exhaust airflow, especially during unoccupied summer periods, by turning off exhaust fans.**
- Verify that air systems shut down during unoccupied periods.**



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UV LIGHT PROPOSAL

Based on the information known to date, it is BDL's opinion that ultraviolet lights are not required in HVAC systems at Poolesville High School for the following reasons:

- Mold growth at Poolesville High School is predominantly the result of high humidity in the building during the cooling season and sweating on single-pane windows. Ultraviolet lights will not improve humidity in the building.**
- Ultraviolet light can degrade closed-cell insulation, some of which is installed in Poolesville High School HVAC systems.**



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UV LIGHT PROPOSAL

Based on the information known to date, it is BDL's opinion that ultraviolet lights are not required in HVAC systems at Poolesville High School for the following reasons:

- It has not been shown that use of ultraviolet light in HVAC systems improves IAQ or is more effective than routine cleaning and maintenance.**
- Most HVAC equipment will be replaced at Poolesville High School over the next few years. New equipment will have clean surfaces and improved humidity control capability.**
- Use of ultraviolet lights will increase energy use of the building because of the additional power consumption of the light.**



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DISCUSSION

Points of Contact

- Sean Yarup, Environmental Safety Coordinator (phone: 301-926-4317)
- Mike Clouse, Division of Construction (phone: 240-314-1027)
- Ed Light & Jim Bailey - Building Dynamics (phone: 703-242-3424)



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CONTACT US

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Our Mission

To achieve, maintain, and where necessary, to restore an indoor air quality environment in which everyone in a Montgomery County Public Schools (MCPS) facility can perform the necessary tasks of learning, teaching, administering, and sustaining facilities in a safe and healthy manner.

About the IEQ Team

MCPS created the IEQ Team in 1999 to improve indoor environmental conditions in its facilities. The team consists of an environmental safety coordinator; environmental safety

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