HARFORD COUNTY PUBLIC SCHOOLS

COMPREHENSIVE MAINTENANCE PLAN 2017

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BOARD OF EDUCATION OF HARFORD COUNTY

INFORMATIONAL REPORT

PRESENTATION OF AND DECISION ON THE 2017 EDUCATIONAL FACILITIES MASTER PLAN AND COMPREHENSIVE MAINTENANCE PLAN

JUNE 26, 2017

Background Information:

The Rules, Regulations and Procedures for the Administration of the Public School Construction Program (PSCP) require that each Local Education Agency (LEA), submit annually, an amended copy of the Educational Facilities Master Plan (EFMP) by July 1st. Additionally, the PSCP require each LEA to prepare and submit an updated Comprehensive Maintenance Plan by October 1, 2017.

Discussion:

The EFMP is a planning tool that addresses the LEA's projected facility needs. Coordinating with HCPS stakeholders and the Harford County Government, the plan is reviewed and updated annually. The 2017 EFMP includes all of the essential elements required by the State and has been reviewed by the appropriate school system personnel. The Capital Improvement Projects proposed in this plan will be the basis for the FY19 Capital Improvement Program. The EFMP Table of Contents and the Timeline of Capital Improvement Projects are attached.

The Comprehensive Maintenance Plan is a tool to develop and improve the facilities maintenance program. Utilizing the guidelines prescribed by the Interagency Committee, the Department of Facilities reviews and updates the plan annually. The 2017 Comprehensive Maintenance Plan is attached.

The information, analysis, and conclusions within these two documents serve as a guide in the development of the priorities for the capital improvement program (CIP).

Superintendent's Recommendation:

The Superintendent of Schools recommends that the Board of Education accept the presentation of the 2017 Educational Facilities Master Plan and the 2017 Comprehensive Maintenance Plan.

HARFORD COUNTY PUBLIC SCHOOLS

COMPREHENSIVE MAINTENANCE PLAN

AUGUST 2017

PURPOSE OF THE PLAN

This comprehensive maintenance plan is established to develop, maintain, and/or improve the maintenance program of the public school system to support the delivery of educational programs and services and to provide a safe and healthy environment as effectively and efficiently as possible.

OBJECTIVES OF MAINTENANCE

The primary objective of the maintenance program is the maintenance of buildings, grounds, and fixed equipment through repairs or replacement during the 40-year life expectancy of the building. Specifically this can be further broken down as follows:

1.) To provide buildings which function at top efficiency.

2.) To maintain the plant buildings and grounds and fixed equipment in such a manner as to eliminate or reduce to acceptable levels - fires, accidents, and safety hazards.

3.) To provide continuous use of facilities without disruptions to the educational program.

4.) To protect public property by planned, scheduled, and repair/ preventive maintenance.

5.) To conserve energy by insuring that the maximum results are obtained with minimum expenditure of energy.

6.) To provide maintenance program which will produce the maximum amount of maintenance for the minimum dollars expended.

MAINTENANCE CATEGORIES

Scheduled Maintenance

1.) Preventive Maintenance - It is the goal of a preventive maintenance program that equipment will be inspected and serviced as required to prevent costlier failures. Attached with this Comprehensive Maintenance Plan is a detailed summary of the Preventive Maintenance Program. Along with this narrative is a TASK LISTING for one of the identified areas for Preventive Maintenance (Make-up Air Unit). Additionally, a list of thirty-three (33) identified areas of mechanical equipment is attached that is the major thrust of the program as well as the filter, drive belt and filter frame specifications.

2.) Scheduled Repairs - Scheduled maintenance has the goal of keeping the facilities in proper operating condition through regular service of equipment and facilities. It is, therefore, imperative that a schedule be established to insure proper budgeting.

The schedule itself is not an exact time table because the exact month or even year of a failure or breakdown cannot be determined in advance. Rather, it is a prediction indicating that over a period of time a piece of equipment must be replaced or serviced if it is expected to function properly. The frequencies used are those recommended by the Interagency Committee or are based on local experiences and conditions.

Repairs or replacements are not made strictly by the schedules, but are made based on the necessity of corrective action. The schedule or replacement must be flexible but will be accurate from a long-range budget-planning standpoint.

3.) Modernization and Alterations – Replacement of the chiller was completed at Churchville Elementary School. Parking lot patching, painting, floor tile replacement and partial asbestos abatement were completed at numerous sites.

Replacement projects are as follows: folding stage partition at William S. James Elementary School; metal chain fence at Bakerfield Elementary School; roof at Joppatowne High School; flooring at Hall's Cross Roads Elementary; concrete sidewalks at Deerfield Elementary and Patterson Mill Middle High School and refinish Aberdeen High's gym floor.

Preventive maintenance and repair on the boilers, sprinkler systems, stage rigging, and fire alarm systems throughout Harford County Public Schools. Preventive maintenance was performed at all three (3) natatorium locations.

Unscheduled Maintenance

1.) Unscheduled Repairs - Requests for repairs are received through our computerized work order system. They are then reviewed, prioritized and assigned to appropriate personnel for completion. Acknowledgment copies are signed by school personnel when work is complete. A total of 20,355 work orders were submitted between 7/1/2016 and 5/4/2017. During that time period 17,562 work orders were completed. This computerized system allows for an accurate inventory control and an accurate tracking of labor, materials/parts and all associated departmental costs. At this time, all buildings are set up to submit work requests electronically.

2.) Vandalism and Security Related Repairs - Facilities is prepared to respond to any acts of vandalism or problems relating to proper building security twenty-four (24) hours a day seven (7) days a week.

While specifics relating to this area cannot be identified in advance, historical information and community trends are used to forecast needs.

Deferred Maintenance

1.) As a part of the prioritizing process it becomes necessary, due to budget constraints, to defer some projects. This activity occurs in a minimal amount. Some other projects are deferred because of personnel shortages and are addressed at a later time.

Capital Improvement Program

The Comprehensive Maintenance Plan (CMP) incorporates and mirrors many components of the CIP. Specific categories of the CMP are boiler replacement, floor covering replacement, fire alarm replacement, resurfacing, roof, HVAC, and vehicle replacement. Priorities are established with both programs in tandem.

BLEACHER INSPECTIONS AND REPAIRS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY20	Planned FY21	Planned FY22
Aberdeen High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Bel Air High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Center for Educational Opportunity	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
C. Milton Wright High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Edgewood High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Fallston High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Harford Technical High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Havre de Grace High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Joppatowne High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
North Harford High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Patterson Mill Middle/High	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out	In/Out
Aberdeen Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Bel Air Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Edgewood Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Fallston Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Havre de Grace Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Magnolia Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
North Harford Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Southampton Middle	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Abingdon Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Church Creek Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Emmorton Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Fountain Green Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
North Bend Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Red Pump Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Ring Factory Elementary	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor

BOILER INSPECTIONS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High			X		X		X
Bel Air High	X	X		X		X	
Center for Educational Opportunity			X		X		X
C. Milton Wright High			X		X		X
Edgewood High			X		X		X
Fallston High	X	X		X		X	
Harford Technical High	X	X		X		X	
Havre de Grace High	X	X		X		X	
Joppatowne High	X	X		X		X	
Patterson Mill Middle/High	X	X		X		X	
Aberdeen Middle			X		X		X
Bel Air Middle	X	X		X		X	
Edgewood Middle	X	X		X		X	
Fallston Middle	X	X		X		X	
Havre de Grace Middle			X		X		X
Magnolia Middle	X	X		X		X	
North Harford Middle			X		X		X
Southampton Middle	X	X		X		X	
Abingdon Elementary			X		X		X
Bakerfield Elementary	X	X		X		X	
Bel Air Elementary			X		X		X
Church Creek Elementary			X		X		X
Churchville Elementary			X		X		X
Deerfield Elementary			X		X		X

BOILER INSPECTIONS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Emmorton Elementary (3)			X		X		X
Forest Hill Elementary			X		X		X
Forest Lakes Elementary			X		X		X
Fountain Green Elementary	X	X		X		X	
Hall's Cross Roads Elementary			X		X		X
Havre de Grace Elementary	X	X		X		X	
Hickory Elementary	X	X		X		X	
Homestead/Wakefield – Primary			X		X		X
Homestead/Wakefield – Intermediate			X		X		X
Jarrettsville Elementary	X	X		X		X	
Joppatowne Elementary	X	X		X		X	
Magnolia Elementary	X	X		X		X	
Meadowvale Elementary			X		X		X
North Bend Elementary	X	X		X		X	
North Harford Elementary	X	X		X		X	
Red Pump Elementary			X		X		X
Ring Factory Elementary	X	X		X		X	
Roye-Williams Elementary	X	X		X		X	
Wm. Paca/Old Post Road – Primary			X		X		X
Wm. Paca/Old Post Road – Inter.			X		X		X
William S. James Elementary			X		X		X
Youth's Benefit – Intermediate	X	X		X		X	
John Archer	X	X		X		X	

BOILER REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High	2004							
Bel Air High (3)	2009							
Center for Educational Opp. (2)	1965	X			X			
C. Milton Wright High (2)	1978							
Edgewood High (3)	2010							
Fallston High (5)	2015							
Harford Technical High (3)	00,01						X	
Havre de Grace High (3) Gym/Boiler	2011					X		
Havre de Grace High (2)-Main	2012					X		
Joppatowne High (2)	1971					X		
Patterson Mill Middle/High	2006							
Aberdeen Middle (2)	2003							
Bel Air Middle (5)	94,00							
Edgewood Middle	2005							
Fallston Middle (2)	1992							
Magnolia Middle (4)	2015							
North Harford Middle (4)	2008							
Southampton Middle (2)	2010							
Abingdon Elementary (3)	1992							
Bakerfield Elementary (2)	1999							
Bel Air Elementary (2)	2013				X			
Church Creek Elementary (5)	93,16							
Churchville Elementary (4)	1998							
Deerfield Elementary (2)	2010							
Emmorton Elementary (3)	1993							

BOILER REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Lakes Elementary (2)	1997							
Fountain Green Elementary	1993							
Hall's Cross Roads Elem. (2)	1993							
Havre de Grace Elementary (2)	1989							
Hickory Elementary (2)	1996							
Homestead/Wakefield-Prim(2)	1988							
Homestead Wakefield–Inter (2)	1984							
Jarrettsville Elementary (3)	2012							
Joppatowne Elementary (2)	2009							
Magnolia Elementary (2)	1974							
Meadowvale Elementary (2)	1991							
North Bend Elementary (2)	1990							
North Harford Elementary (3)	2013							
Patterson Mill Middle/High	2006							
Red Pump Elementary	2011							
Ring Factory Elementary (2)	1990							
Roye-Williams Elementary (2)	1982				X			
Wm. Paca/Old Post Road– Pri (2)	1974							
Wm. Paca/Old Post Road–Inter. (2)	2012							
William S. James Elementary (4)	2014							
Youth's Benefit – Inter. (2)	1973	X	X					
John Archer (2)	2009							

FIRE ALARM REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High	2004					Panel		
Bel Air High	2009							
Center for Educ. Oppor.	1965							X
C. Milton Wright High	1996			X				
Edgewood High	2010							
Fallston High	2009			Panel				
Harford Tech. High	2000					Panel		
Havre de Grace High	2005							
Joppatowne High	1996					X		
North Harford High	2005					Panel		
Aberdeen Middle	2000							
Bel Air Middle	1994					X		
Edgewood Middle	2005					Panel		
Fallston Middle	1993							
Havre de Grace Middle	2011							
Magnolia Middle	2014							
North Harford Middle	2003		Panel					
Southampton Middle	2003							
Abingdon Elementary	2002				X			
Bakerfield Elementary	2000					Panel		
Bel Air Elementary	2002			X				
Church Creek Elem.	1994						X	
Churchville Elem.	2000							
Darlington Elementary	1999							
Deerfield Elementary	2010							
Dublin Elementary	2012							
Edgewood Elementary	2001							
Emmorton Elementary	2010							
Fountain Green Elem.	1993							

FIRE ALARM REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Lakes Elementary	1997					Panel		
George D. Lisby @ Hillsdale	1997			X				
Hall's Cross Roads Elem.	1997					Panel		
Havre de Grace Elem.	1995							
Hickory Elementary	1997							
Homestead/Wakefield – Inter.	2009							
Homestead/Wakefield - Primary	1958					X		
Jarrettsville Elementary	2010							
Joppatowne Elementary	2009							
Magnolia Elementary	2009							
Meadowvale Elem.	2001							
Norrisville Elementary	2011							
North Bend Elementary	1991				X			
North Harford Elem.	2002							
Prospect Mill Elem.	2012							
Red Pump Elem.	2011					Panel		
Ring Factory Elem.	2007							
Riverside Elementary	2000							
Roye-Williams Elem.	2013							
Wm. Paca/Old Post Rd. – Inter.	2013							
Wm. Paca/Old Post Rd.– Primary	2014							
William S. James Elem.	2004							
Youth's Benefit – Intermediate	2001							
Youth's Benefit - Primary	2005							
John Archer	2006							
Harford Glen – Bldg. A	1997							
Harford Glen – Bldg. B	1997							
Harford Glen – Cafeteria	2014							

FLOOR COVERING REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned F Y 22
Aberdeen High	2003							
Bel Air High	2009							
Center for Educational Oppor. (Media)	2007							
C. Milton Wright High	2010							
Edgewood High	2010							
Fallston High	2001							
Harford Technical High	2000							
Havre de Grace High	2000							
Joppatowne High	2003							
North Harford High	2006							
Aberdeen Middle	2003							
Bel Air Middle (Media)	2012							
Edgewood Middle	2003							
Fallston Middle	1993						X	
Havre de Grace Middle - Media	2013							
Magnolia Middle	2000							
North Harford Middle	1997							
Southampton Middle	2000							
Abingdon Elementary	1992					X		
Bakerfield Elementary	2000							
Bel Air Elementary	2008							
Church Creek Elementary	1994							
Churchville Elementary - Gym	1997				X			
Darlington Elementary	2016							
Deerfield Elementary	2010							
Dublin Elementary	2011							
Edgewood Elementary	2002							
Emmorton Elementary	1994							

FLOOR COVERING REPLACEMENTS

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Hill Elementary	2000							
Fountain Green Elementary	1993							X
Forest Lakes Elementary	1997							
George D. Lisby Elem. (VCT)	1968							
Hall's Cross Roads Elementary	2017		X					
Havre de Grace Elementary	2012							
Hickory Elementary	1997							
Homestead/Wakefield – Primary	1996							
Homestead/Wakefield – Inter.	2009							
Jarrettsville Elementary	2007							
Joppatowne Elementary	2009							
Magnolia Elementary	1997							
Meadowvale Elementary	2002							
Norrisville Elementary	1997							
North Bend Elementary - Gym	2014					X		
North Harford Elem. (VCT)	1997							
Prospect Mill Elementary	2006							
Red Pump Elementary	2011							
Ring Factory Elementary - Gym	2010				X			
Riverside Elementary (Media)	2010							
Roye-Williams Elementary	1995							
Wm. Paca/Old Post Road – Prim.	1997							
Wm. Paca/Old Post Road – Inter.	1997							
William S. James Elementary	1997							
Youth's Benefit – Primary	1995							
Youth's Benefit – Intermediate	2000							
John Archer (VCT)	1998							

HVAC SYSTEM REPLACEMENTS

(Roof Top Units and Chillers)

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High (Chiller)	2005							
Bel Air High (Chiller)	2009							
C. Milton Wright High (Chiller)	2001							
Edgewood High (Chiller)	2010							
Fallston High (Chiller)	1997							
Harford Technical High (RT)	1998							
Havre de Grace High (Chiller RT) Auditorium (2)	2012							
Joppatowne High (Chiller)	2006							
North Harford High	2007							
Aberdeen Middle (Chiller)	2014							
Bel Air Middle	2007					X		
Edgewood Middle (Chiller) (2)	2005			X (1)			X (1)	
Fallston Middle (Chiller)	1993				X			
Havre de Grace Middle (RT)	1997							
Magnolia Middle (Chiller)	2014							
North Harford Middle (Chiller)	2015							
Southampton Middle (Chiller)	2010							
Abingdon Elementary (Chiller)	2001/ 1992					X		
Bakerfield Elementary (Chiller)	1998							
Bel Air Elementary (Chiller)	2011							
Church Creek Elementary (Chiller)	2013							
Churchville Elementary (Chiller)	1998							
Darlington Elementary	2000	X						
Dublin Elementary	2015							
Edgewood Elementary (RT)	2001							
Emmorton Elementary (Chiller)	2013							
Forest Hill Elementary (Chiller)	2000							

HVAC SYSTEM REPLACEMENTS

(Roof Top Units and Chillers)

School	Date Installed	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Lakes Elementary (Chiller)	2014							
Fountain Green Elem. (Chiller)	2009							
George D. Lisby Elem. @ Hillsdale (RT)	1997							
Hall's Cross Roads Elem. (Chiller)	1996							
Havre de Grace Elem. (Chiller)	2013							
Hickory Elementary (Chiller)	1997						X	
Homestead/Wakefield – I (Chiller)	2012							
Jarrettsville Elementary (Chiller)	2012							
Magnolia Elementary (Chiller)	2003							
Meadowvale Elementary(Chiller)	2002							
Norrisville Elementary (Chiller)	1995							
North Bend Elementary (Chiller)	1991				X			
North Harford Elem. (Chiller)	2000							
Patterson Mill Middle/High (Chiller)	2006							
Prospect Mill Elementary (RT)	2016							
Red Pump Elementary	2011							
Ring Factory Elementary (Chiller)	2015							
Riverside Elementary (RT)	1995							
Roye-Williams Elementary (Chiller)	1995							
Wm. Paca/Old Post Rd – I (Chiller)	2012							
Wm. Paca/Old Post Rd – Primary	1996							
William S. James Elementary (Chiller)	2014							
Youth's Benefit Elementary Intermediate (Chiller)	2009							
Youth's Benefit Elementary Primary (Chiller)	2012							
John Archer	2009							
K Buildings (Total of 14)	68,70							

PAINTING

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High						X	
Bel Air High							
Center for Educational Opportunity							
C. Milton Wright High			X				
Edgewood High				X			
Fallston High							
Harford Technical High							
Havre de Grace High							
Joppatowne High							
North Harford High	X	X					
Aberdeen Middle			X				
Bel Air Middle							
Edgewood Middle			X				
Fallston Middle							
Havre de Grace Middle							
Magnolia Middle							X
North Harford Middle				X			
Patterson Mill Middle/High					X		
Southampton Middle						X	
Abingdon Elementary							X
Bakerfield Elementary					X		
Bel Air Elementary							
Church Creek Elementary							
Churchville Elementary				X			
Darlington Elementary							
Deerfield Elementary			X				
Dublin Elementary							
Edgewood Elementary							X
Emmorton Elementary							

PAINTING

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Hill Elementary				X			
Forest Lakes Elementary	X	X					
Fountain Green Elementary							
George D. Lisby @ Hillsdale						X	
Hall's Cross Roads Elementary	X	X					
Havre de Grace Elementary							
Hickory Elementary							
Homestead / Wakefield - Primary							X
Homestead / Wakefield - Intermediate							X
Jarrettsville Elementary				X			
Joppatowne Elementary							
Magnolia Elementary							
Meadowvale Elementary							X
Norrisville Elementary	X	X					
North Bend Elementary						X	
North Harford Elementary	X	X					
Prospect Mill Elementary					X		
Red Pump Elementary						X	
Ring Factory Elementary					X		
Riverside Elementary							
Roye-Williams Elementary					X		
Wm. Paca/Old Post Road - Primary			X				
Wm. Paca/Old Post Road - Intermediate			X				
Wm. S. James Elementary							
Youth's Benefit - P							
Youth's Benefit - I							
John Archer							

PAVING – OVERLAY & MAINTENANCE

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High – South							
Bel Air High							
Center for Educational Opportunity							
C. Milton Wright High							
Edgewood High							
Fallston High							
Harford Technical High							
Havre de Grace High							
Joppatowne High				X			
North Harford High							
Aberdeen Middle							
Bel Air Middle							
Edgewood Middle							
Fallston Middle							
Havre de Grace Middle							
Magnolia Middle							
North Harford Middle							
Patterson Mill Middle/High							
Southampton Middle							
Abingdon Elementary							
Bakerfield Elementary							
Bel Air Elementary							
Church Creek Elementary							
Churchville Elementary							
Darlington Elementary							
Deerfield Elementary							
Dublin Elementary							
Edgewood Elementary							
Emmorton Elementary							

PAVING – OVERLAY & MAINTENANCE

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Forest Hill Elementary							
Forest Lakes Elementary							
Fountain Green Elementary							
George D. Lisby Elem. At Hillsdale							
Hall's Cross Roads Elementary					X	X	
Havre de Grace Elementary							
Hickory Elementary							
Homestead/Wakefield – P							
Homestead/Wakefield – I							
Jarrettsville Elementary							
Joppatowne Elementary							
Magnolia Elementary							
Meadowvale Elementary							X
Norrisville Elementary							
North Bend Elementary						X	
North Harford Elementary					X		
Prospect Mill Elementary							
Red Pump Elementary							
Ring Factory Elementary							
Riverside Elementary			X				
Roye-Williams Elementary							
Wm. Paca/Old Post Road – Primary							
Wm. Paca/Old Post Road-Intermediate							
William S. James Elementary							
Youth's Benefit – Primary							
Youth's Benefit – Intermediate							
John Archer							
Hickory Annex							

ROOF REPLACEMENTS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High							
Bel Air High							
Center for Educational Opportunity						X	
C. Milton Wright High							
Edgewood High							
Fallston High							
Harford Technical High							
Havre de Grace High							
Joppatowne High	X	X					
North Harford High							
Aberdeen Middle				X			
Bel Air Middle							
Edgewood Middle							
Fallston Middle							
Havre de Grace Middle							
Magnolia Middle							
North Harford Middle							
Patterson Mill Middle/High							
Southampton Middle							
Abingdon Elementary							
Bakerfield Elementary							
Bel Air Elementary							
Church Creek Elementary							
Churchville Elementary							
Darlington Elementary							
Deerfield Elementary							
Dublin Elementary							
Edgewood Elementary							
Emmorton Elementary							
Forest Hill Elementary							
Forest Lakes Elementary							

ROOF REPLACEMENTS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Fountain Green Elementary							
George D. Lisby @ Hillsdale							
Hall's Cross Roads Elementary							
Havre de Grace Elementary							X
Hickory Elementary					X		
Homestead / Wakefield - Primary							
Homestead / Wakefield – Inter.							
Jarrettsville Elementary							
Joppatowne Elementary							
Magnolia Elementary							
Meadowvale Elementary							
Norrisville Elementary							
North Bend Elementary							
North Harford Elementary			X				
Prospect Mill Elementary							
Red Pump Elementary							
Ring Factory Elementary							
Riverside Elementary							
Roye Williams Elementary							
Wm. Paca/Old Post Road – Primary							
Wm. Paca / Old Post Road – Inter.							
William S. James Elementary							
Youth's Benefit - Primary							
Youth's Benefit - Intermediate							
John Archer							

CLEANING OF ON-SITE WASTEWATER SYSTEMS

School	Planned FY 17	Actual FY 17	Planned FY 18	Planned FY 19	Planned FY 20	Planned FY 21	Planned FY 22
Aberdeen High – Grease Trap	X	X	X	X	X	X	X
Bel Air High – (2) Grease Traps	X	X	X	X	X	X	X
Edgewood High – (2) Grease Traps	X	X	X	X	X	X	X
Fallston High – WWTP & Grease Trap	X	X	X	X	X	X	X
Harford Technical High - WWTP & Grease Traps	X	X	X	X	X	X	X
North Harford High - WWTP & Grease Trap	X	X	X	X	X	X	X
Fallston Middle – Grease Trap	X	X	X	X	X	X	X
North Harford Middle – Grease Trap	X	X	X	X	X	X	X
Patterson Mill Middle/High - Grease Trap	X	X	X	X	X	X	X
Churchville Elementary – Septic Tank	X	X	X	X	X	X	X
Darlington Elementary - Septic Tank	X	X	X	X	X	X	X
Deerfield Elementary – Grease Trap	X	X	X	X	X	X	X
Dublin Elementary – Septic Tank	X	X	X	X	X	X	X
Edgewood Elementary – Grease Trap	X	X	X	X	X	X	X
Forest Hill Elementary–Septic Tank & Grease Trap	X	X	X	X	X	X	X
Jarrettsville Elementary – Septic Tank	X	X	X	X	X	X	X
Norrisville Elementary–Septic Tank &Grease Trap	X	X	X	X	X	X	X
North Bend Elementary – Septic Tank	X	X	X	X	X	X	X
North Harford Elementary – Septic Tank	X	X	X	X	X	X	X
Prospect Mill Elementary – Grease Trap	X	X	X	X	X	X	X
Red Pump Elementary – Grease Trap	X	X	X	X	X	X	X
Youth's Benefit – Primary – WWTP & Grease Trap	X	X	X	X	X	X	X
Harford Glen – Grease Trap	X	X	X	X	X	X	X
Harford Glen House – Septic Tank	X	X	X	X	X	X	X
John Archer – Grease Trap	X	X	X	X	X	X	X

UNDERGROUND STORAGE TANKS

SCHOOL	PRODUCT	GALLONS	TANK No.	INSTALL DATE	LAST TEST	PASS/ FAIL	TEST COMPANY	TYPE OF TANK	TEST PIPES PLACED	MAN WAY	CERT ON FILE
2019											
ABINGDON ELEM.	**#2 OIL**	**15000**	**1**	**1992**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
ABINGDON ELEM.-GENERATOR	**DIESEL**	**20000**	**1**	**1992**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
BAKERFIELD ELEM.	**#2 OIL**	**10000**	**1**	**1993**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
CHURCHVILLE ELEM.	**#2 OIL**	**10000**	**1**	**1995**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
HICKORY ANNEX-BUS	**DIESEL**	**10000**	**2**	**1993**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
HOMESTEAD ELEM.	**#2 OIL**	**10000**	**1**	**1966**	**2016**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
JOHN ARCHER	**#2 OIL**	**10000**	**1**	**1988**	**2014**	**P**	**Eldreth**	**ST-FRP**	**NO**	**YES**	**YES**
MAGNOLIA ELEM.	**#2 OIL**	**10000**	**1**	**1990**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
WAKEFIELD ELEM.	**#2 OIL**	**10000**	**1**	**1958**	**2016**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**
OLD POST ROAD ELEM.	**#2 OIL**	**10000**	**1**	**1990**	**2014**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
2020											
HICKORY ANNEX	**GAS**	**8000**	**1**	**1993**	**2015**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
HICKORY ANNEX BUS	**DIESEL**	**10000**	**2**	**1993**	**2015**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
HOMESTEAD ELEM.	**#2 OIL**	**10000**	**1**	**1966**	**2016**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
HALL'S CROSS ROADS	**#2 OIL**	**10000**	**1**	**1987**	**2015**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
WAKEFIELD ELEM.	**#2 OIL**	**10000**	**1**	**1958**	**2016**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**
2021											
HOMESTEAD ELEM.	**#2 OIL**	**10000**	**1**	**1966**	**2016**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
NORTH BEND ELEM.	**#2 OIL**	**15000**	**1**	**1995**	**2016**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
WAKEFIELD ELEM.	**#2 OIL**	**10000**	**1**	**1958**	**2016**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**
YOUTH'S BENEFIT - P	**#2 OIL**	**1000**	**1**	**1994**	**2011**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
2022											
HICKORY ANNEX	**GAS**	**8000**	**1**	**1993**	**2015**	**P**	**Eldreth**	**ST-FRP**	**YES**	**YES**	**YES**
HOMESTEAD ELEM	**#2 OIL**	**10000**	**1**	**1966**	**2016**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
NORTH HARFORD ELEM.	**#2 OIL**	**10000**	**1**	**1993**	**2013**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**
WAKEFIELD ELEM	**#2 OIL**	**10000**	**1**	**1958**	**2016**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**
2023											
ABERDEEN HIGH-CEO	**#2 OIL**	**15000**	**1**	**1987**	**2013**	**P**	**Eldreth**	**STIP-3**	**YES**	**NO**	**YES**
ABERDEEN MIDDLE	**#2 OIL**	**10000**	**1**	**1999**	**2013**	**P**	**Rellek**	**ST-FRP**	**YES**	**YES**	**YES**
FALLSTON MIDDLE	**#2 OIL**	**20000**	**1**	**1993**	**2013**	**P**	**Rellek**	**ST-FRP**	**YES**	**YES**	**YES**
HOMESTEAD ELEM	**#2 OIL**	**10000**	**1**	**1966**	**2016**	**P**	**Eldreth**	**Steel**	**YES**	**YES**	**YES**
WAKEFIELD ELEM.	**#2 OIL**	**10000**	**1**	**1958**	**2016**	**P**	**Eldreth**	**Steel**	**NO**	**YES**	**YES**

VEHICLE REPLACEMENT

7/1/2017

The following report presents a breakdown of the equipment owned and maintained by HCPS and outlines the amount of capital replacement expenditure needed per year under the replacement guidelines utilized by Harford County Government policy. The economic life standards used to form Harford County's policies are derived from the American Public Works Association (APWA). The numbers presented are based on current fleet composition and do not include any re-alignment due to changing needs. Furthermore, they do not factor in inflation. Some of the inflation factor will be overcome by an increase in trade value as our fleet becomes newer. Please also see the explanation accompanying each section regarding the use of these numbers.

		Capital Money Needed Each Year
Truck	$	613,493.00
Car	$	59,855.00
Tractor	$	168,463.09
Equipment	$	100,000.00
Total	$	941,811.09

See theaccompanying spreadsheet for each category above.
In the above categories, "Tractor" represents all school based equipment.
The "Equipment" category is Facilities tractors, trailer, mowing equipment, paving equipment etc.
The "Equipment" category does not have an accompanying spreadsheet and the number above is based on the estimated replacement cost of the equipment divided by 8 years.

5 YEAR REPLACEMENT PLAN - TRUCKS

	Description of Categories
A	One-Ton Van
B	One-Ton Utility 4X4
C	3/4 Ton and One-Ton 4X4 Pick-up
D	1/2 Ton Pick-up
E	35,000 GVW Dump Truck with Plow
F	Forestry Truck with Plow
G	Stake Body Truck Heavy One-Ton
H	One-Ton Dump
I	1/2 Ton Van
J	Passenger Van
K	Box Truck 6000 series
L	Refrigerated Box Truck
M	Wash Bus/Science Bus
N	Bucket Truck
O	Sprinter/Super Duty Step Van
P	Dual Rear Wheel HD P/up for Salt Box

		Est. Cost		Est. Trade		Est. Total		Total in Fleet		Economic Life	Notes
A		$ 30,000.00		$ 800.00		$ 29,200.00		40		6/90	
B		$ 39,500.00		$ 1,000.00		$ 38,500.00		8		6/90	
C		$ 30,000.00		$ 1,000.00		$ 29,000.00		6		6/90	
D		$ 13,000.00		$ 500.00		$ 12,500.00		14		6/90	Repl w/ E group
E		$ 120,000.00		$ 2,000.00		$ 118,000.00		5		8/120	Repl w/A or B group
F		$ 80,000.00		$ 3,000.00		$ 77,000.00		1		8/120	
G		$ 36,000.00		$ 500.00		$ 35,500.00		1		6/90	
H		$ 56,000.00		$ 2,500.00		$ 53,500.00		1		6/90	
I		$ 14,000.00		$ 800.00		$ 13,200.00		23		6/90	
J		$ 14,000.00		$ 2,500.00		$ 11,500.00		6		6/90	
K		$ 81,000.00		$ 3,000.00		$ 78,000.00		3		8/120	
L		$ 105,000.00		$ 3,000.00		$ 102,000.00		3		8/120	
M		n/a		n/a		n/a		0		6/90	
N		$ 75,000.00		$ 3,000.00		$ 72,000.00		1		6/90	
O		$ 40,000.00		$ 1,500.00		$ 38,500.00		10		6/90	
P		$ 38,000.00		$ 2,500.00		$ 35,500.00		1		6/90	

5 YEAR REPLACEMENT PLAN - TRUCKS

The average number of units that will need to be replaced during each year are indicated below:

Average Cost Per Year			
	Units Per Year	Cost	Total
A	6.66	$ 29,200.00	$ 194,472.00
B	1.33	$ 38,500.00	$ 51,205.00
C	1	$ 29,000.00	$ 29,000.00
D	2.33	$ 12,500.00	$ 29,125.00
E	0.625	$ 118,000.00	$ 73,750.00
F	0.125	$ 77,000.00	$ 9,625.00
G	0.166	$ 35,500.00	$ 5,893.00
H	0.166	$ 53,500.00	$ 8,881.00
I	3.83	$ 13,200.00	$ 50,556.00
J	1	$ 11,500.00	$ 11,500.00
K	0.375	$ 78,000.00	$ 29,250.00
L	0.375	$ 102,000.00	$ 38,250.00
M	0	n/a	
N	0.166	$ 72,000.00	$ 11,952.00
O	1.666	$ 38,500.00	$ 64,141.00
P	0.166	$ 35,500.00	$ 5,893.00
	19.98	Grand Total	$ 613,493.00

5 YEAR REPLACEMENT PLAN – TRACTORS

	Description of Categories
A	Commercial Front Mower such as Ford MC28, or Kubota F3060
B	Compact Diesel with Rear Deck such as Ford TC-40 or Kubota 30 series
C	Garden Tractor such as Ford TC21 or 24 (frequently replaced with zero turn rider)
D	Wing Mower such as Ransome or Howard Price 1280/Utility Tractor
E	Gasoline Zero Turn Rider such as Bobcat Z219, Toro 400 series or Scag 48 Wide Cut
F	Diesel Zero Turn Rider
G	Commercial Push mower
H	Snow blower
I	Leaf Blower
J	Combination Weed eater/Trimmer/Edger

	Est. Cost	Est. Trade	Est. Total	Total In Fleet	Economic Life	Notes
A	$ 15,500.00	$ 1,000.00	$ 14,500.00	47	7 years	
B	$ 17,000.00	$ 3,000.00	$ 14,000.00	8	7 years	
C	$ 6,000.00	$ 300.00	$ 5,700.00	3	7 years	Repl w/E group
D	$ 15,500.00	$ 3,000.00	$ 12,500.00	3	7 years	Repl w/AorB Group
E	$ 6,000.00	$ 800.00	$ 5,200.00	33	7 years	
F	$ 9,500.00	$ 1,000.00	$ 8,500.00	8	7 years	
G	$ 349.00	$ -	$ 349.00	56	7 years	
H	$ 500.00	$ -	$ 500.00	52	7 years	
I	$ 300.00	$ -	$ 300.00	52	7 years	
J	$ 579.00	$ -	$ 579.00	54	7 years	

This plan is based on the economic life standards used by Harford County Government in establishing equipment replacement parameters.
The economic life standards used to form Harford County's policies are derived from the American Public Works Association (APWA).
The economic life of each vehicle type is listed on the right side of the above chart. (6/90 means 6 years or 90,000 miles)

5 YEAR REPLACEMENT PLAN – TRACTORS

Average Cost Per Year			
	Units Per Year	Cost	Total
A	6.71	$ 14,500.00	$ 97,295.00
B	1.14	$ 14,000.00	$ 15,960.00
C	0.43	$ 5,700.00	$ 2,451.00
D	0.43	$ 12,500.00	$ 5,375.00
E	4.71	$ 5,200.00	$ 24,492.00
F	1.14	$ 8,500.00	$ 9,690.00
G	8	$ 349.00	$ 2,792.00
H	7.43	$ 500.00	$ 3,715.00
I	7.43	$ 300.00	$ 2,229.00
J	7.71	$ 579.00	$ 4,464.09
		Grand Total	$ 168,463.09

COMPLIANCE OVERVIEW

Environmental compliance requirements impact every area of facilities. Regulations dictate close attention to issues such as asbestos containing materials, integrated pest management, underground storage tank systems, wastewater, lead containing materials, hazardous substances, storm water management, carbon monoxide, drinking water quality, indoor air, and radon. Compliance encompasses the conditions, safety and operation of all the buildings and occupants throughout the school system and the Department of Facilities personnel. When age and condition of buildings and equipment warrant additional monitoring, environmental personnel ensure acceptable performance is maintained by visual and quantitative analysis. Monitoring of water treatment is performed in accordance with the Lead and Copper Rule and Safe Drinking Water Act. Additionally, water system corrosion control is administered as prescribed by Maryland Department of Environment (MDE). Concerns about indoor air quality are addressed by bi-annual site assessments. Any additional mechanical work required is coordinated through the Department of Facilities. Monitoring for radon has been done in buildings throughout Harford County Public Schools. Follow-up actions including remediation and monitoring has been performed at sites where radon levels indicated. Additional monitoring will also be performed periodically to ensure continued acceptable radon levels in Harford County Public Schools buildings. Harford County Public Schools Facilities responds effectively to the constantly increasing number and complexity of Environmental Regulations.

INVESTIGATION OF AN INDOOR AIR QUALITY PROBLEM

Date Notified: _____ Who Reported: _____

Position: _____

Building: _____

Building Location: _____

Designated Investigator: _____

Position: _____

On-Site Evaluation: Date: _____ Time: _____

People Present: _____

I. Description of problem/symptoms:

II. Physical assessment:

III. Recommendation:

Signatures: Investigator: _____ Date: _____

Principal: _____ Date: _____

HARFORD COUNTY PUBLIC SCHOOLS
PERIODIC SURVEILLANCE

Periodic surveillance shall be performed formally by Harford County Public School personnel approximately every six-months. Please return form Jessica Schrader, Environmental Specialist, in the Department of Facilities.

_____ _____

School Name Today's Date

_____ _____

Date Noted Performed by: Name and Position

Changes in Material:_____

_____

Conditions:

_____

_____

_____

_____

_____

_____

_____

_____

RESOURCE AND ENERGY CONSERVATION

In an effort to meet the goals of the Energy Management Plan as they pertain to reduction of energy consumption, implementation of conservation programs, implementation of new conservation technology, and establishment of procedures to facilities conservation efforts. Harford County Public Schools Facilities Department is in the process of upgrading our Building Automation Platform with a new crowd based energy monitoring software. This enhanced technology will allow us to:

- Track energy use trends for individual locations
- Identify outlying use for potential maintenance issues
- Identify accurate cost per school event for accurate billing and budgeting purposes
- Educate the occupants about the financial advantages of their conservation efforts

School locations that are deemed inefficient will be addressed by the individual school based administrator and chief custodian in conjunction with the Resource Conservation Manager for possible improvements. New technology will be reviewed and evaluated for its effectiveness and appropriateness for use within our facilities. Continued monitoring of our resource and energy consumption will take place as well as onsite evaluations of our facilities. This oversight will provide data to evaluate the effectiveness of our conservation efforts.

HCPS Building Efficiency and Sustainability Survey

School: _____ Date: _____
Rooms Inspected: _____ Inspected by: _____

This survey is to be used to evaluate the efficiency of the HCPS site including the building and surrounding grounds. It is meant to be a useful tool in determining areas of progress in addressing efficiency and conservation issues, as well as identifying additional areas of concern. The areas inspected in this checklist are outlined in the administrative procedures documents for HCPS.

Site Grounds	**Y**	**N**	**Comment**
Outside security lights are functioning			
Outside security lights are off in day-light hours			
Outside parking and sidewalk lights are functioning			
Outside parking and sidewalk lights are off during day-light hours			
Recycling and waste receptacles are on-site and properly used			
Recycling receptacles are available for community and event use			
Appropriate use of shading and canopy use			
Evidence of Ground Erosion or run-off			
Building Envelope	**Y**	**N**	
Exterior doors and windows are functioning properly and draft free			
Weather stripping and caulk are appropriate and functioning			
Structure is sound with no serious penetrations or areas of draft			
Window coverings are used appropriately to maximize daylight use			
Window coverings are closed in evening hours to resist temp change			
Recycling and waste receptacles are on-site and properly used			
Resource usage	**Y**	**N**	
Sinks and water fountains appear to be functioning and leak free			
Toilets are functioning and do not appear to be running			
Paper towel and toilet paper dispensers are functioning			
Electrical	**Y**	**N**	**Comment**
Light level is appropriate for needs			
Light level is appropriately efficient i.e. fluorescent			
Lights are off in unoccupied areas of the building			
Fixtures are clean and functioning			
Accent lighting is minimal and appropriately used			
Half-lighting or task-lighting is used where appropriate			
	Y	**N**	**Comment**

Other			
Evidence of educational materials stressing conservation			
Evidence of exceptional environmental stewardship			

COMMENTS OR SUGGESTIONS:

Please return to: Office of Energy and Conservation, Department of Facilities

July 2017

HARFORD COUNTY PUBLIC SCHOOLS
Preventive Maintenance
July 2017

Status/Remarks

Preventive maintenance is the proactive application of proper inspection and servicing techniques to plant and equipment systems associated with the Harford County Public Schools on a continuous selective cyclical and routine basis.

With the augmentation of a Computerized Maintenance Management System, this approach will afford the advantage of protecting capital investment by permitting the application of adjustments, replacement of wear and tear components and calibration of devices under controlled conditions, and either effecting quick, simple solutions or else generating pertinent work orders to the cognizant maintenance section for repair before the equipment fails or breaks down.

Representative Accomplishments

1. Essential Equipment Preventive Maintenance Field Audits of the entire school system, an open-ended and ongoing process, including the formulation & usage of projections for new school facilities, those schools undergoing major renovation/reconstruction & the prompt replacement of projection data with actual data – complete with impact analysis – upon the completion of the new/major renovation/reconstruction activity.

2. The formulation & periodic updating of equipment task listing criterion for over 30 major and sub-equipment categories serving as a basis upon which to plan, organize, analyze & process a high volume of data.

3. The development, utilization and continuous revision of an analytical technique of a Preventive Maintenance Subtotals Equipment Task Network, to include the establishment of per unit annual coverage capability factors, as the essential vehicle to array and manage the equipment regarding frequency and specifics of PM service intervals within the five major HCPS geographical school zones delineated by PM. This approach facilitates obtaining maximum economy and efficiency.

4. The identification of selective essential rates of coverage of the school system, given the available PM staffing levels, system size & criticality of service so as to specify realistic initial/modified program implementation levels as well as to provide a sound foundation and benchmarking for future expansion.

5. The application of functional, durable identification labeling to the thousands of items of equipment audited - to include ongoing updating, as required (replacements, modifications, etc.). This includes innovative classroom ceiling grid labeling for those equipment installations aloft above ceiling level.

6. Development, utilization and continuous updating of logistical system encompassing the PM Team HVAC air filter/frame general specifications, comprehensive expendables inventory instruments for drive belts, air filter media and air filter frames and procurement

contract rider for the last 3(+) consecutive years with the Baltimore and/or Howard County Public School Systems and pricing request/order procedures. Some samples are included.

7. The implementation of an Electric Service Entrance Equipment Maintenance/PM Program to provide much needed attention to the Main Electrical Services at the schools on a regular basis to include substantial follow-up on deficiencies encountered. Proactive role in the implementation of a MABE funded Thermographic Imaging/Infrared Testing thrust for electrical distribution equipment which further assists the Maintenance/PM action by helping uncover incipient deficiencies before they cause unscheduled electrical outages, equipment damage or possibly fire.

A sample Preventive Maintenance checklist for annual indirect gas fired make-up air unit inspections is attached. The generation/modification of PM checklists is an evolving, ongoing process.

HARFORD COUNTY PUBLIC SCHOOLS

Preventive Maintenance Program

JULY 2017

Preventive Maintenance Inspection Frequency

Item	Description	A	Bi-A	Semi-A	Tri-A	Quar	Semi-Q	Mo.	Bi-Mo.	FI*	*** a.
1.	Air Handling Unit (AHU)	x		X**		X				X	
2.	Circulator Pump (CP)	c. X									
3.	Circulator Pump (CP)>/=50HP				c. X						X
4.	Exhaust Fan (EF)	X									
5.	Vane Axial Exhaust Fan (VAEF)	a . x	a . x					b. X			
6.	Heat Pump (HP) – General			X						X	
7.	Heat Pump (HP) – Relocatable						X				
8.	Water to Air Geothermal Heat Pump	X		X				X			
9.	Roof Top Unit (RTU)	X				X				X	
10.	Return Air Fan (RAF)	X						X			
11.	Supply Air Fan (SAF)	X		X				X		X	
12.	Air Cleaner/Purifier			X**				X			
13.	Unit Heater Ventilator Electrical(UHV-E)			X		X				X	
14.	Energy Recovery Ventilator	X				X		X			
15.	Energy Recovery Unit (ERU)	X		X		X		X			
16.	Electric Unit Heater (EUH)			X							
17.	Cabinet Unit Heater Electrical (CUH)	X				X					
18.	A/C Only Unit (Electrical)			X		X				X	
19.	Fan Coil Unit Electrical (FCU)	X				X					
20.	Fan Powered Mixing Box Electrical (FPMB)			X		X					
21.	UHV – Gas			X							

Item	Description	A	Bi-A	Semi-A	Tri-A	Quar	Semi-Q	Mo.	Bi-Mo.	FI. *	*** a.
22.	Unit Heater – Gas (GUH)			X							
23.	Indirect Gas Fired Make-up Air Unit	SampleX		X		X					
24.	UHV – Water/Steam			X		X				X	
25.	Cabinet Unit Heater – Water Steam (CUH)	X								X	
26.	Fan Coil Unit – Water/Steam (FCU)	x				X				X	
27.	A/C only Unit (Water/Steam)			X		X					
28.	Horizontal A/C Unit (H A/C)			X					X		
29.	Fan Powered Mixing Box – Water/Steam (FPMB)			X		X				X	
30.	Unit Heater (UH) Water/Steam			X							
31.	Wall Fan (WF)	x									
32.	Water Cooler (WC)			X							
33.	Window A/C (WAC)			X							

Sample Preventive Maintenance Checklist attached.
* Air filter change and inspection service only – custom, variable frequency.
**Selectively applied, custom service.
*** Overhaul/General Take-Down Inspection. Frequency TBD, hourly basis.
• At selective essential rates of coverage. PM service frequencies are custom tailored to each facility.
Not all PM service frequencies apply to all schools.

a. By others – Outside the scope of PM
b. Or at every 720 hrs. of operation using retro-fitted elapsed run time hour meter.
c. Or, for 1760 rated RPM machine motors, at each 7400 hours of accumulated run time (4250 hrs, machine pumps) – NEMA 280-360 fr; 3500 hours NEMA 360-5800; with prescribed periodic purging and replacement of lubricant – or per manufacturer's instructions – using retro-fitted elapsed run time hours metering.

HARFORD COUNTY PUBLIC SCHOOLS
TASK LISTING FOR PREVENTIVE MAINTENANCE CLASSIFICATIONS FORM
GAS FIRED MAKE-UP AIR UNIT (560IGFMUAU) ANNUAL INSPECTION (FALL)

SAFETY PRECAUTIONS

- Lock-out the gas and the electrical power to the unit before performing any maintenance or service operations on this equipment.
- Wait for all rotating components to come to a complete stop prior to entering the equipment.
- Clear snow away from roof mounted units. Keep the snow clear of the intake, access doors and any vent piping.
- Do not allow water or solvents to enter the motor or bearings. Motors and bearings should never be sprayed with steam, water or solvents.
- Exercise caution when venting the coils. High pressure and/or high temperature fluids can cause serious injury.

GENERAL INSPECTION PROCEDURES

1. ***Fan Wheel***: Keep the fan wheel clean for proper operation. Accumulated dirt and oil will cause imbalance.

2. ***Cooling Coils***

    a. Inspect the coil for signs of corrosion and/or leaks. Repair any leaks as required.

    b. Inspect coil surface for foreign material. If the coil surface needs to be cleaned, then direct the cleaning agent into the leaving air-side so that foreign material will be washed out of the coil rather than being pushed farther in to it.

    c. Inspect and clean the drain pan to prevent the growth of algae and other organisms. Add condensate drain capsules as needed.

3. ***Chilled Water Coils***

    a. Test the circulating fluid for sediment, corrosive products, and biological contaminants and take the necessary corrective measures.

    b. Maintain adequate fluid velocities and proper filtering of the fluid.

    c. If automatic air vents are not utilized, periodic venting of the coil is recommended to remove accumulated air.

4. ***Evaporative Coolers***

    a. Shut off the water and drain all the lines when the outside temperature drops below 45ºF.

    b. Remove drain plugs for the winter.

    c. Clean all interior parts of any mineral deposits or foreign materials that may have built-up during the cooling season.

    d. Replace any worn or non-functioning parts.

5. ***Gas Line***

    a. Remove the drip leg and clean any liquid or debris that may have accumulated.

    b. After cleaning the drip leg, reattach it.

6. ***Vent Piping***: Remove any debris from the drip legs in the combustion air and exhaust pipes.

7. ***Burners and Orifices***: Before each heating season examine the burners and gas orifices to make sure they are clear of any debris such as spider webs, etc. Then clean the burners as follows:

    a. Turn off both electrical and gas supplies to the unit.

    b. Disconnect union between manifold and gas valve.

    c. Remove manifold and burner assembly.

    d. Inspect and clean orifices and burners as necessary. Avoid using any hard or sharp instruments which could cause damage to the orifices or burners.

        1. Remove any soot deposits from the burner with a wire brush.

        2. Clean the ports using an aerosol degreaser or compressed air.

        3. Wipe the inside of the burner clean. Cleaning the burner with a degreaser will retard the future build-up of dirt.

        4. Before reinstalling the burner assembly, look down the heat exchanger tubes to make sure they are clear of any debris.

        5. Reinstall manifold and burner assembly, reconnect wire leads and gas supply piping.
        6. Turn on the electrical power and gas supply.

        7. Follow the start-up procedure to light the burners and verify proper operation.

8. ***Heat Exchanger***

    a. Check the heat exchanger annually for cracks.

    b. If a crack is detected, the heat exchanger should be replaced before the unit is put back into operation.

    c. Airflow across the heat exchanger should be checked to make sure the blower is operating properly.

9. ***Flue Collector Box***: The flue passageway and flue collector box should be inspected prior to each heating season and cleared of any debris.

10. ***Electrical Wiring***: The electrical wiring should be checked annually for loose connections or deterioration.

Tools needed to complete the Preventive Maintenance:

Hand Tools	Wire Brush	Fiberglass step ladder, as required
VOM	Respirator	Full face safety goggles
H2O Test Kit	Pipe Cleaner	Portable Air Compressor
Vacuum Cleaner		

Materials List: Coil Cleaner, Aerosol Degreaser, Condensate Drain Tabs

Special Notes:

1. Coordination with Energy Manager required in advance if building is otherwise shut-down by EMS – e.g., schools closed.

2. Disconnect and secure to the OFF position, all sources of power to the equipment prior to servicing, per standard Lock-Out Tag-Out Procedures. In the case of the exception in which the equipment must be temporarily energized for troubleshooting, observation, diagnostic measurements or related servicing actions, **exercise extreme caution**.

3. Check all work and restore power upon completion of the Preventive Maintenance work activity.

4. For further technical details, refer to the instruction manual.

5. Safety glasses and gloves required as needed.

Date: _____
PM Zone: _____

PREVENTIVE MAINTENANCE – AIR FILTER ORDER FORM

ITEM NO.	QTY (ea., or as noted)	SIZE (“or as indicated)	POLY ROLL (Spec 1)	POLY PAD (Spec 2)	PAD FRAME (Spec 3)	POLY BAG HDR (Spec 4)	RIGID PAD (Spec 5)	POLY T/A (Spec 6)	OTHER	OTHER	TAG BOXES	UNIT PRICE $	SUB TOTAL $

SUBTOTAL: [Grand Total If PGS 2/3 Not Used]

☐ ☐

AIR FILTER/FRAME
ORDER ☐ PRICE REQUEST ☐

WILL CALL/FAX/E-MAIL PLEASE CALL/FAX/E-MAIL
FOR CONFIRMATION

TRACKING P.O. #: _____

Date: _____

PM Zone: _____

PREVENTIVE MAINTENANCE – AIR FILTER ORDER FORM

ITEM NO.	QTY (ea., or as noted)	SIZE ("or as indicated)	FOAM ROLL (Spec 7)	PLEAT- STANDARD CAPACITY (Spec 8)	RIGID BOX NH (Spec 9)	BAG EXTENDED SURFACE (Spec 10)	PLEAT MERV 8 (Spec 11)	FOAM PLASTIC FRAME (Spec 12)	OTHER	OTHER	TAG BOXES	UNIT PRICE $	SUB TOTAL $

SUBTOTAL: _____

GRAND TOTAL [If P3 Is Not Used]: _____

AIR FILTER/FRAME
ORDER ☐ PRICE REQUEST ☐

WILL CALL/FAX/E-MAIL ☐ PLEASE CALL/FAX/E-MAIL ☐
FOR CONFIRMATION

TRACKING P.O. #: _____

Date: _____
PM Zone: _____

PREVENTIVE MAINTENANCE – AIR FILTER ORDER FORM

ITEM NO.	QTY (ea., or as noted)	SIZE ("or as indicated)	RIGID BOX SH (Spec 13)	POLY BAG WIRE (Spec 14)	PLEAT-MERV 11 ® FARR HR (Spec 15)	EXTEN SUR SEP; 65% FLA-PRECI (Spec 16)	BAG DUSTLOC® CUBE MTL HDR (Spec 17)	BAG DUSTLOC® CUBE WIRE HDR (Spec 18)	OTHER	OTHER	TAG BOXES	UNIT PRICE $	SUB TOTAL $

SUBTOTAL: _____

GRAND TOTAL: _____

AIR FILTER/FRAME ORDER ☐ PRICE REQUEST ☐

WILL CALL/FAX/E-MAIL ☐ PLEASE CALL/FAX/E-MAIL ☐ FOR CONFIRMATION

TRACKING P.O. #: _____

Date: _____
PM Zone: _____

PREVENTIVE MAINTENANCE – AIR FILTER ORDER FORM

ITEM NO.	QTY (ea., or as noted)	SIZE (“or as indicated)	PLEAT MERV 6 FARR® (Spec 19)	PLEAT PNL MERV 7 AIRGUARD (Spec 20)	PLEAT RIGID BOX 65% NH (Spec 21)	PLEAT RIGID BOX 65% SH (Spec 22)	Au MET MESH Preci-aire (Spec 23)	POLY RING (Spec 24)	OTHER	OTHER	TAG BOXES	UNIT PRICE $	SUB TOTAL $

SUBTOTAL: _____

GRAND TOTAL: _____

AIR FILTER/FRAME ORDER ☐ PRICE REQUEST ☐

WILL CALL/FAX/E-MAIL ☐ PLEASE CALL/FAX/E-MAIL ☐ FOR CONFIRMATION

TRACKING P.O. #: _____

Date: _____
PM Zone: _____

PREVENTIVE MAINTENANCE – AIR FILTER ORDER FORM

ITEM NO.	QTY (ea., or as noted)	SIZE (“or as indicated)	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	OTHER	OTHER	OTHER	TAG BOXES	UNIT PRICE $	SUB TOTAL $

SUBTOTAL: _____

GRAND TOTAL: _____

AIR FILTER/FRAME ORDER ☐ PRICE REQUEST ☐

WILL CALL/FAX/E-MAIL ☐ PLEASE CALL/FAX/E-MAIL ☐ FOR CONFIRMATION

TRACKING P.O. #: _____