

BALTIMORE COUNTY PUBLIC SCHOOLS

DATE: June 14, 2005

TO: **BOARD OF EDUCATION**

FROM: Dr. Joe A. Hairston, Superintendent

SUBJECT: **REPORT ON PHYSICAL FACILITIES**

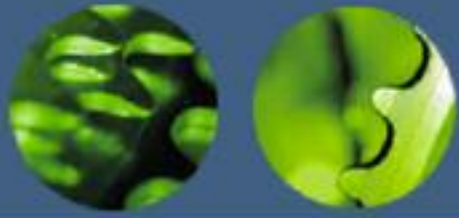
ORIGINATOR: J. Robert Haines, Esq., Deputy Superintendent, Business Services

RESOURCE
PERSON(S): Michael Sines, Executive Director, Physical Facilities

INFORMATION

That the Board of Education review the report on Physical Facilities.

Appendix I: Department of Physical Facilities presentation

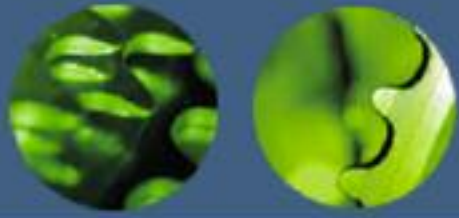


DEPARTMENT OF PHYSICAL FACILITIES

EXECUTIVE SUMMARY

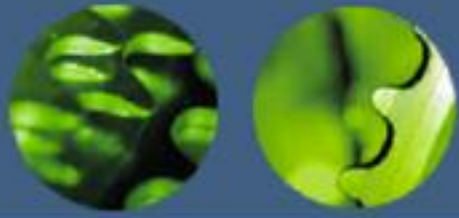
Although much attention has been directed toward the introduction of a new Computerized Maintenance Management System (CMMS), the challenges associated with the delivery of services by the Department of Physical Facilities are significantly more complex than the addition of one management component can solve. In order for the department to function smoothly and in a comprehensive manner, all offices must operate in unison with each other, and adequate resources must be available to meet the basic charge.

Acknowledgement of the fundamental issues confronting the department in providing service for the school system, critical evaluation of the resources that are needed to provide an acceptable level of service, and continuation of an aggressive capital investment program are essential. A new CMMS system will provide excellent data; however, without additional resources to methodically address the aging school infrastructure to meet maintenance demands, the new system will neither produce a significantly improved maintenance program nor enhance the standard of performance. A regional comparison of resources contrasted to the accepted industry standard for funding maintenance activities clearly substantiates a sound basis for augmenting the maintenance budget.



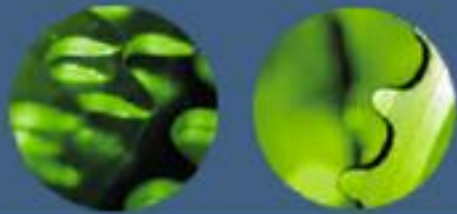
Baltimore County Public Schools Department of Physical Facilities Presentation - June 14, 2005

- I. Review of the Department of Physical Facilities
 - A. Office of Engineering and Construction
 - B. Office of Operations
 - C. Office of Grounds
 - D. Office of Maintenance
- II. Focus on the Office of Maintenance
 - A. Subdivisions
 - 1. Electrical
 - 2. Mechanical
 - 3. General Maintenance
 - 4. Contract Maintenance
 - 5. Customer Service
 - B. Computerized Maintenance Management System
 - 1. FileMaker Pro
 - 2. TMA
- III. Issues Confronting the Department
 - A. Aging School Inventory
 - B. Antiquated Mechanical Infrastructure
 - C. Indoor Air Quality
- IV. Summary Proposals
 - A. Improve Response to Stakeholders through CMMS
 - B. Increase Level of Funding to 2%
 - C. Window Replacement Emphasis
 - D. HVAC Filters
 - E. Capital Investment Strategies




OBJECTIVES OF PRESENTATION

- Identify critical departmental needs
- Provide an update of Computerized Maintenance Management System (CMMS)
- Implement strategies to assure success




DEPARTMENT OF PHYSICAL FACILITIES



Friday, May 20, 2000
All schools operating on normal posted schedule.

Search: **GO**

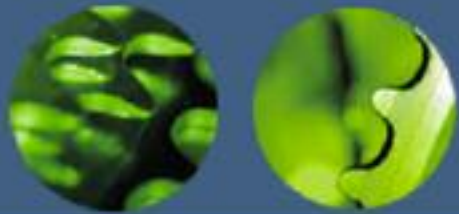
Baltimore County Public Schools  [BCPS Home](#)

Department of Physical Facilities

Meeting the Challenge of Leadership in the 21st Century

Personnel		Office Listing
<p>Michael G. Sines Executive Director msines@bcps.org</p> <p>Jacqueline A. Dryden Admin. Assistant jdryden@bcps.org</p> <p>Phone: 410-887-6300</p> <p>Fax: 410-887-6359</p>	<p>The Department of Physical Facilities is responsible for the physical management of 162 schools housing approximately 108,015 students and 16 administrative, grounds, and transportation buildings. The mission of the Department of Physical Facilities is to provide support services to maintain safe, clean, and productive educational environments that are conducive to high student achievement. The entire Facilities' staff is committed to delivering quality service in construction, maintenance, operations, and grounds with the belief that we are an integral part of the educational process for the students of the Baltimore County Public Schools.</p>	<p>Engineering and Construction</p> <p>Operations</p> <p>Grounds Services</p> <p>Maintenance Services</p> <p>DPF Home</p>

Focused on Quality; Committed to Excellence



ENGINEERING AND CONSTRUCTION

Thursday, May 26, 2005
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THE BALTIMORE COUNTY PUBLIC SCHOOLS

Baltimore County Public Schools [BCPS Home](#)

Department of Physical Facilities
Meeting the Challenge of Leadership in the 21st Century

Personnel

Richard H. Cassell P.E.
Administrator
rcassell@bcps.org

Judy C. Wagner
Secretary
jwagner1@bcps.org

Phone: 410-887-6301
Fax: 410-887-6314

The Office Engineering and Construction

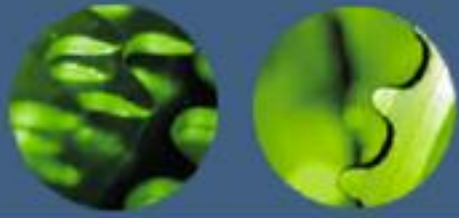
The Office of Engineering and Construction, with its staff of professional engineers, architects, designers, and construction personnel, acts as consultant, design team, and manager to the school system for a variety of projects. We aid the school system in design and implementation of complex engineered systems, practices, and procedures in new construction, renovations, and site improvements. Our staff is committed to providing quality engineering and construction services while following the Board of Education Blueprint for Progress, goals and vision.

Office Listing

- [Directory](#)
- [Special Project Requests](#)
- [New Construction](#)
- [Systemic Renovations](#)
- [Aging School Projects](#)
- [QZAB Projects](#)
- [Major Maintenance Projects](#)
- [Capital Projects](#)

[Back to Top](#)

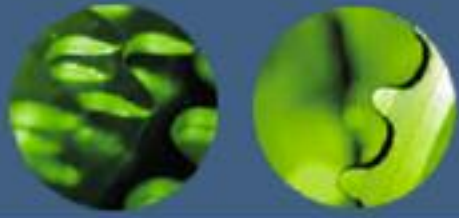
[Internet](#)



ENGINEERING AND CONSTRUCTION

New Town High
School during
construction





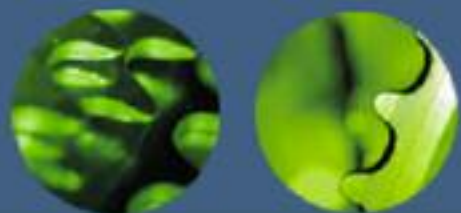
WINDOW REPLACEMENT

Southwest Academy
before




Berkshire Elementary
after





OPERATIONS



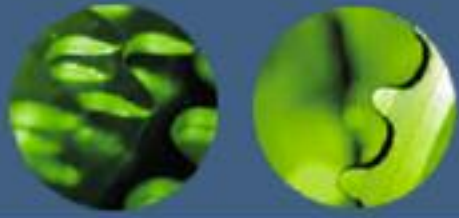
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Department of Physical Facilities
Meeting the Challenge of Leadership in the 21st Century

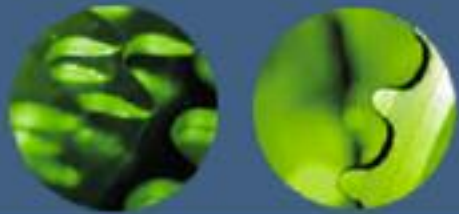
Personnel	The Office of Operations	Area Listing
<p>William P. Wingerd Administrator wwingerd@bcps.org</p> <p>Cindy Serra Secretary cserra@bcps.org</p> <p>Fran Marchese Secretary fmarchese@bcps.org</p> <p>Gail Williams Clerk gwilliams@bcps.org</p> <p>Phone: 410-887-0430</p>	<p>The Office of Operations is responsible for the daily operation of the physical plants of all schools and offices. This office directs the activities of over 900 custodial staff members who provide housekeeping services, perform basic preventative maintenance, and monitor the operations of all heating, ventilating and air conditioning systems. The Office of Operations is committed to providing quality, timely services to all schools and offices by encouraging employees to work as a team, take pride in their work, strive for excellence, and become life-long learners. Through these endeavors, the Office of Operations strives to provide a safe, clean, and attractive learning environment that promotes quality education.</p>	<p>Northeast</p> <p>Northwest</p> <p>Central</p> <p>Southeast</p> <p>Southwest</p> <p>Special Services</p> <p>DPF Home</p>



OPERATIONS STAFF

Chief custodian
replacing filter





SAFETY AND SECURITY

Personnel

Charles R. Jenkins
cjenkins@bcps.org

Deborah A. Rojek
Secretary
drojek@bcps.org

Phone: **410-887-6300**

Fax: **410-887-6359**

24 Hour Security
Monitoring:

410-887-6488

Office Of Safety and Security

Baltimore County Public Schools

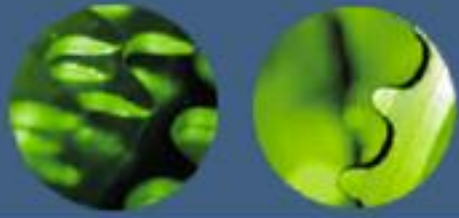
The Office of Safety and Security is a 24 hour, seven days a week operation.

It is the responsibility of the Office Safety and Security to patrol the 505 square miles of Baltimore County that make up the Baltimore County Public Schools System by inspecting all facilities to ensure protection of property and equipment.

The mission of the Office Safety and Security is to ensure an overall safe and productive learning environment for the students. The Office of Safety and Security provides a critical communication link between all departments in cases of emergency. Some examples of the various types of emergencies are:

- Plumbing, mechanical and/or electrical problems,
- Hazardous material spills in buildings or general vicinity, and
- Weather related situations, trees down, power outages, water problems.

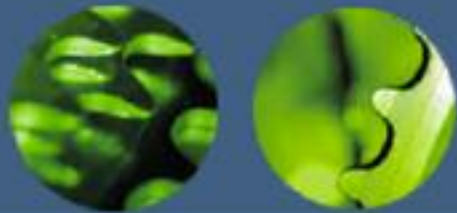
Security also operates, maintains and repairs security alarm systems, Closed Circuit Television (CCTV), card access systems, and door bell monitoring entry systems.




SAFETY AND SECURITY STAFF

Card reader entry
system at Glenmar
Elementary School






GROUNDS



Friday, May 20, 2005
All schools operating on normal posted schedule.

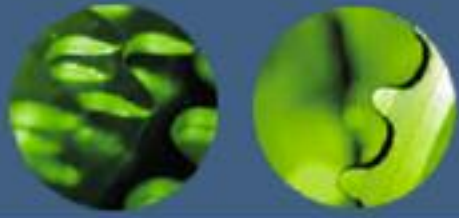
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Department of Physical Facilities

Meeting the Challenge of Leadership in the 21st Century

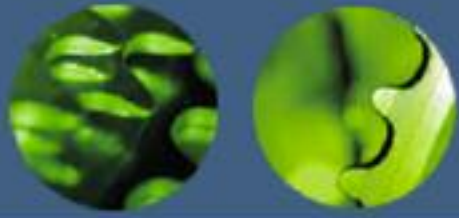
Personnel	Grounds Services	Select From Below
Dennis N. Elkins Administrator delkins@bcps.org	Baltimore County Public Schools	Snow Events
Nancy L. Rothwell Secretary nrothwell@bcps.org	The Office of Grounds provides grounds maintenance services to Baltimore County's 162 schools, 7 Transportation Facilities, and numerous Office locations. The Office of Grounds is proud of its dedicated women and men who are professionals in the field of landscape management, construction, and athletic turf management. Our goal is to effectively maintain the exterior properties in a safe, responsible manner while facilitating and enhancing the overall learning experience for Baltimore County's 108,015 students.	Turf Management
Phone: 410-887-6300	Click on the subjects at right to view.	Special Projects
Fax: 410-887-6369		Training
		DPF Home



GROUNDNS

Maintenance crew
patching parking lot at
Cockeysville Service
Center

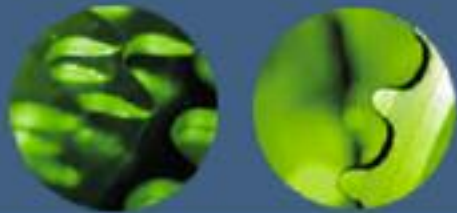





GROUNDNS

Maintenance crew
pruning and removing
trees at Dulaney High





MAINTENANCE



Thursday, May 26, 2005
All schools operating on normal posted schedule.

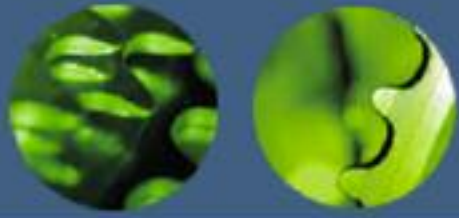
Search: [GO](#)

Baltimore County Public Schools [BCPS Home](#)

Department of Physical Facilities

Meeting the Challenge of Leadership in the 21st Century

Personnel	Office of Maintenance Services	Office Listing
<p>Dennis N. Elkins, Acting Administrator delkins@bcps.org</p> <p>Dorothy E. McDaniel Secretary dmacdaniel@bcps.org</p> <p>Phone: 410-887-6300 Fax: 410-887-6369</p>	<p>MISSION...</p> <p>The Office of Maintenance Services provides quality service to all schools and offices through the areas of Customer Service, Contract Maintenance, Energy Management, Utilities, Building Automation Systems, Mechanical, Electrical, and General Maintenance. The office is responsible for maintaining an environment that is conducive for teaching and learning while meeting the System's vision, mission, belief statement, goals, key strategies, and indicators for student achievement progress.</p> <ul style="list-style-type: none"> • FY05 - Personnel [150] • Services – Contract Maintenance, Customer Service, Energy Management, Electrical, General Maintenance, and Mechanical 	<p>Maintenance Services</p> <p>Directory</p> <p>News</p> <p>Services</p> <p>Business</p> <p>FAQ</p> <p>Photo Gallery</p> <p>DPF Home</p>



MAINTENANCE SHOPS

Electrical

- building automation, fire alarms, electronics maintenance, and electrical maintenance

Mechanical

- plumbing, HVAC, and mechanical maintenance

General Maintenance

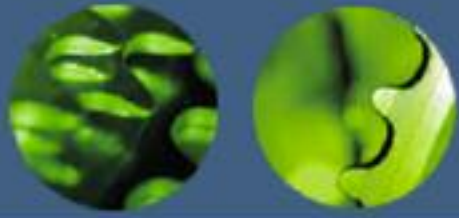
- painting, glazing, and building repair

Contract Maintenance

- outsourced specialized work, special certifications, and inspections

Customer Service

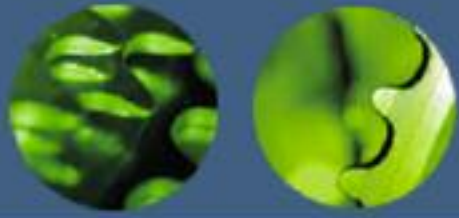
- work requests and service calls



ELECTRICAL SHOP

Electrician installing
underground wiring to
parking lot lighting at
Loch Raven High
School

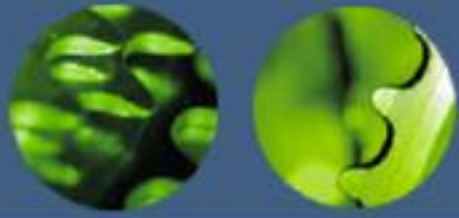




MECHANICAL SHOP

Recent installation of
mixing valve at
Ridgely Middle School

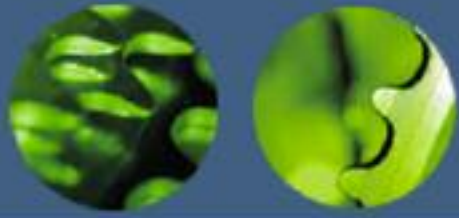




GENERAL MAINTENANCE SHOP

Masons repointing
mortar joints at Dundalk
Middle School

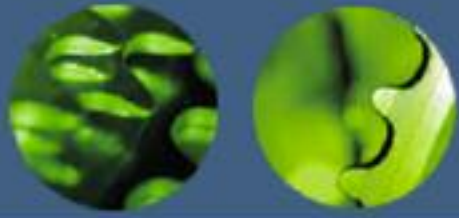




GENERAL MAINTENANCE SHOP

- Glaziers repairing a new broken window at Berkshire Elementary School
- No abatement needed; therefore, our mechanics can execute the repair

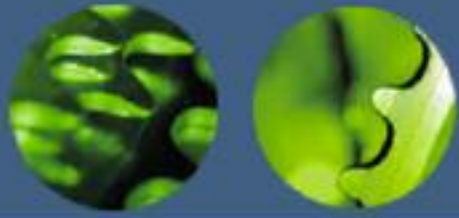




CONTRACT MAINTENANCE

New air handler
installation at Dundalk
High School

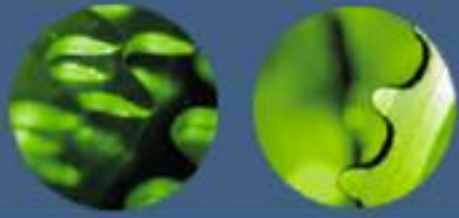




CUSTOMER SERVICE CENTER

Customer service desk:
work requests are
created in CMMS

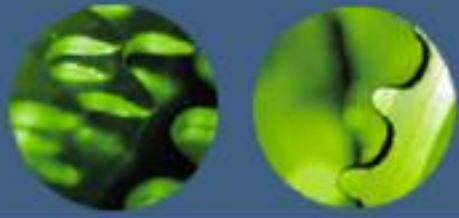




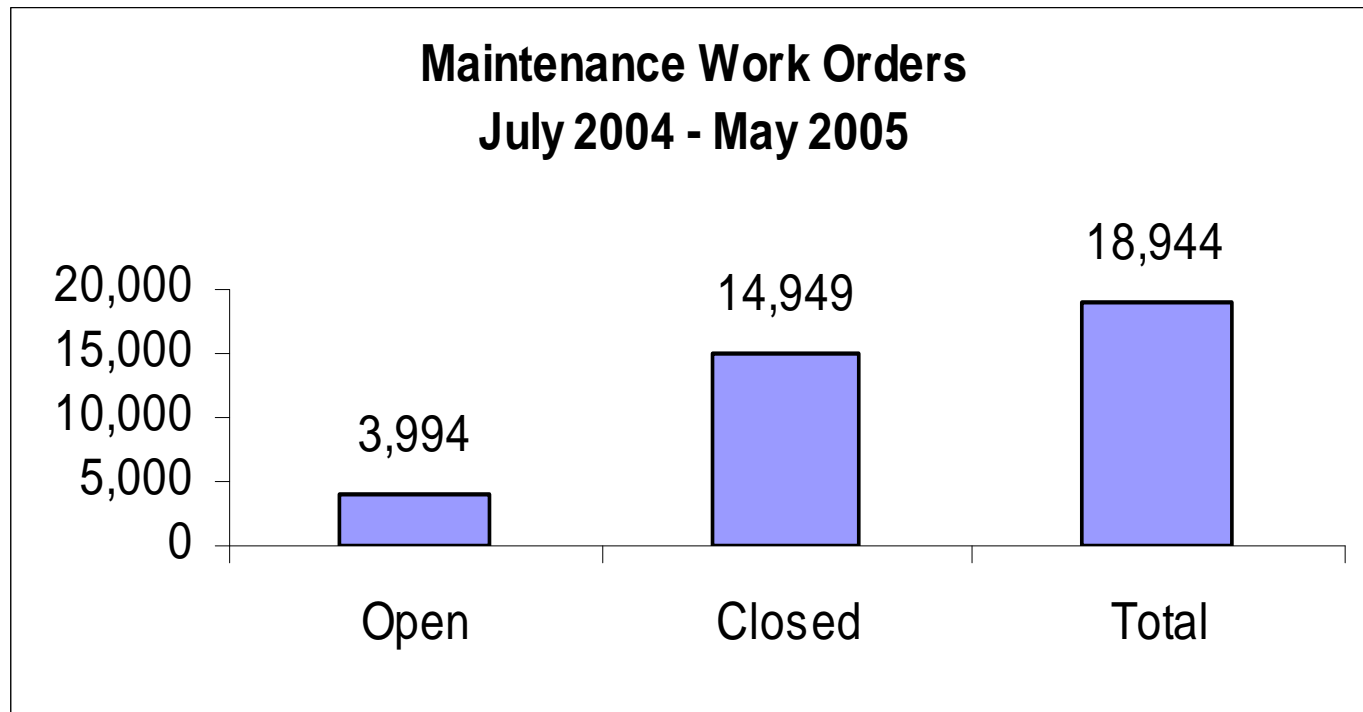
COMPUTERIZED WORK ORDER SYSTEM

FileMaker Pro – Existing Work Orders

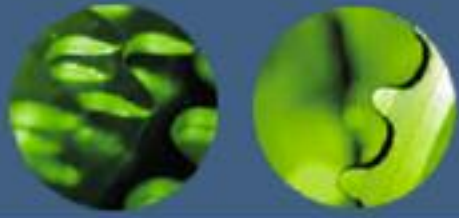
- Modeled from the database at Technology Customer Support Center (CSC) in Timonium
- Database tracks work orders
- Database does not track:
 - Time and material costs
 - Labor
 - Priority of work
- School provided work order status via paper reports



EFFICIENCY



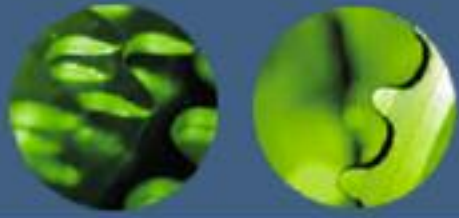
Efficiency rate of 79 percent



Computerized Maintenance Management System

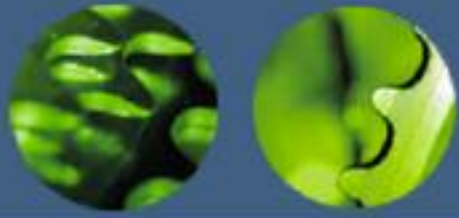
TMA Features

- Computerized Maintenance Management System (CMMS) – dedicated to service centers
- On-line work requests via BCPS intranet
- Schedule, track, and measure data
- Work order status on-line at each school for administrators to monitor



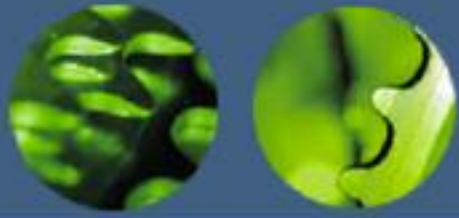
Computerized Maintenance Management System

- **Database to capture and store information relating to:**
 - Work orders
 - Building and equipment maintenance history
 - Inventory tracking
 - Costs of labor and materials
- **Intranet reports on-line to schools**
 - Work request and work order status



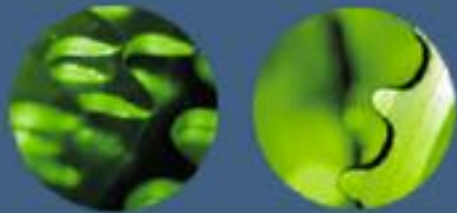
Status of Implementation CMMS

- **Phase I – Implement software and pilot program at three locations (May 2, 2005)**
 - Glenmar Elementary School
 - Middle River Middle School
 - Kenwood High School
- **Phase II – Continue implementation**
 - Bring all schools on-line as rapidly as possible



CCMS - Future Enhancements

- Personal Digital Assistant (PDA's) for technicians to use in the field for work order processing
- Bar coding and scanning of work orders, equipment, and materials



Work order statistics detail report

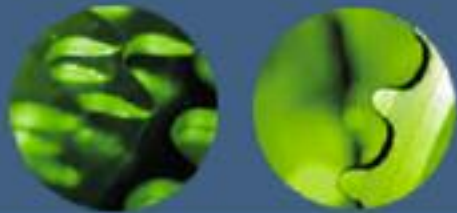
Work Order Statistics Detail

Repair Ctr(Rc): Physical Facilities
From 05/01/2005 To 05/27/2005

Baltimore County Public Schools

Physical Facilities

Structures Name	Last 24 Hours	Total Qty
Glenmar Elementary		
Glenmar Elementary		
Electrical	0	1
Electronics	0	1
Glazing	0	1
Plumbing	1	2
Roofing	0	1
Security	0	1
Totals for Glenmar Elementary	1	7
Totals for Glenmar Elementary	1	7
Kenwood High		
Kenwood High		
Contract Maintenance	0	3
Electrical	0	2
Electronics	0	1
General Maintenance	0	5
Glazing	1	1
Plumbing	0	3
Totals for Kenwood High	1	15
Totals for Kenwood High	1	15
Middle River Middle		
Middle River Middle		
Electrical	0	1
General Maintenance	0	1
Plumbing	0	3
Totals for Middle River Middle	0	5
Totals for Middle River Middle	0	5



Facilities work order for Kenwood High School

Baltimore County Public Schools Physical Facilities Work Order

Page 1 of 1

WO #: PF-10
PF-10

Location ID: 1573-GROSENTIR

Requested: 05/04/2005

Client:

Time: 11:45

Campus/Sites: Kenwood High

Est. Start:

Work Type:
Corrective Maintenance

Structures: Kenwood High

Primary Ph:

Description: Entire Grounds

Sq Feet: 0.00

Completed: 05/10/2005

Priority:

Requestor: Linda

Closed: 05/34

Emergency

Phone:

Hours: 1.25

Task Code: GM0401 - Doors, Exterior Repairs

Supervisor: Sr.Op.Sup. General Maint.

Pic_trade: GM - General Maintenance

Action Requested:

THE DOOR LOCK ON THE RAMP SIDE OF TRAILER. IF THE LATCH IS STUCK OUT AND WILL NOT GO BACK IN AND THE DOOR CANT BE SECURED

Employee	Date	T	Hours	Est'd Code / Description	Qty	Cost	Est'd
RICHARD WILKINSON	05/04/2005	RT	1.25	31.25			

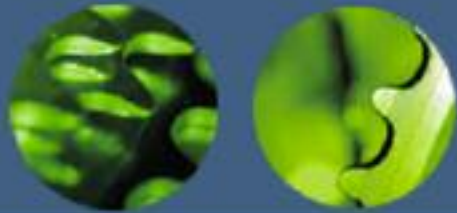
Total Hours:	1.25	Account:		Labor: \$	31.25
Last Printed:	05/27/2005	Ref #:		Other: \$	
Closed		User: GEP		Parts: \$	
				Total: \$	31.25

Signature: _____

Approved By: _____

Tech Report: _____

Inspected By: _____

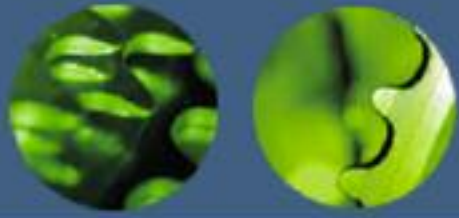


Work Order Completion Summary

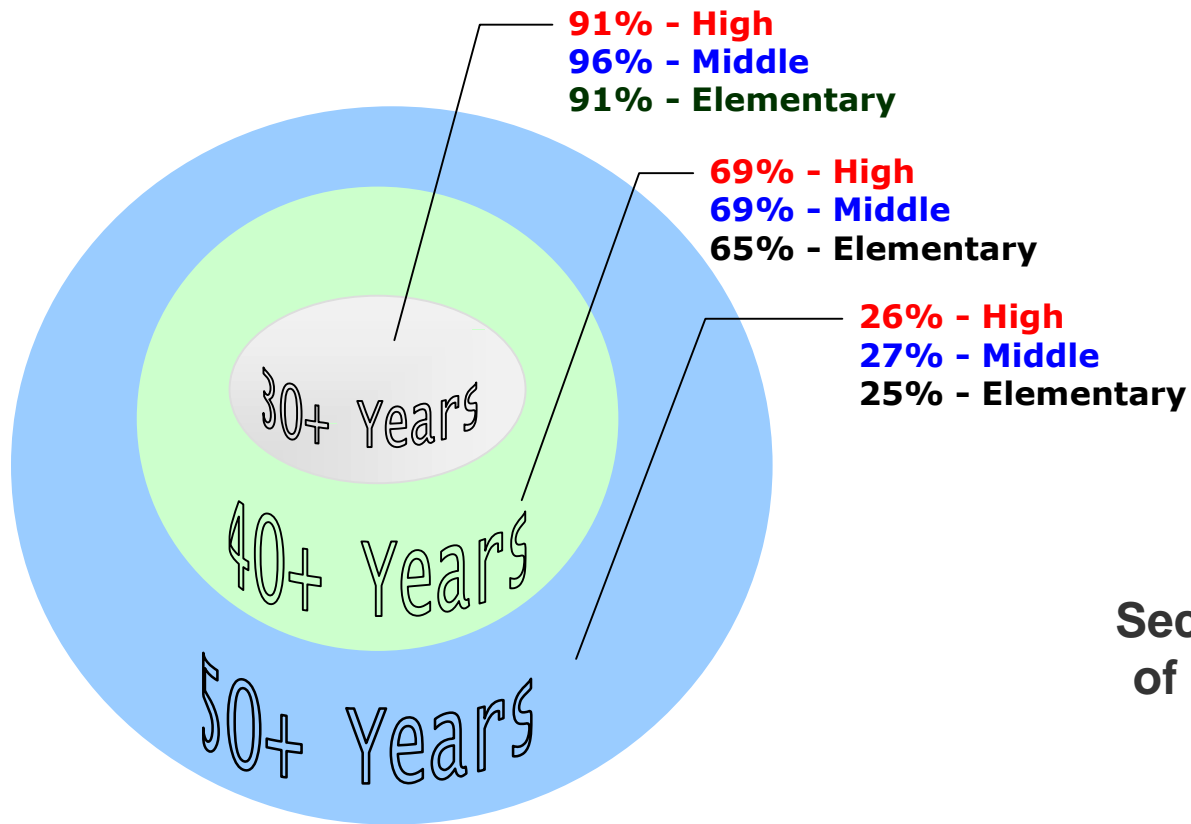
From 05/01/2005 To 05/27/2005
For the year - 2005

Baltimore County Public Schools			Physical Facilities		
Work Order Type	# Work Orders	Labor	Material	Other	Total
Corrective Maintenance	4	93.75	0.00	0.00	93.75
May Total:	4	93.75	0.00	0.00	93.75
2005 Total:	4	93.75	0.00	0.00	93.75
Report Total:	4	93.75	0.00	0.00	93.75

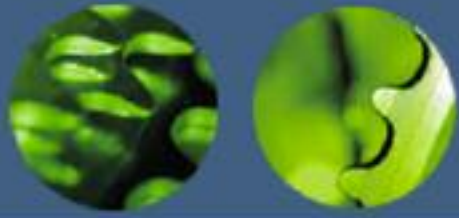
Work order
completion
summary



Inventory of Schools



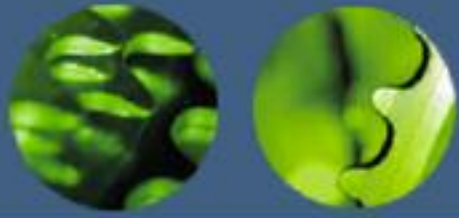
**Second Oldest Inventory
of Facilities in Maryland**



NATIONAL STANDARD FOR MAINTENANCE BUDGET

It is nationally recommended that 3% of the total school system's budget be allocated for building maintenance. *

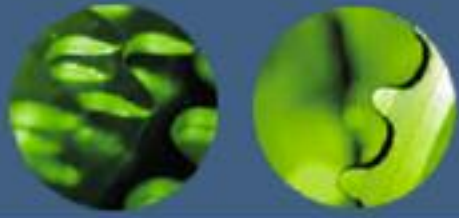
Secondly, EAI Consulting Inc. recommended to Frederick County a benchmark of 60,000 square feet per employee to effectively perform a preventive maintenance program.



MAINTENANCE

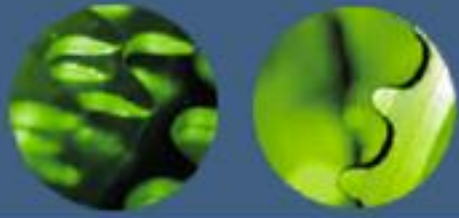
FOUR COUNTY COMPARISON

Frederick County
Prince George's County
Montgomery County
Baltimore County



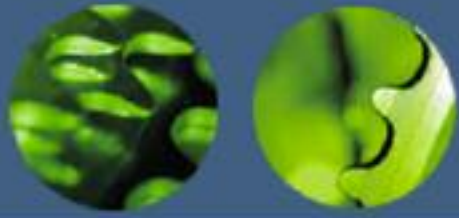
REGIONAL COMPARISON

- FCPS – 118 employees; 5.6 million square feet; 47,500 square feet per employee
- PGCPs – 311 employees; 20 million square feet; 64,000 square feet per employee
- MCPS – 353.5 employees; 22 million square feet; 62,000 square feet per employee
- BCPS – 150 employees; 15.5 million square feet; 103,000 square feet per employee



MAINTENANCE of PLANT BUDGETS FY05

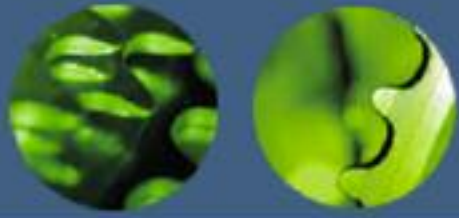
- **Frederick County - 60 schools
\$7.8 Million or 2.56% of total budget**
- **Prince George's County - 196 schools
\$22.2 million or 1.75% of total budget**
- **Montgomery County - 192 schools
\$24.9 million or 1.56% of total budget**
- **Baltimore County - 162 schools
\$11.6 million or 1.09% of total budget**



IF BALTIMORE COUNTY FUNDED AT 2.56%?

If the maintenance budget were 2.56% of the total budget, then Maintenance would receive \$27.7 million

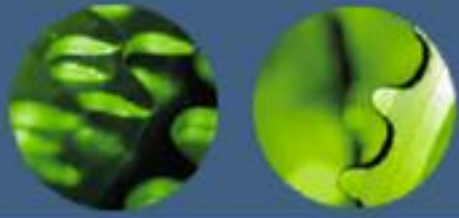
- 158 additional positions would bring the square footage average to 60,000 per employee**
- improve efficiency and appearance of all BCPS properties**
- add \$9.1 million to the supplies and materials account to purchase additional supplies and support the workforce**



SUMMARY

ISSUES

- **Aging School Inventory**
 - Average school age is over 45 years
 - Deferred maintenance results in component failures
- **Antiquated Mechanical Infrastructure**
 - HVAC systems and temperature controls
 - Boilers
- **Indoor Air Quality**
 - HVAC systems / filter replacements
 - Maintenance of a water-tight building (windows)



FILTER CHANGE RECOMMENDATION

Example - Franklin Middle School

Manufacturer of HVAC equipment – McQuay,
systemic renovation – 2004

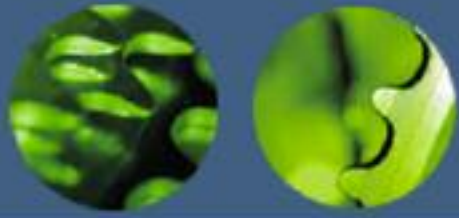
Recommended replacement – every 3 months

Cost per change - \$746

Annual cost - \$2,984

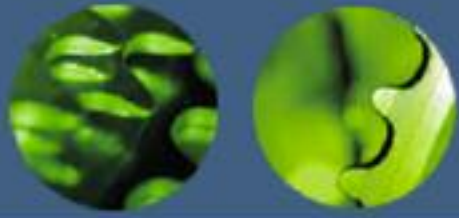
System-wide average annual cost - \$483,408

Current filter budget - \$120,000



PROPOSALS

- Continue Capital investment strategies
- Increase level of funding to 2% of Operating Budget by 2008
- Place greater emphasis on window replacement
- HVAC filters must meet manufacturers' recommended maintenance standards
- Improve response to stakeholders through CMMS



REFERENCES

- **Baltimore County Public Schools**
FY05 Adopted Budget; BCPS Website; Maintenance Procedures Manual
- **Prince George's County Public Schools**
PGCPS Website <http://www.pgcps.pg.k12.md.us>; FY05 Adopted Maintenance of Plant Budget
- **Montgomery County Public Schools**
MCPS website <http://www.mcps.k12.md.us/> ; FY05 Maintenance and Operation Manual
- **Frederick County Public Schools**
FCPS website <http://www.fcps.org/> ; FY05 Maintenance and Operation Manual
- **American School and University, 34th Annual M&O Cost Study, April 2005**
- **Schoolhouse in the Red, 2004 edition**
- **American School Business Journal, May 2005**