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.

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Appendix I: Department of Physical Facilities presentation
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.
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
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.
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.
New Town High School during construction
Southwest Academy before

Berkshire Elementary after
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 lifelong learners. Through these endeavors, the Office of Operations strives to provide a safe, clean, and attractive learning environment that promotes quality education.
Chief custodian replacing filter
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.
Card reader entry system at Glenmar Elementary School
Grounds Services

Baltimore County Public Schools

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 100,015 students.

Click on the subjects at right to view.
Maintenance crew patching parking lot at Cockeysville Service Center
Maintenance crew pruning and removing trees at Dulaney High
MAINTENANCE

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

Baltimore County Public Schools
Department of Physical Facilities
Meeting the Challenge of Leadership in the 21st Century

Office of Maintenance Services

MISSION...

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.

- FY05 - Personnel [150]

Search: [Search Bar]
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
Electrician installing underground wiring to parking lot lighting at Loch Raven High School
Recent installation of mixing valve at Ridgely Middle School
Masons repointing mortar joints at Dundalk Middle School
• Glaziers repairing a new broken window at Berkshire Elementary School
• No abatement needed; therefore, our mechanics can execute the repair
New air handler installation at Dundalk High School
Customer service desk: work requests are created in CMMS
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

Maintenance Work Orders
July 2004 - May 2005

Efficiency rate of 79 percent

BCPS
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
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Facilities work order for Kenwood High School
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.
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 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
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