

COMPREHENSIVE MAINTENANCE PLAN 2023



October 11, 2023

*Carroll County Public Schools
Westminster, Maryland 21157*

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COMPREHENSIVE MAINTENANCE PLAN

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SECTION 1

INTRODUCTION

Introduction

With the assistance, guidance, and support of the Maryland Public School Construction Program, the Board of Education of Carroll County has established an inventory of facilities that contains 4,277,287 square feet of space and has a replacement value of \$1,647,268,769. This represents an important and vital segment of the education process of Carroll County. It is the policy of the Board of Education to provide properly maintained and furnished school environments. This can only be accomplished through efficient, timely, and economical maintenance.

This plan identifies the objectives of the maintenance program and provides an overview of the scheduled maintenance of all buildings. This publication is also intended to meet the requirements of COMAR 14.39.02.17 and will be submitted to the Interagency Commission on School Construction (IAC).

In the sections that follow, elaboration and details are provided that are illustrative of the long-range planning for school building maintenance in Carroll County. We will continue to strive for improvement to the procedures and practices stated herein.

Purpose

This comprehensive maintenance plan is established to help identify, improve, and develop the facilities maintenance program of the Carroll County School System. Educational programs and services mandate that their instructional delivery be presented within educational facilities that provide a safe and healthy environment.

The mission of Facilities Maintenance and Operations is to ensure that the proper environment is provided while managing the efficient use of all resources.

Objectives of the Maintenance Program

The overall objective of the maintenance program is to maintain, throughout its expected useful life, the interior, and exterior of school buildings, the grounds and the roadways, and all fixed and moveable equipment through preventive maintenance and repairs. Further, this objective is specifically intended to provide:

- Buildings and their components, which function safely and at top efficiency.
- Facilities and equipment, which greatly minimize the possibility of fires, accidents, and safety hazards.
- Continuous use of facilities without disruptions to the educational program.
- Protection of public property through proper planning, scheduling, and preventive maintenance.
- Provide quality management of maintenance projects and tasks.
- Conservation of energy through utilization of the latest technology and energy conservation measures.
- Ensure a quality maintenance program through effective management and efficient utilization of resources.
- Provide the best indoor air quality possible by maintaining a physical environment that supports the needs of the instructional program, staff, students, other users, and visitors who use school facilities and grounds.

General Maintenance Methods

There are five (5) methods for performing required building and equipment maintenance that have proven to be cost-effective and are presently being utilized in the Carroll County School System. They include:

- Utilization of a centralized maintenance workforce.
- Effective use of facilities operations forces to perform preventive maintenance.
- Assignment of four highly trained preventive maintenance technicians.
- Assignment of full-time maintenance personnel at the high school level to perform daily maintenance tasks.
- Utilization of service contracts as needed.

SECTION 2

ORGANIZATIONAL STRUCTURE

Efficient school building maintenance requires an effective organizational structure. The following is an overview of the basic responsibilities of the Facilities Maintenance and Operations organization.

Facilities Maintenance – The maintenance department utilizes a centralized maintenance workforce consisting of multiple tradesmen to meet the mission of the maintenance department. Approximately 75% of our full-time maintenance personnel are assigned by a specific trade (electrician, plumber, mason, etc.), and 39% of those employees are cross-trained in several trades. Each of these tradesmen develop an in-depth familiarity with their respective assignments which includes the operation of equipment in each facility. The importance of having trained personnel who are highly capable and readily available constitutes many advantages regarding timely response and having facilities in a safe and ready condition for student use.

Maintenance personnel have the prime responsibility for building/equipment maintenance based on specific areas of responsibilities. The full-time centralized maintenance workforce provides the following services:

- Emergency response to power failures, plumbing, heating and air conditioning failures
- Monitoring energy management with state-of-the-art computerized system
- Interior and exterior painting
- Carpentry, electrical, plumbing, HVAC service, and minor roof repairs
- Grounds maintenance, mowing, snow removal, landscaping, etc
- Minor building modifications
- Vandalism repairs
- Maintenance and repairs to fire and security systems
- Hardware maintenance and repairs
- Utilization of a computerized maintenance management system

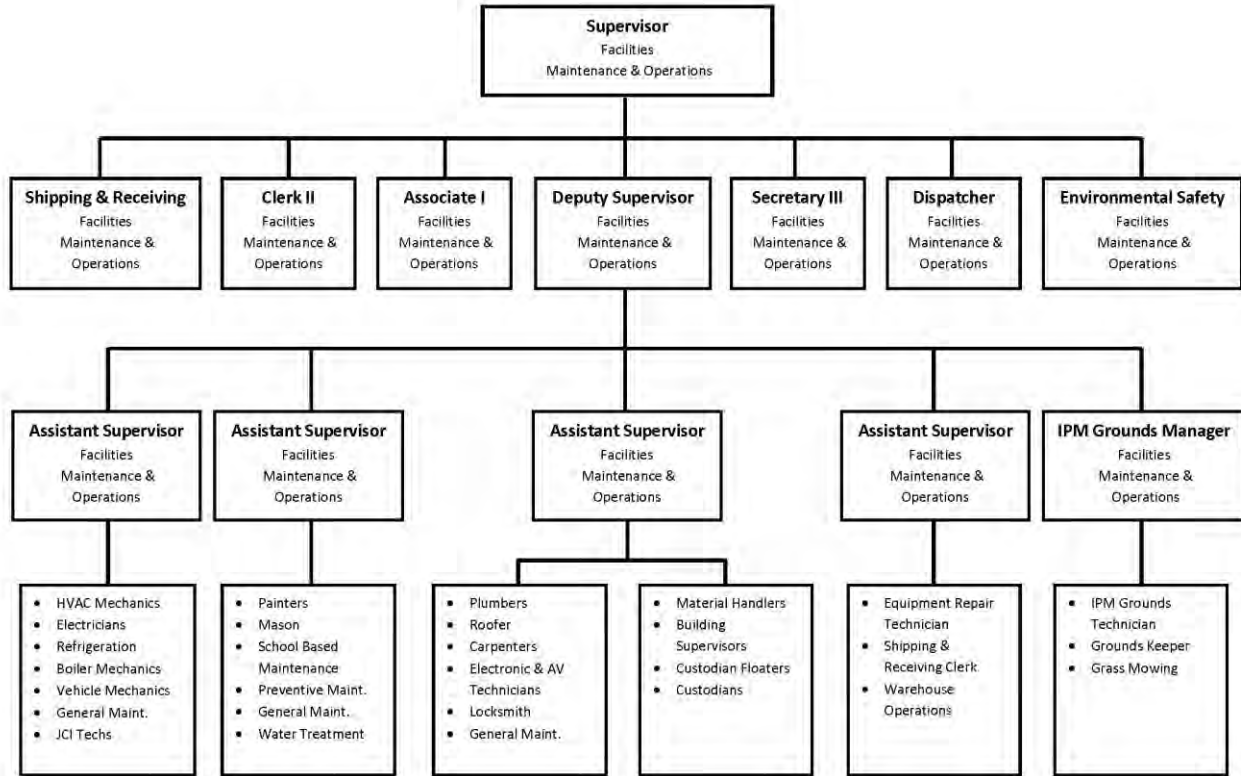
It should be noted that there are some maintenance areas in which contracted services supplement or have major responsibilities for building and/or equipment maintenance. In the cases where contracted services have traditionally been utilized, such services have proved to be cost effective.

The contracted services component relates to the following areas:

- HVAC chiller service
- Kitchen exhaust hoods, service, and inspection
- Elevator maintenance and inspection
- Energy management service
- Sprinkler systems maintenance and inspection
- Underground storage tank testing
- Fire extinguisher inspection and service
- Fire and security monitoring
- Bleacher and folding wall mount inspection
- Boiler inspection
- Water Treatment
- Fleet Tracking
- Grease Traps/Septic Systems
- Large Generators

Facilities Operations – Operations personnel provide assistance and service to the schools on a daily basis to perform custodial duties and minor preventative maintenance to the building equipment. Grounds maintained around the perimeter of the building is also the responsibility of Facilities Operations personnel assigned to the individual school. Typically, these services are primarily dedicated to cleaning and limited maintenance to promote a healthy and safe learning environment. However, the custodial personnel assigned to each school also can provide an invaluable service in identifying equipment malfunctions and building deterioration before either becomes a major problem.

Facilities Maintenance & Operations Organization



Maintenance Staff Positions		
Professional Positions		
Job Title	Job Description	QTY
Supervisor - Maintenance & Operations	Supervises the Maintenance & Operations Departments	0.5
Deputy Supervisor - Maintenance & Operations	Supervises the Asst Supervisors in the Maintenance & Operations Departments	0.5
Assistant Supervisor - Maintenance & Operations	Supervises a team of Maintenance Employees	2
Classified Staff		
Job Title	Job Description	QTY
Audio Visual Technician - Category IV	Service and repair to audio visual equipment (PA Systems)	1
Boiler Mechanic/ Gen'l Maintenance - Category III	Service, repair and preventive maintenance to Boilers	1
Boiler Mechanic - Category IV	Service, repair and preventive maintenance to Boilers	1
Building Maintenance Mechanic - Category II	School based general maintenance	1
Building Maintenance Mechanic - Category III	School based general maintenance	8
Carpenter / General Maintenance - Category III	Carpentry work for repairs and modifications at schools	2
Carpenter / General Maintenance - Category IV	Carpentry work for repairs and modifications at schools	2
Clerk II	Administrative tasks in the Maintenance Office	1
Dispatcher	Maintains the CMMS and dispatches the Maint. Employees per work order requests	1
Electrician / General Maintenance - Category IV	Electrical work for repairs and modifications at schools	4
Electronic System Tech / General Maintenance - Cat IV	Service and repair to electronic equipment (Fir Alarm etc.)	3
Facilities Maintenance & Operations Associate	Financial administrative tasks for the Maintenance & Operations Department	1
General Maintenance - Category II	General Maintenance tasks and provide support to all other trades	10
General Maintenance / Mechanic - Category II	General Maintenance tasks and provide support to all other trades	2
Grounds Services Manager	Manage grounds personnel	1
Groundskeeper / General Maintenance - Category III	Maintains grounds	1
HVAC Control Technician / General Maintenance	Service and repair HVAC equipment	2
HVAC Controls / General Maintenance IV	Service and repair HVAC equipment	3
IPM Grounds Technician	Maintains grounds	4
Lead Painter / General Maintenance - Category IV	Manage painters	1
Locksmith / Carpenter/ General Maintenance - Cat IV	Service and repair lock and key systems	1
Mason / General Maintenance - Category IV	Masonry work for repairs and modifications at schools	1
Painter / General Maintenance - Category II	Paint interior and exterior of school buildings	4
Plumber / General Maintenance - Category III	Plumbing work for repairs and modifications at schools	1
Plumber/General Maintenance - Category IV	Plumbing work for repairs and modifications at schools	2
Preventive / General Maintenance - Category III	Provide preventive maintenance support to all school buildings	4
Roofer / Carpenter - Category IV	Roof work for repairs and modifications at schools	1
Shipping & Receiving Clerk - Category III	Maintains stock and orders parts needed for repairs	1
Vehicle Mechanic / General Maintenance Category III	Service, repair and preventive maintenance to vehicles and mowers	1
Vehicle Mechanic / General Maintenance Category IV	Service, repair and preventive maintenance to vehicles and mowers	1

Operations Staff Positions		
Professional Positions		
Job Title	Job Description	QTY
Supervisor - Maintenance & Operations	Supervises the Maintenance & Operations Departments	0.5
Deputy Supervisor - Maintenance & Operations	Supervises the Asst Supervisors in the Maintenance & Operations Departments	0.5
Coordinator of Environmental Safety	Oversees all environmental safety needs in a school environment	1
Assistant Supervisor - Maintenance & Operations	Supervises a team of Maintenance Employees	2
Classified Staff		
Job Title	Job Description	QTY
Building Services Manager - Central Office	Supervises and schedules the custodial crew for the care of the Central Office Building	1
Building Supervisor - Category III	Supervises and schedules the custodial crew for the care of an assigned school.	32
Building Supervisor - Category IV	Supervises and schedules the custodial crew for the care of an assigned school.	8
Custodian - Category I	General cleaning and other custodial tasks at a assigned school.	170
Custodian - Equipment Repair Technician	Repair and maintain equipment used to clean and maintain school buildings.	1
Driver - Category III	Makes necessary deliveries to all school buildings.	4.6
Floater Custodian	General cleaning and other custodial tasks at a school that is short staff.	5
Groundskeeper / Custodian - Category I	Grounds keeping and landscaping tasks at a assigned school.	5
Secretary III	Provides administrative support to the Operations Department.	1
Shift Foreman - Category II	Supervises the custodial crew during their shift for the care of an assigned school.	9
Shipping & Receiving Clerk - Category III	Manages the shipping and receiving of products used at the schools by the custodial staff.	1

Staffing Trends

Facilities Maintenance and Operations have been able to maintain a safe and healthy school environment despite budget and staff limitations. This success can lead to the assumption that maintenance functions and budgets are adequate. Although the maintenance department has been highly effective in maintaining the facilities, there are limitations to the extent to which this can be accomplished. The following tables compares past and current staffing numbers with the American Physical Plant Association (APPA) suggested staffing ratios for Level 2 Comprehensive Stewardship and Ordinary Tidiness.

Maintenance Staffing

Fiscal Year	Square Feet of Facilities	Current Staffing	Current Staffing Ratio Per Sq. Ft.	APPA Suggested Staffing Ratio Per Sq. Ft.	APPA Suggested Staffing	Delta
2014	4,536,965	64	70,890	67,500	67	-3
2015	4,176,741	64	65,262	67,500	62	2
2016	4,176,741	64	65,262	67,500	62	2
2017	4,176,741	63	66,297	67,500	62	1
2018	4,176,741	63	66,297	67,500	62	1
2019	4,176,741	63	66,297	67,500	62	1
2020	4,176,741	63	66,297	67,500	62	1
2021	4,176,741	63	66,297	67,500	62	1
2022	4,176,741	63	66,297	67,500	62	1
2023	4,267,567	63	67,739	67,500	63	0
2024	4,277,287	63	67,893	67,500	63	0

Custodial Staffing

Fiscal Year	Square Feet of Facilities	Current Staffing	Current Staffing Ratio Per Sq. Ft.	APPA Suggested Staffing Ratio Per Sq. Ft.	APPA Suggested Staffing	Delta
2015	4,176,741	241	17,331	16,700	250	-9
2016	4,176,741	241	17,331	16,700	250	-9
2017	4,176,741	222.2	18,797	16,700	250	-28
2018	4,176,741	222.2	18,797	16,700	250	-28
2019	4,176,741	221	18,899	16,700	250	-29
2020	4,176,741	221	18,899	16,700	250	-29
2021	4,176,741	221	18,899	16,700	250	-29
2022	4,176,741	221	18,899	16,700	250	-29
2023	4,267,567	225	18,967	16,700	256	-31
2024	4,277,287	227	18,843	16,700	256	-29

SECTION 3

WORKFLOW

All requests for maintenance related work in school facilities is routed through the Facilities Maintenance Department in order to maximize the efficient use of our limited resources. Since 2010, we have utilized Schooldude Maintenance Direct as our Centralized Maintenance Management System (CMMS). In addition to the Maintenance Direct module, we also utilize the Preventative Maintenance, Inventory Direct, and Capital Forecast modules. We currently utilize the CMMS to track in-house work and some contracted services such as the work performed by Johnson Controls. We have been increasing the amount of contracted work captured in the CMMS and will continue to look to utilize this capability. Over the past few years, we have been increasing the amount of PM work orders that are generated automatically. We currently have 10,204 PM work orders generated automatically. Although the CMMS does have the ability to track asset inventory for all equipment in the system, our current workload has not allowed us to utilize this advantage of the CMMS.

The benefits of utilizing a CMMS are:

- Reduces work initiation by telephone and e-mail, thus providing faster service and more consistent execution
- Provides staff with a minimum of paperwork while maintaining a history of facility repairs and costs
- Provides feedback tracking information relative to recurring problems
- Enables supervisor to manage staff workloads
- Provides information to enable recording of job costs to assist management in future budget decisions, including planning of capital projects
- Assists in reaching objectives and meeting expectations
- Information data from this system is used to assist in setting capital and operational budget priorities

Work Order Request Process

Facilities Maintenance has three primary types of work requests.

- Facility Work Order Requests - These are generated by designated school facility staff at individual schools. Typical requests involve minor repairs, moving assistance, vandalism, etc.

- Planned Preventative Maintenance – These are generated by a pre-determined process. These tasks are based on time intervals, the results of the last preventative maintenance inspections, how long a piece of equipment has operated, or season environmental changes. Typical preventative maintenance tasks include annual fire alarm testing, annual roof inspections, automobile service every 5,000 miles, lawn equipment service, etc..
- Inspection Results – These are generated by inspections and are typically predictive or proactive replacement, repair, renovation or refurbishment resulting from methodical observation, testing, operational verification, and inspections.

Work Order Request Categories

Work order requests fall into three basic categories: emergency, urgent, and scheduled.

- Emergency – These requests are related to life safety systems (fire alarm, fire suppression, or egress), security, and situations that endanger or has the potential to endanger students or staff.
- High – These requests relate to the environment within the facility that may cause a significant deviation from the teaching and learning objectives.
- Medium – These requests are of a planned nature such as moving assistance, installation of new equipment, addition or relocation of electric, light fixture repairs, inspections, etc.

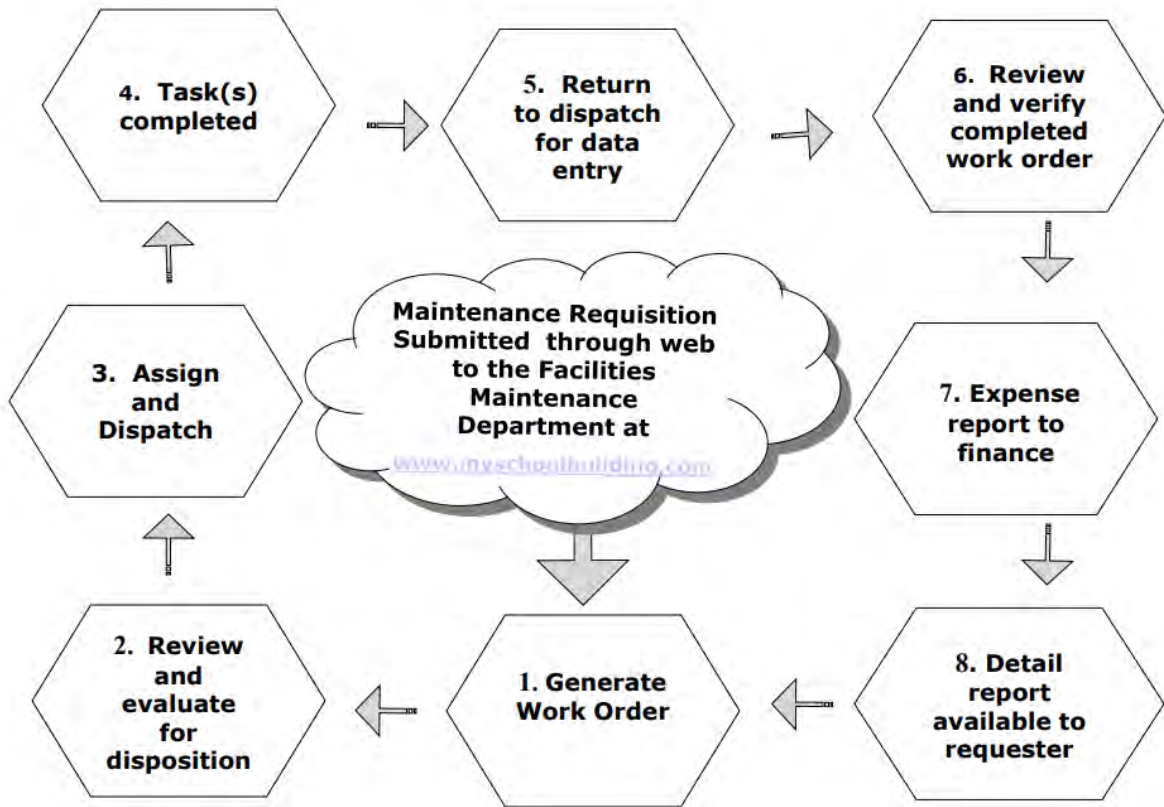
Work Order Flow

Review and Evaluate for Disposition - Work Order requests are received and reviewed by Maintenance Department supervisors who assign a status to the request. Depending on the scope of the request, maintenance supervisors will determine if work will be done in-house or contracted out.

Assign and Dispatch – Once a status has been assigned, the dispatcher will assign a start date, a completion date (if needed), dispatch the trades person to complete, and assign any request for supplies to the shipping/receiving clerk for disposition.

Task Completed – Once the trades person completes the actual work, the work order is returned to the dispatcher with all invoices attached.

Work Order Flow Chart



Facility Useability

The following charts indicate the number of facility days that a school facility could not support the delivery of the educational program due to system failures.

Facility Usability Metric			
PK-12 Facility	FY-23 Goal	FY-23 Actual	FY-24 Goal
Carrolltowne Elem	0	0	0
Cranberry Station Elem	0	0	0
Ebb Valley Elem	0	0	0
Eldersburg Elem	0	0	0
Elmer Wolfe Elem	0	0	0
Freedom District Elem	0	0	0
Friendship Valley Elem	0	0	0
Hampstead Elem	0	0	0
Linton Springs Elem	0	0	0
Manchester Elem	0	0	0
Mechanicsville Elem	0	0	0
Mt. Airy Elem	0	0	0
Piney Ridge Elem	0	0	0
Parr's Ridge Elem	0	0	0
Robert Moton Elem	0	0	0
Runnymede Elem	0	0	0
Sandymount Elem	0	0	0
Spring Garden Elem	0	0	0
Taneytown Elem	0	0	0
Westminster Elem	0	0	0
William Winchester Elem	0	0	0
Winfield Elem	0	0	0
East Middle	0	0	0
Mt. Airy Middle	0	0	0
North Carroll Middle	0	0	0
Northwest Middle	0	0	0
Oklahoma Road Middle	0	0	0
Shiloh Middle	0	0	0
West Middle	0	0	0
Century High	0	0	0
Francis Scott Key High	0	0	0
Liberty High	0	0	0
Manchester Valley High	0	0	0
South Carroll High	0	0	0
Westminster High	0	0	0
Winters Mill High	0	0	0
Carroll Springs School	0	0	0
Gateway School	0	0	0
CCC&T Center	0	0	0

Work Order Data

The following chart includes actual work order data from FY2023 and projected goals for FY2024.

Preventive Maintenance (PM)	FY-23 Goal	FY-23 Actual	FY-24 Goal
Total PM WOs opened	2000	10,204	10,300
% of PM WOs closed within 30 days	80%	84%	80%
Total staff hours spent on PM work	10,000	18,599	19,000
Total contractor hours spent on PM work	600	432	600
Total \$ spent on PM work by staff	\$300,000	\$440,596	\$500,000
Total \$ spent on PM work by contractors	\$250,000	\$195,000	\$250,000
% of all Maintenance hours spent on PM	16%	27%	26%
Corrective Maintenance (CM)	FY-23 Goal	FY-23 Actual	FY-24 Goal
Total CM WOs opened	6,500	7,203	7,000
% of CM WOs closed within 30 days	75%	86%	75%
% of CM Emergency or High Priority WOs	5%	5%	5%
Total staff hours spent on CM work	60,000	49,530	55,000
Total contractor hours spent on CM work	1,000	1200	1,500
Total \$ spent on CM work by staff	\$3,500,000	\$4,890,000	\$4,500,000
Total \$ spent on CM work by contractors	\$150,000	\$245,000	\$250,000
The mean time to repair the items for which a CM WO was opened	8	20	10
% of CM WOs entered by central-administration staff	40%	10%	25%
% of CM WOs entered by building-level staff	60%	90%	75%

Custodial Data

The following charts indicate the percentage of custodians properly trained and performing adequately.

Custodial	FY-23 Goal	FY-23 Actual	FY-24 Goal
% of Custodians trained on Custodial Scope of Work during the last two fiscal years	100%	100%	100%
% of custodial duties completed adequately (as assessed through the LEA's selected method of assessment and against the LEA's selected standard	100%	100%	100%

SECTION 4

BUDGET

This plan addresses the continuing effort to reduce the existing maintenance backlog through available funding programs. This is a challenge based on the fact that the maintenance operating budget has remained at the same level for the past decade. Since Fiscal Year 2013, the percentage of the maintenance operating budget dedicated for salaries has increased from 40% to 60% of the available dollars. As a result, the ability to do smaller maintenance projects within the operating budget has been severely impacted over the past decade. Additionally, the capital budget for most of the past decade was mainly focused on doing systemic renovations due to limited local funding availability. As a result of these funding limitations, the amount of deferred maintenance has increased over the last 10 years. Due to increased local capital funding availability and the passage of the Maryland Build to Learn Act, the amount of capital funding did increase significantly over the past few capital budgets. In order to continue to reduce the amount of deferred maintenance backlog, it is critical that the state and local capital funding reflect the needs of the system.

The chart below provides a summary of the previous and current maintenance operating budgets for Preventative and Corrective Maintenance, and the current amount of capital budget dollars utilized to address the deferred maintenance backlog.

	Industry Standard	Industry Standard per GSF	FY23 Budget	FY23 Budget per GSF	FY23 Actual	FY23 Actual per GSF	FY24 Budget	FY24 Budget per GSF
Preventative Maintenance	NA	NA	\$550,000	\$0.13	\$635,596	\$0.15	\$750,000	\$0.18
Corrective Maintenance	NA	NA	\$6,245,161	\$1.46	\$6,159,565	\$1.44	\$6,221,330	\$1.45
Deferred Maintenance (CIP Projects)	NA	NA	\$30,653,058	\$7.17	\$30,653,058	\$7.17	\$49,952,713	\$11.68
All Maintenance (CRV* x 3%)	\$49,418,063	\$11.55	\$37,448,219	\$8.76	\$37,448,219	\$8.76	\$56,924,043	\$13.31
Operations (CRV* x 1%)	\$16,472,688	\$3.85	\$16,375,957	\$3.83	\$16,552,796	\$3.87	\$18,700,057	\$4.37
M&O Combined (CRV* x 4%)	\$65,890,751	\$15.40	\$53,824,176	\$12.58	\$54,001,015	\$12.63	\$75,624,100	\$17.68

The industry standard for maintenance and operations expenditures is typically 4% of the Complete Replacement Value (CRV) of a facilities inventory. We were below this standard for FY2023 but are back above it in FY2024 due to the increased Capital Budget. It is critical that the level of capital funding remain close to the amount (adjusted for inflation) received in FY2024 in order to meet the maintenance needs of the system.

SECTION 5

PLANNED ACTIONS

Organizational Planning

In order to better utilize our CMMS, the Maintenance Department is instituting the following process changes:

1. Perform additional preventive maintenance tasks with maintenance personnel and track these tasks in our Computer Maintenance Management System (CMMS). Currently we provide our Building Supervisors at our schools a checklist containing both a list of equipment and devices that they should visually inspect and a list of preventive maintenance (PM) tasks to be completed on a set schedule. Our high schools have a maintenance employee assigned to that school that can handle these tasks. We do not have this person at our elementary and middle schools. We currently ask the Building Supervisors at these schools to do the visual checks and the PM's. The plan is to take the PM tasks that are currently scheduled for the Building Supervisors at our elementary and middle schools and have the maintenance department perform these tasks. This would serve two important purposes:
 - a. Allow the Building Supervisors at these schools to focus primarily on keeping the school buildings clean, disinfected, and safe for all occupants.
 - b. Better track all PMs with the CMMS. The current method does not track all the PMs that are being performed at the school in the CMMS. They are tracked with a spreadsheet file and filed at the school.
2. Continue the implementation of tracking our building automation contractor in our CMMS. We currently have PMs scheduled for our control system contractor using the CMMS. We need to improve on entering all the labor hours and material cost into the CMMS so that we have the most accurate data possible. We can also generate corrective maintenance work orders for the contractor. They can then assign one of their technicians to investigate and make any repairs needed at the school.

Project Planning

In order to support Pillar IV of the CCPS Strategic Plan, school facilities must be operated and maintained to preserve a safe and healthy learning environment over the life of the building. This is achieved through a combination of the routine maintenance activities funded by the operating budget and capital maintenance projects funded by the capital budget. The relationship between facility maintenance and capital investments is clearly defined and there is an understanding that good maintenance of building systems and equipment will defer or reduce the need for capital investment. It is also understood that well-timed and judicious use of capital investment should reduce the burden on

maintenance staff, time and resources while prolonging the life of the building. Both forms of investment are the best way to ensure better building performance, reduce the likelihood of building failures, and provide savings in operational and utility expenses. Most importantly these investments will ensure a safe and health learning environment.

The main purpose of this Comprehensive Maintenance Plan is to highlight information related to the operational budget, organization and staffing structure, and performance strategies of the Maintenance Department. It is mostly concerned with identifying the procedures and resources necessary to ensure that the routine maintenance activities are being performed sufficiently.

It is the 10 Year Educational Facilities Master Plan (EFMP) that identifies the capital needs of the system. The EFMP includes both school modernization projects and system replacement projects. The projects identified in the EFMP are funded through the Board of Education's annual Capital Budget request to the County and State.

Modernizations - Modernization projects address schools reaching the end of their useful life in a comprehensive manner. **The term "Modernization" refers to** the design, construction, and equipping process through which an aging facility is brought up to current educational standards and through which its systems are renewed and updated to meet current system, county, state and federal codes and requirements. In order to determine which schools are most in need of modernization, both physical and functional educational evaluations are required.

Physical Assessment - In 2005 the Board of Education hired the firm of EMG to do building condition assessments of all school facilities in the system. EMG observed the major building components and assessed their physical condition. Estimated repair and replacement costs were developed and compared against the replacement value of the school to develop a Facilities Condition Index (FCI). The 2008 FCI number was then used to compare and rank the physical condition of school facilities. In order to update the physical assessment scores for these schools, a new FCI score is calculated every three years.

Although the work of EMG was valuable in helping to document the physical condition of our schools, the information is over ten years old. In order to provide more current facility condition information and link it with our maintenance work order system, CCPS contracted with Schooldude to provide a more comprehensive solution. **Utilizing Schooldude's Capital Forecast web** application and its Life Cycle Modeling, new FCI scores were developed for school facilities. These FCI scores for schools constructed prior to 1980 were then converted to a 1,000 point scale so that they could be added to the functional scores to create a combined assessment score.

Functional Assessment - In 2008, Carroll County Public Schools staff conducted an Educational Assessment of all school facilities that were constructed prior to 1980. This assessment included evaluations done for specific program areas of the school buildings conducted by the appropriate Instructional Area Supervisors. In order to keep the functional assessment scores up to date, schools that receive capital improvements are reevaluated. The last update, which included a reevaluation of Eldersburg Elementary related to the Open Space Enclosure project, was completed in 2017.

This original assessment was limited to schools constructed prior to 1980 due to the large number of schools in that category. Since the time of the original assessment, two of these schools have been closed and two have been replaced with new buildings. At the same time, schools constructed during the eighties have continued to age. In order to consider these additional school buildings for modernization, an educational assessment of the schools constructed between 1980 and 1990 was conducted during 2022. As a result, the following schools have been added to the modernization priority list:

- Hampstead Elementary
- Manchester Elementary
- Mount Airy Elementary
- Sykesville Middle
- Liberty High

Combined Assessment Score - In order to get a comprehensive view of how well a building is meeting the current building and instructional needs both the physical and functional scores are combined into one overall score. The combined scores for schools constructed prior to 1990 are included in the following table.

COMBINED ASSESSMENT			
School	Physical Assessment Score	Functional Assessment Score	Total Score
Liberty HS	189	612	801
Mt Airy ES	336	747	1083
Westminster HS	485	663	1148
William Winchester ES	549	637	1186
Northwest MS	450	747	1197
Sykesville MS	594	694	1288
Westminster West MS	650	648	1298
Carrolltowne ES	504	806	1310
Westminster ES	580	760	1340
Hampstead ES	624	743	1367
South Carroll HS	587	786	1373
Manchester ES	620	781	1401
Eldersburg ES	619	813	1432
Freedom ES	690	791	1481
Robert Moton ES	658	826	1484

According to the combined scores, the top two candidates for modernization are Liberty High and Mount Airy Elementary. Liberty High has the lowest Physical score and lowest Functional score. Mount Airy Elementary has the second lowest Physical score but has the seventh lowest Functional score. The HVAC replacement at Mount Airy Elementary is currently being designed, and this project will raise the school’s Physical score. The lowest two Functional Scores, after Liberty High, belong to William Winchester Elementary and West Middle schools. Since these two schools share a campus, they should be considered for modernization together after Liberty High.

System Replacements - The average school building is expected to last a minimum of forty years before it receives a modernization. Although many of the systems that make up a school building may last for forty years, there are certain systems that must be replaced prior to modernization to keep the school in operation. Two of the larger systems that typically need replacing and are critical to the operation of a school are the roof and the heating, ventilation, and air conditioning (HVAC) systems. Due to the size of these systems, the replacement costs are too large to be able to adequately fund them in the operating budget. Therefore, these projects are prioritized annually based on age and condition and included in the annual capital budget requests to the County and State.

Roofs - Replacement of aging roofs is necessary to protect building structure, and to preserve the learning environment. Without a roof replacement program, aging roofs will continue to deteriorate allowing water to infiltrate building envelopes. This water infiltration will damage the structural roof deck, interior ceilings, floor and wall finishes, and building contents. Water infiltration can also create conditions which could lead to air quality issues within the building. Additionally, persistent leaks disrupt learning areas and interfere with the learning environment in the school. The plan includes a total of 6 roofs that need to be replaced over the next decade.

SCHOOL	ROOF TYPE	SQUARE FEET	DATE OF INSTALL	CURRENT AGE	EFMP SCHEDULED REPLACEMENT	AGE AT REPLACEMENT
North Carroll Middle	Shingle	68,000	2005	15	2024	19
Spring Garden Elementary	Single Ply	63,500	1991	29	2025	34
Oklahoma Road Middle	Single Ply	116,399	1997	23	2026	29
Shiloh Middle	TPO	116,250	2000	20	2027	27
Century High	Single Ply	135,000	2000	20	2028	28
Gateway	Shingle	30,300	2003	17	2029	26

HVAC – Due to the significant impact of temperature and indoor air quality on the learning environment, the HVAC system plays a critical role in the daily operation of a school building. Replacement of aging systems and equipment is required to continue to provide a comfortable and healthy learning environment. The industry standard for the replacement of most HVAC system components is in the 15–20 year timeframe. Most of these systems have exceeded their useful lives by over 10 -20 years.

School	HVAC Scope	Date of Installation	Scheduled Replacement (Summer)	Age at Replacement
Spring Garden Elementary	System Replacement	1991	2023	32
Oklahoma Road Middle	System Replacement	1997	2024	27
Mt. Airy Elementary	System Replacement	1987	2024	37
Carroll Springs	System Replacement	1981	2024	43
Carrolltowne Elementary	System Replacement	1976	2025	49
Northwest Middle	System Replacement	1976	2025	49
Piney Ridge Elementary	System Replacement	1991	2026	35
Friendship Valley Elementary	System Replacement	1992	2026	34
Liberty High	Modernization	1980	2027	47
Mechanicsville Elementary	System Replacement	1994	2027	33
Runnymede Elementary	System Replacement	1994	2027	33
Taneytown Elementary	System Replacement	1995	2028	33
Elmer Wolfe Elementary	System Replacement	1998	2028	30
South Carroll High	System Replacement	1998	2029	31
Eldersburg Elementary	System Replacement	1999	2030	31
Linton Springs Elementary	System Replacement	1998	2031	33
Cranberry Station Elementary	System Replacement	1999	2032	33
Francis Scott Key High	System Replacement	1999	2033	34

Routine Maintenance

In order to meet the objectives of the maintenance department, it is necessary that routine maintenance for building systems is scheduled and budgeted for. A regular schedule for these activities allows for the budgeting of these items to occur in a predictable way. The following schedules are utilized by the Maintenance Department for planning purposes. However, they are subject to revision when conditions mandate that a project be moved up or back in its schedule.

Maintenance Schedules

Roof Replacement	20 years (single ply); 30 years (Built Up)
HVAC Replacement	25 – 30 years
Paving Resurfacing	25 years
Painting – Exterior	10 years
Painting – Interior	10 years
Gym Floor Refinish	10 years
Track Resurface	10 years
Tennis Court Resurface	10 years

PLANNED MAINTENANCE PROJECTS (OPERATING BUDGET)

Scheduled Maintenance Projects	
FY-2024	Repair/Replace chiller comp. at Friendship Valley Ele.
	Replace fire alarm panel at Westminster Elementary
	Repair/Replace RTU #5 at Piney Ridge Elementary
	Repair/Replace Chiller comp. at Francis Scott Key
	Repair/Refinish Liberty High Main Gym
FY-2025	Repair/Refinish Shiloh Middle Gym Floor
	Repair/Refinish Mechanicsville Elem Gym Floor
	Repair/Resurface outdoor track at Liberty High
	Replace fire alarm panel at Carrolltowne Elementary
	Replace fire alarm panel at Liberty High
	Replace/Repair multiple HVAC units at North Carroll Middle
FY-2026	Repair/Refinish Linton Springs Elementary Gym Floor
	Repair/Refinish Mt. Airy Middle Gym Floor
	Repair/Refinish South Carroll High Aux Gym Floor
	Replace fire alarm panel at Piney Ridge Elementary
	Repair/Refinish Century High Tennis Courts
FY-2027	Repair/Refinish Liberty High Tennis Courts
	Repair/Refinish Liberty High Aux Gym Floor
	Repair/Refinish Winters Mill High Aux Gym Floor
	Replace fire alarm panel at Mechanicsville Elementary
	Replace P.A. System at Francis Scott Key High
FY-2028	Repair/Refinish Francis Scott Key High Tennis Courts
	Repair/Refinish Westminster High Aux Gym
	Repair/Refinish Manchester Valley High Gym Floor
	Replace fire alarm panel at Linton Springs Elementary
	Replace P.A. System at North Carroll Middle
FY-2029	Replace fire alarm panel at Elmer Wolfe Elementary
	Replace fire alarm panel at Runnymede Elementary
	Repair/Refinish Francis Scott Key High Aux. Gym Floor
	Replace fire alarm panel at Parr's Ridge Elementary

PLANNED MAINTENANCE PROJECTS (CAPITAL BUDGET)

Scheduled CIP Projects	
FY-2024	Oklahoma Road Middle HVAC Replacement
	North Carroll Middle Roof Replacement
	Liberty High Parking Lot
FY-2025	Spring Garden Roof Replacement
	Carroll Springs HVAC Replacement
	Mt. Airy Elementary HVAC Replacement
	Northwest Middle Parking Lot
	Francis Scott Key High Bus Loop
FY-2026	Oklahoma Road Middle Roof Replacement
	Carrolltowne Elementary HVAC Replacement
	Northwest Middle HVAC Replacement
	Runnymede Elementary Parking Lot
	Mechanicsville Elementary Parking Lot
FY-2027	Friendship Valley Elementary HVAC Replacement
	Piney Ridge Elementary HVAC Replacement
	Shiloh Middle Roof Replacement
	Winfield Elementary Parking Lot
	Mt Airy Elementary Parking Lot
FY-2028	Liberty High Modernization
	Mechanicsville Elementary HVAC Replacement
	Runnymede Elementary HVAC Replacement
	Century High Roof Replacement
	Manchester Elementary Parking Lot
	Spring Garden Elementary Parking Lot
FY-2029	Liberty High Modernization
	Taneytown Elementary HVAC Replacement
	Elmer Wolfe Elementary HVAC Replacement
	Gateway Roof Replacement
	Sandymount Elementary Parking Lot
	Taneytown Elementary Parking Lot

APPENDIX A

ROOF REPLACEMENT SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Carrolltowne ES	2018	5	2048	
Cranberry Station ES	2020	3	2050	
Ebb Valley ES	2008	15	2038	
Eldersburg ES	2000	23	2030	
Elmer Wolfe ES	2018	5	2048	
Freedom ES	2012	11	2042	
Friendship Valley ES	2017	6	2047	
Hampstead ES	2012	11	2042	
Linton Springs ES	2019	4	2049	
Manchester ES	2016	7	2046	
Mechanicsville ES	2015	8	2045	
Mt. Airy ES	2010	13	2040	
Parr's Ridge ES	2005	18	2035	
Piney Ridge ES	2017	6	2047	
Robert Moton ES	2018	5	2048	
Runnymede ES	2018	5	2048	
Sandymount ES	2019	4	2049	
Spring Garden ES	1991	32	2011	Single Ply (2024)
Taneytown ES	2014	9	2044	
Westminster ES	2016	7	2046	
William Winchester ES	2012	11	2042	
Winfield	2021	2	2051	
Middle Schools				
Mt Airy MS	2013	10	2043	
North Carroll MS	2005	18	2025	Shingle (2024)
Northwest MS	2002	21	2032	
Oklahoma Road MS	1996	27	2016	Single Ply (2025)
Shiloh MS	2000	23	2025	TPO (2026)
Sykesville MS	2007	16	2037	
Westminster East MS	2023	0	2053	
Westminster West MS	2013	10	2043	
High Schools				
Century HS	2000	21	2020	Single Ply (2027)
Francis Scott Key HS	2017	4	2047	
Liberty HS	2001	20	2031	
Manchester Valley HS	2009	12	2039	
South Carroll HS	2009	12	2039	
Westminster HS	2017	4	2047	
Winters Mill HS	2002	19	2032	
Other				
Career & Technology Center	2015	6	2045	
Carroll Springs	2014	7	2044	
Gateway	2003	18	2023	Shingle (2028)

More than 5 year past replacement cycle

1-5 years past replacement cycle

HVAC REPLACEMENT SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Carrolltowne ES	1976	47	2001	FY2026, Boilers (2012) Chiller (2016)
Cranberry Station ES	1999	24	2024	
Ebb Valley ES	2008	15	2033	
Eldersburg ES	1999	24	2024	
Elmer Wolfe ES	1998	25	2023	FY2029
Freedom ES	2005	18	2030	Heat Plant (2013)
Friendship Valley ES	1992	31	2017	FY2027
Hampstead ES	2011	12	2036	
Linton Springs ES	1998	25	2023	Chillers (2015)
Manchester ES	2015	8	2040	
Mechanicsville ES	1994	29	2019	FY2028
Mt. Airy ES	1987	36	2012	FY2025
Parr's Ridge ES	2005	18	2030	
Piney Ridge ES	1991	32	2016	FY2027
Robert Moton ES	2007	16	2032	
Runnymede ES	1994	29	2019	FY2028
Sandymount ES	2018	5	2043	
Spring Garden ES	2023	0	2048	
Taneytown ES	1995	28	2020	FY2029
Westminster ES	2003	20	2028	
William Winchester ES	2005	18	2030	
Winfield	2021	2	2046	
Middle Schools				
Mt Airy MS	2013	10	2038	
North Carroll MS	2005	18	2030	Cooling Tower Repairs (2020)
Northwest MS	1976	47	2001	FY2026
Oklahoma Road MS	1997	26	2022	FY2024
Shiloh MS	2000	23	2025	
Sykesville MS	2003	20	2028	
Westminster East MS	2023	0	2048	
Westminster West MS	2006	17	2031	
High Schools				
Century HS	2001	22	2026	Cooling Tower Repairs (2018)
Francis Scott Key HS	2012	11	2037	Cooling Tower (2011)
Liberty HS	1980	43	2005	Modernization (FY28)
Manchester Valley HS	2009	14	2034	
South Carroll HS	1998	25	2023	FY2030, Chiller (2012)
Westminster HS	2012	11	2037	
Winters Mill HS	2002	21	2027	Cooling Tower Repairs (2020)
Other				
Career & Technology Center	2023	0	2048	
Carroll Springs	1980	43	2005	FY2025, Chiller (2007)
Gateway	2003	20	2028	

More than 5 year past replacement cycle

1-5 years past replacement cycle

PAVING REPLACEMENT SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Carrolltowne ES	2010	13	2035	
Cranberry Station ES	1999	24	2024	
Ebb Valley ES	2008	15	2033	
Eldersburg ES	2015	8	2040	
Elmer Wolfe ES	1998	25	2023	
Freedom ES	2006	17	2031	
Friendship Valley ES	1991	32	2016	FY2030
Hampstead ES	2013	10	2038	
Linton Springs ES	2021	2	2046	
Manchester ES	1990	33	2015	FY2028
Mechanicsville ES	1994	29	2019	FY2026
Mt. Airy ES	1986	37	2011	FY2027
Parr's Ridge ES	2005	18	2030	
Piney Ridge ES	2007	16	2032	
Robert Moton ES	2021	2	2046	
Runnymede ES	1994	29	2019	FY2026
Sandymount ES	1992	31	2017	FY2029
Spring Garden ES	1991	32	2016	FY2028
Taneytown ES	1995	28	2020	FY2029
Westminster ES	2019	4	2044	
William Winchester ES	2015	8	2040	
Winfield	1992	31	2017	FY2027
Middle Schools				
Mt Airy MS	2013	10	2038	
North Carroll MS	2005	18	2030	
Northwest MS	1976	47	2001	FY2025
Oklahoma Road MS	1997	26	2022	
Shiloh MS	2022	1	2047	
Sykesville MS	1984	39	2009	Addition Project (FY2026)
Westminster East MS	2023	0	2048	
Westminster West MS	2014	9	2039	
High Schools				
Century HS	2001	22	2026	
Francis Scott Key HS	2015	8	2040	FY2025 (Bus Loop)
Liberty HS	2023	0	2048	
Manchester Valley HS	2009	14	2034	
South Carroll HS	2010	13	2035	
Westminster HS	2010	13	2035	
Winters Mill HS	2002	21	2027	
Other				
Career & Technology Center	1987	36	2012	Addition/Renovation
Carroll Springs	2015	8	2040	
Gateway	2003	20	2028	

More than 5 year past replacement cycle

1-5 years past replacement cycle

EXTERIOR PAINTING SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Carrolltowne ES	2022	1	2032	
Cranberry Station ES	2017	6	2027	
Ebb Valley ES	2022	1	2032	
Eldersburg ES	2016	7	2026	
Elmer Wolfe ES	2019	4	2029	
Freedom ES	2022	1	2032	
Friendship Valley ES	2016	7	2026	
Hampstead ES	2016	7	2026	
Linton Springs ES	2017	6	2027	
Manchester ES	2013	10	2023	
Mechanicsville ES	2013	10	2023	
Mt. Airy ES	2012	11	2022	
Parr's Ridge ES	2014	9	2024	
Piney Ridge ES	2014	9	2024	
Robert Moton ES	2014	9	2024	
Runnymede ES	2014	9	2024	
Sandymount ES	2013	10	2023	
Spring Garden ES	2014	9	2024	
Taneytown ES	2017	6	2027	
Westminster ES	2016	7	2026	
William Winchester ES	2021	2	2031	
Winfield	2023	0	2033	
Middle Schools				
Mt Airy MS	2013	10	2023	
North Carroll MS	2017	6	2027	
Northwest MS	2017	6	2027	
Oklahoma Road MS	2013	10	2023	
Shiloh MS	2020	3	2030	
Sykesville MS	2010	13	2020	
Westminster East MS	2023	0	2033	New School
Westminster West MS	2021	2	2031	Installed soffit
High Schools				
Century HS	2010	13	2020	FY24 Caulk exterior
Francis Scott Key HS	2022	1	2032	
Liberty HS	2017	6	2027	
Manchester Valley HS	2009	14	2019	
South Carroll HS	2016	7	2026	
Westminster HS	2012	11	2022	Mulitple sections over time
Winters Mill hS	2012	11	2022	FY24 Caulk exterior
Other				
Career & Technology Center	2023	0	2033	New School
Carroll Springs	2011	12	2021	
Gateway	2023	0	2033	

More than 5 year past replacement cycle

1-5 years past replacement cycle

INTERIOR PAINTING SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Carrolltowne ES	2022	1	2032	
Cranberry Station ES	2020	3	2030	
Ebb Valley ES	2020	3	2030	
Eldersburg ES	2015	8	2025	
Elmer Wolfe ES	2020	3	2030	
Freedom ES	2022	1	2032	
Friendship Valley ES	2014	9	2024	
Hampstead ES	2017	6	2027	
Linton Springs ES	2020	3	2030	
Manchester ES	2013	10	2023	
Mechanicsville ES	2015	8	2025	
Mt. Airy ES	2014	9	2024	
Parr's Ridge ES	2016	7	2026	
Piney Ridge ES	2023	0	2033	
Robert Moton ES	2014	9	2024	
Runnymede ES	2016	7	2026	
Sandymount ES	2023	0	2033	
Spring Garden ES	2012	11	2022	
Taneytown ES	2019	4	2029	
Westminster ES	2017	6	2027	
William Winchester ES	2014	9	2024	
Winfield	2023	0	2033	
Middle Schools				
Mt Airy MS	2013	10	2023	
North Carroll MS	2016	7	2026	
Northwest MS	2017	6	2027	
Oklahoma Road MS	2017	6	2027	
Shiloh MS	2021	2	2031	
Sykesville MS	2017	6	2027	
Westminster East MS	2023	0	2028	
Westminster West MS	2021	2	2031	
High Schools				
Century HS	2023	0	2033	
Francis Scott Key HS	2022	1	2032	
Liberty HS	2017	6	2027	
Manchester Valley HS	2009	14	2019	
South Carroll HS	2012	11	2022	
Westminster HS	2012	11	2022	Multiple sections over time
Winters Mill HS	2012	11	2022	
Other				
Career & Technology Center	2023	0	2033	2024 Addition/Renovation
Carroll Springs	2017	6	2027	
Gateway	2013	10	2023	

More than 5 year past replacement cycle

1-5 years past replacement cycle

WOOD GYM FLOOR SCHEDULE

School Name	Last Replacement	Current Age	Scheduled Replacement	Notes
Elementary Schools				
Elmer Wolfe ES	2020	3	2030	
Linton Springs ES	2015	8	2025	FY2026
Manchester ES	2018	5	2028	
Mechanicsville ES	2011	12	2021	FY2025
Parr's Ridge ES	2022	1	2032	
Middle Schools				
Mt Airy MS	2013	10	2023	FY2026
North Carroll MS	2018	5	2028	
Northwest MS	2023	0	2033	
Oklahoma Road MS	2021	2	2031	
Shiloh MS	2012	11	2022	FY2025
Sykesville MS	2020	3	2030	
Westminster East MS	2023	0	2033	
Westminster West MS	2022	1	2032	
High Schools				
Century HS (Main Gym)	2022	1	2032	
Century HS (Aux Gym)	2018	5	2028	
Francis Scott Key HS (Main Gym)	2021	2	2031	
Francis Scott Key HS (Aux Gym)	2016	7	2026	FY2029
Liberty HS (Main Gym)	2016	7	2026	FY2024
Liberty HS (Aux Gym)	2014	9	2024	FY2027
Manchester Valley HS (Main Gym)	2016	7	2026	FY2028
South Carroll HS (Main Gym)	2019	4	2029	
South Carroll HS (Aux Gym)	2013	10	2023	FY2026
Westminster HS (Main Gym)	2020	3	2030	
Westminster HS (Aux Gym)	2013	10	2023	FY2028
Winters Mill HS (Main Gym)	2023	0	2033	
Winters Mill HS (Aux Gym)	2013	10	2023	FY2027
Other				
Carroll Springs	1980	43	1990	

More than 5 year past replacement cycle

1-5 years past replacement cycle

TENNIS COURT RESURFACING SCHEDULE

School Name	Install/ Resurface Date	Current Age	Scheduled Resurface	Notes
High Schools				
Century HS	2012	11	2022	FY26
Francis Scott Key HS	2015	8	2025	FY28
Liberty HS	2015	8	2025	FY27
Manchester Valley HS	2022	1	2032	
South Carroll HS	2020	3	2030	
Westminster HS	2022	1	2032	
Winters Mill HS	2023	0	2033	

More than 5 year past replacement cycle

1-5 years past replacement cycle

TRACK RESURFACING SCHEDULE

School Name	Install/ Resurface Date	Current Age	Scheduled Resurface	Notes
High Schools				
Century HS	2023	0	2033	
Francis Scott Key HS	2022	1	2032	
Liberty HS	2017	6	2027	FY2025
Manchester Valley HS	2022	1	2032	
South Carroll HS	2022	1	2032	
Westminster HS	2021	2	2031	
Winters Mill HS	2020	3	2030	

More than 5 year past replacement cycle

1-5 years past replacement cycle

APPENDIX B

PREVENTIVE MAINTENANCE PROGRAM

Preventive maintenance (P.M.) generally refers to routine inspections, adjustments, lubrication and cleaning of fixed and movable equipment, machinery and appliances utilized in the daily operation of a facility. Performing regular routine preventive maintenance keeps equipment in good running order, reducing the possibility of equipment failure thus insuring and extending expected equipment life. Through regular preventive maintenance, potential problems can be detected early, reducing down time and preventing repairs that are more expensive.

The performance of routine preventive maintenance in each school facility is the responsibility of the Building Supervisor. The following document is designed to give building supervisors the guidance necessary to perform basic routine P.M. checks and tasks.

It is the responsibility of the Building Supervisor to see that these P.M. tasks are performed and properly recorded on the appropriate check sheet. As with other assignments, the building supervisor may desire to delegate some of the tasks to subordinate employees. The original check sheet shall be posted at a visible location in the Building **Supervisor's office**. Completed reports shall be forwarded to the Supervisor of Facilities Maintenance and Operations by the 10th of each month. The reports expected at that time include the daily, weekly, and monthly check sheets. The quarterly and annual check sheets are to be forwarded by the 10th of the month following the conclusion of the performance period.

Problems found during the P.M. inspections should be noted in the **inspector's comments section on each check sheet**. **Problems that cannot be** repaired by the Building Supervisor or his/her designee should be reported to the Supervisor of Facilities Maintenance and Operations, either by an electronic Maintenance Requisition or by telephone if considered an emergency.

Check sheets require either a visual inspection, a specific task to be performed or the recordation of information. The majority of the routing inspections are primarily visual inspections, which should be incorporated **into the Building Supervisor's daily travels throughout the school facility**.

Building Supervisor's Preventive Maintenance

<u>Equipment</u>	<u>Interval</u>	<u>Maintenance Checks and Duties</u>	<u>Comments</u>
Air Compressors	Daily Daily Daily Monthly Quarterly Quarterly	Check for proper operation Drain moisture from separators Drain moisture from tank Check oil level Check V-belt tension Clean filter intake	Tank pressure/all compressors run Drain till moisture disappears Drain till moisture disappears Adjust level as needed Adjust level as needed Adjust belt with 2" flex Wash or blow out as required
Air Conditioning	Daily Weekly Monthly Quarterly Annually	Check operation Check cooling towers Check air cooled condensers Check- adjust V-belts Clean A/C coils	Cooling properly Fan running/water level proper All fans run/coils clean Adjust belts with 2" flex Vacuum/wash finned coils
Air Handlers	Quarterly Quarterly Quarterly Quarterly Quarterly	Lubricate bearings Check air filters Check roll filters Lubricate motors Check V-belts	Use 4 to 6 pumps of grease Change as needed Change as needed Oil and lube sparingly Adjust belt with 2" flex
Bleachers	Weekly Monthly Annually	Check operation and alignment Inspect units for damage and loose parts Clean and lubricate undercarriage assembly	Repair or report all problems Repair or report all problems Grease slides/lube rollers
Boilers: Hot Water Steam Boiler	Daily Daily Daily Weekly	Check water temp & water pressure Check water level,, blow sight glass, water feeder and mud legs Check for oil leaks Boiler air pumps - check oil reservoir	Temp 12 - 200 / Pres 12-25 lbs. Check for proper level Blow out till water is clear Repair or report promptly Fill with special oil only
Buildings	Daily Daily Weekly	Check all windows and doors Check all fire and safety devices Check interior and exterior of building	Repair or report all damage Repair or report all problems Repair or report all problems
Circulating Pumps	Daily Weekly Quarterly Quarterly	Check operation Lead-lag sequence/rotate pumps Check couplings Lubrication	Running & pump discharge pressure Manually switch pumps Not loose or slipping Oil and lube sparingly
Electric Motors	Weekly Quarterly Quarterly	Check operation Lubricate Clean air over vents	They run, not noisy or overheating Oil and lube sparingly Clear all dirt from motor
Emergency Lights	Weekly Weekly	Check emergency light operation Check battery water level	Repair or report all problems Add distilled water if needed
Exhaust Fans	Monthly Quarterly Quarterly	Check motors and operation Lubrication Check V-belts	Motors run/fan moves air Oil and lube sparingly Adjust belt with 3/8" flex
Fire extinguishers	Monthly Annually	Check fire extinguisher Inspect and re-tag fire extinguishers	If low have extinguisher refilled Re-tag fire extinguisher if OK

Grounds	Daily Monthly Quarterly	Check grounds for safety and security Check all storm drain for debris Check all playground equipment for safety	Repair or report all problems Clean or clear as required Repair or report all problems
Heating Equipment	Daily Weekly Monthly Quarterly	Check equipment operation Check time clocks Check night set-back controls Check air filters	Units run and heat properly Set correct time-check day pins Night - stat temperature set @ 44 Change as needed
Hot Water Heater	Daily Monthly	Check water temperature Drain bottom of tank	Use gauge or thermometer Blow out till water is clear
Lighting	Daily Weekly Weekly	Check all interior lights Check all exterior lights Check time clocks	Replace bulbs - ballasts as needed Replace bulbs - ballasts as needed Set correct time/check pins
Plumbing	Daily Daily	Check all lavatory flush valves Check equipment operation	Work properly/not running Work properly/not dripping
Refrigeration Equipment	Daily Daily	Check temp. on all refrigerated equipment Check equipment operation	(Record- Cooler Temp, 40-45 F. (Record -Freezer Temp, 0-5 F. Runs O.K./not short cycling
Water Coolers	Weekly Annually	Check for cooling operation Clean condenser coils	Water Temperature - 40-45 F Vacuum finned air coils

APPENDIX C

*BOILER AND
PRESSURE VESSEL*



LOG BOOK

Facilities Maintenance
48 Monroe Street
Westminster, MD 21157
(410) 751-3199

PREFACE

Boiler and Pressure Vessel Log Book For Carroll County Public Schools

The purpose of this logbook is to provide a history of when each boiler and pressure vessel in each facility was last inspected and what the condition of each device was at the time of each inspection. This record will provide Facilities Maintenance personnel as well as the Boiler Inspector with the history of each piece of equipment at a glance. This will also serve as an evaluation tool in determining that all violations or corrective action has been addressed after the Boiler Inspector's official notification to Facilities Maintenance.

It is the Building Supervisor's responsibility to assure that the boiler inspector fills in the logbook each time an inspection is performed.

CARROLL COUNTY PUBLIC SCHOOLS
FACILITIES MAINTENANCE & OPERATIONS
48 Monroe Street
Westminster, MD 21157
Telephone: 410-751-3199
Fax: 410-751-3228

BOILER AND PRESSURE VESSEL
INVENTORY LOG

SCHOOL LOCATION _____ DATE RECORDED _____

EQUIPMENT TYPE (ie; Boiler, Chiller, Hot Water Heater, Air Compressor, and Steamer)

UNIT DESCRIPTION (TYPE) _____

If Modular (No. of Modules) _____

UNIT CAPACITY (Output in BTU/HR) _____

Primary Voltage _____ Secondary Voltage _____ Control _____
Voltage

UNIT IDENTIFICATION

Manufacturer Model # _____ Year Built _____

ASME # _____ Nat. Bd _____

UL# _____ AGA# _____

STATE ID# _____

BURNER

Manufacturer _____ Model _____

UL or AGA# _____ Serial # _____

FUEL TYPE _____

UNIT MANUFACTURER

Name _____

Address _____ Zip _____

Telephone _____ Fax _____

STEAM

Max W.P. _____ psig

Min Safety Valve Cap _____ PPH

HOT WATER

Max W.P. _____ psig

Max temp. _____ deg. F

Min. Safety Relief Valve Cap _____ PPH or Btu

BOILER AND PRESSURE VESSEL INVENTORY LOG (Continued)

CONTROL/DEVICE	MANUFACTURER	MODEL #	TEST PERFORMED DATE
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Operating Controls

Low-Water Fuel cutoff	_____	_____	_____
Steam Pressure	_____	_____	_____
Water Temperature	_____	_____	_____
High/Low Fire	_____	_____	_____
Summer/Winter Control	_____	_____	_____
Pressure Switch	_____	_____	_____

Safety Controls

Low-Water Fuel Cutoff	_____	_____	_____
High Steam Pressure Limit	_____	_____	_____
High Water Temperature Limit	_____	_____	_____
Fuel Safety Shutoff Valve	_____	_____	_____
Pilot Safety shutoff Valve	_____	_____	_____
Combustion Air Proof Switch	_____	_____	_____
High Gas Pressure	_____	_____	_____
Low Gas Pressure	_____	_____	_____
Flame Safeguard (primary)	_____	_____	_____
Oil Failure	_____	_____	_____

SAFETY RELIEF VALVE

Manufacturer _____
 Model _____
 Size - Inches _____ Size _____
 Capacity _____ PPH or Btu/hr
 Relieving Pressure _____ Psi

SAFETY RELIEF VALVE

Manufacturer _____
 Model _____
 Inches _____
 Capacity _____ PPH or Btu/hr
 Relieving Pressure _____ Psi

FUEL TANK

Type _____ Size _____

INSPECTOR'S NAME/CO.	INSPECTION DATE	EQUIPMENT NUMBER	EQUIPMENT NAME	PRESENT CONDITION	COMMENTS

APPENDIX D

PLEASE NOTE:

The responsibilities for environmental issues described in the following pages are assigned as follows:

FACILITIES OPERATIONS

- All disposal activities including hazardous materials and medical waste
- Special cleaning – fume hoods, waste traps, and welding stations
- Generation of hazardous material reports to the EPA and MDE on a two-year schedule
- Water testing requirements based on the Clean Drinking Water Act and the Lead and Copper Act for all schools on private water systems
- All indoor air quality investigations with remedial work coordinated with the Maintenance Department
- All regulatory requirements for the Asbestos Hazardous Emergency Response Act
- Lead testing for drinking water
- Radon testing

FACILITIES MAINTENANCE

- Indoor air quality remedial action including carpeting, heating, ventilation, and air conditioning

ADMINISTRATIVE PROCEDURES FOR WATER SAMPLING

INTRODUCTION

The 1974 Safe Water Drinking Act was enacted by Congress and has bound the United States Environmental Protection Agency (EPA) to ensure that potable water sources are supplied to the public. Further obligations have been enacted through passage of the 1988 Lead Contaminant Control Act and the 1991 Lead and Copper Rule.

PURPOSE

The establishment of a local standard for implementation by the school system in the testing of a potable water source to detect contaminants is the purpose of this undertaking. Compliance with directives of the EPA (as well as those printed in The Federal Register and The Maryland Register) for the Safe Water Drinking Act and subsequent amendments shall be accomplished in the following manner:

- A. Facilities Operations is charged with the responsibility of contracting with a vendor laboratory (licensed by the State of Maryland) to collect water samples and perform tests. Results of water sample tests will be forwarded by the laboratory directly to Maryland Department of the Environment (MDE) and Plant Operations. A copy of the water sample results will be forwarded to each affected school.
- B. Facilities Operations shall assist with acquiring the certification for the water plant operator as required by the State of Maryland for each school having an on-site well.
- C. The water plant operator will be responsible for the daily operation of the water system, record keeping reflecting the operation and maintenance of the system and communication of water system problems with Facilities Maintenance and Operations. The water plant operator will also be provided with a copy of water test results and will retain a copy of all analyses of water sample tests collected at the individual schools.
- D. Completed report shall be forwarded to the Supervisor of Facilities Maintenance and Operations by the 10th of the following month.
- E. In accordance with requirements set forth by EPA and MDE water samples are collected. Additional requests for water sampling shall be made directly to Facilities Maintenance and Operations.
- F. Should sampling results indicate the presence of contaminants above the permitted level, Facilities Maintenance and Operations shall develop an action plan for communication to the affected school, the Health Department, the public and MDE.

ADMINISTRATIVE PROCEDURES FOR HAZARDOUS WASTE DISPOSAL

INTRODUCTION

The proper disposal of hazardous waste is a concern to be shared by all school system personnel. This concern requires participation not only to be borne by numerous organizations but also accomplished by individual employees of these organizations. The United States Environmental protection Agency (EPA) has established certain rules and regulations for identification, storage, and disposal of hazardous waste since improper disposal can cause pollution of water, air and soil as well as cause harm to individuals and wildlife.

PURPOSE

The establishment of a local standard (for implementation by the school system in identifying hazardous waste product and ensuring their proper shipment, handling and disposal) is the purpose of this undertaking. Compliance with directives of the EPA as well as those printed in The Federal Register and The Maryland Register shall be accomplished in the following manner:

- A. Facilities Maintenance and Operations is charged with the responsibility of assisting school system administrators in identifying hazardous materials and ordering their disposal. As the list of hazardous materials is enumerated by the EPA, Maryland Department of the Environment (MDE) and/or other agencies, communication will be issued by the Coordinator of Environmental Safety designated with the responsibility for coordinating activities for the removal of hazardous waste.
- B. The Coordinator of Environmental Safety shall engage the services of a disposal contractor (licensed by the state of Maryland) to package the hazardous material for shipment and to insure that a manifest is prepared noting the point of shipment and the receiving site(s) for disposal of hazardous waste.
- C. A file on the disposal of all hazardous material shall be maintained in the Facilities Operations office by the Coordinator of Environmental Safety.

- D. MDE will be advised of each disposal action and supply a copy of each manifest showing the origin of the hazardous material and description of its composition.
- E. To address the ongoing removal requirements at the Facilities Maintenance site, each high school and the Career and Technology Center, a site-specific number (as issued by EPA) will be secured, used continuously, and referenced in all disposal documents.
- F. The Coordinator of Environmental Safety will coordinate with cost center administrators and particularly with the Supervisor of Science, Facilities Maintenance and Operations, and Career and Technology Centers to maintain a thrust to seek out alternative materials that hold potential to be less likely classified as hazardous materials.
- G. MDE will be supplied annually (by the Coordinator of Environmental Safety) with a list of the quantities and composition of hazardous materials removed, the receiving disposal site (s) and other information as may be requested by MDE.

ASBESTOS MANAGEMENT PROGRAM

Contact: Supervisor of Operations

The documentation and removal of asbestos containing building materials in Carroll County School buildings shall comply with the standards set forth in EPA (Environmental Protection Agencies), A.H.E.R.A. (Asbestos Hazard Emergency Response Act), as published in the C.F.R. (Code of Federal Register) October 1987.

The A.H.E.R.A rule requires that a certified EPA building inspector inspect all schools. The engineering firm of Spotts, Stevens, and McCoy performed the initial inspection of all Carroll County Schools.

In addition to the initial inspection required by A.H.E.R.A. there is to be a six-month surveillance inspection performed to note any changes in the condition of the known friable-non-friable asbestos materials.

The A.H.E.R.A. rule also requires a three-year follow-up inspection to be performed by an EPA certified inspector.

Unless otherwise noted, all inspections shall be performed by a consulting firm specializing in A.H.E.R.A rules and regulations.

The documentation of all asbestos material condition, location, and amounts will be recorded in the Asbestos Management Plan prepared for each designated school building owned or leased by the Carroll County Board of Education. Copies of the plans will be available at each school and at Plant Operations.

The management plan is updated because of the six-month inspection findings, three-year inspection findings, and any removal activities conducted at the school.

The management plans are to be available for review of any interested parties upon request. Copies are available for a fee. However, the plans are not to be removed from the school's **office**.

A designated industrial hygienist company will take the monitoring of all indoor air quality and final air sample results.

There will be provided a summary of the asbestos project to the school upon completion. This summary will be included and become part of the management plan for the school where the removal activities took place.

The A.H.E.R.A. rule further requires that all school PTA, PTO and union bargaining groups be notified on a yearly basis of the availability of the management plans and/or any asbestos project planned or accomplished during the year. Plant Operations will perform the notification requirement with a copy sent to all schools **for inclusion on the school's management plan. Any questions relating to compliance with the A.H.E.R.A rule should be directed to the Facilities Operations office.**