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**CAPITAL IMPROVEMENT PLAN  
2009-2019**

**Major Mechanical and Maintenance Projects**

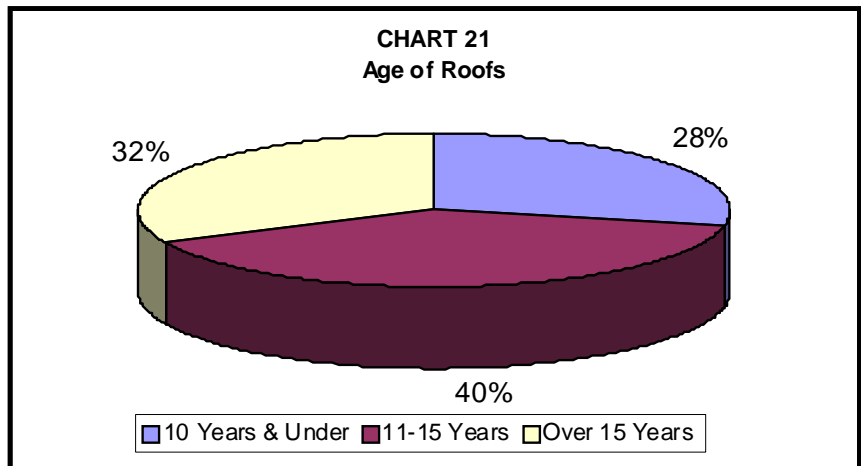
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**BACKGROUND**

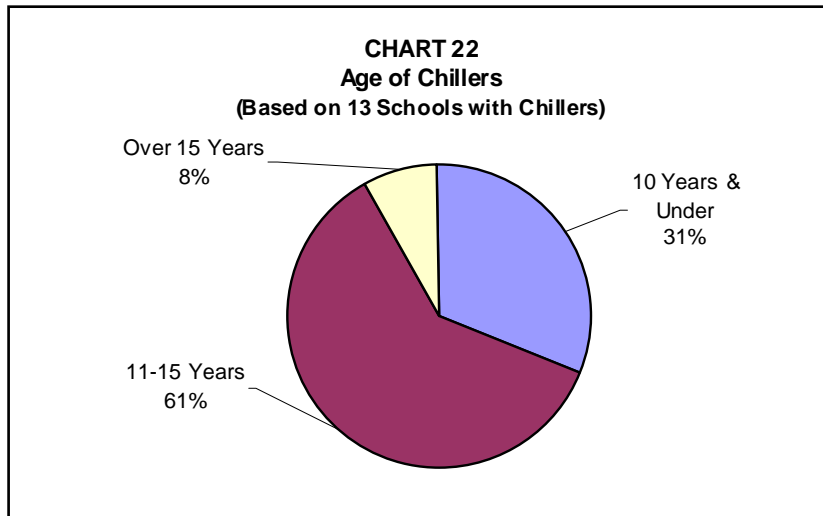
As facilities in the school division continue to age, major mechanical and maintenance projects will constitute a larger share of the proposed capital improvement plan, especially if funding is not available in a timely manner. To assist in stressing the importance of regular maintenance and replacement of equipment, a separate section, Major Mechanical and Maintenance Projects, is included in the proposed capital improvement plan.

Although school buildings are constructed to last 40-50 years, many components of a school building have a shorter life span. In particular, roofs and various components of the heating, ventilation and air conditioning system (HVAC) have a shorter life span.

Roofing materials have a finite life span, normally 15-20 years, after which there is a need for replacement. Chart 21 (right) shows 32 percent of the schools have roofs that are over 15 years old and warrant replacement at this time. Additionally, another 40 percent of the school buildings have roofs between 11-15 years old and are approaching the need for replacement. Twenty-eight percent of the school buildings have roofs less than 10 years of age.



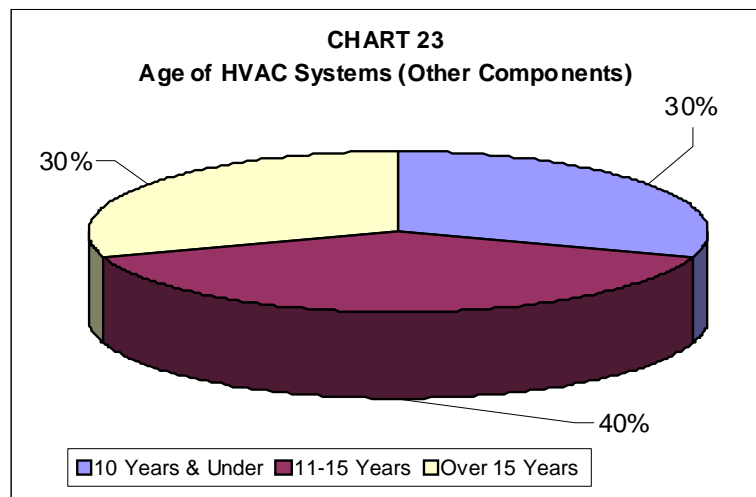
**MAJOR MECHANICAL AND MAINTENANCE PROJECTS**



Heating, ventilation and air-conditioning components, (HVAC), have a life cycle, normally between 15-20 years, after which there is a need for replacement. Although there are many components to an HVAC system, for illustrative purposes, these systems will be divided between chillers and all other HVAC components. There are 13 schools within the school division that utilize chillers. Chillers have a life

cycle, normally 20 years, after which there is a need for replacement. Chart 22 (above) illustrates the ages of the chillers at school facilities. Eight percent of the schools impacted have chillers over 15 years of age. Another 61 percent of the existing chillers are between 11 and 15 years of age and are approaching the need for replacement by the end of the second five-year planning period (2014-2019). It is important to note that many of the chiller replacements are not listed separately in the proposed capital improvement plan. These chiller replacements are included in the individual school addition and renovation projects (Western Branch High, Western Branch Middle, Indian River Middle, and Indian River High). Other chiller replacements are currently estimated to cost less than \$100,000 (Deep Creek Elementary, and Thurgood Marshall Elementary) so they are not listed separately in the proposed capital improvement plan. It is important to note, if the addition and renovation projects are not funded in a timely manner, the chiller replacements will require replacement separately.

Chart 23 (right) illustrates the age of the remaining HVAC components throughout the school division. The remaining HVAC components would include items such as cooling towers, classroom units, rooftop units, and indoor air quality units. They have a normal life span of 15 years. Thirty percent of the HVAC systems exceed the normal life cycle and warrant replacement at this time. Another 40 percent of the HVAC systems within the school division are between 11-15 years old and are quickly approaching the end of the normal life cycle.



## **MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

Lastly, the paved surfaces (parking lots, bus loops, etc.) at school facilities have a useful life of approximately 10-15 years. After that time, these surfaces require repaving. A portion of the schools requiring repaving is included. As School Plants continues to evaluate school facilities, additional repaving projects will be included in future updates of the capital improvement plan.

### **The Plan for 2009-2014**

#### **1. Roof Replacements**

Roofing materials have a finite life span, normally about 15 years, after which there is a need for replacement. The roofs at the following facilities need to be replaced in the near future: Rena B. Wright Primary School, Great Bridge Primary School, Chittum Elementary School, Indian River Middle School, Butts Road Primary School, Southwestern Elementary School, Sparrow Road Intermediate School, Western Branch Intermediate School, Great Bridge Intermediate School, Butts Road Intermediate School, Greenbrier Intermediate School, Southeastern Elementary School, Treakle Elementary School, Camelot Elementary School, Crestwood Middle School, and Indian River High School, the Planetarium, Warehouse and Supply, the former RE-ED Center (Brentwood) and School Plants. It is proposed that the roof replacements be completed during the first five-year planning period (2009-2014).

#### **2. HVAC Replacements**

HVAC systems have a life cycle, normally between 15-20 years, after which there is a need for replacement. Several facilities are approaching the 20-year period. It is proposed that the HVAC systems at the following facilities be replaced during the first five-year planning period (2009-2014): Great Bridge High School, Southeastern Elementary School, Deep Creek High School, B.M. Williams Primary School, Treakle Elementary School, Western Branch Primary School, Geenbrier Primary School, Portlock Primary School, Cedar Road Elementary School, Oscar Smith High School, Southwestern Elementary School, Hickory Elementary School, Carver Intermediate School, Deep Creek Middle School, Camelot Elementary School, Western Branch Intermediate School (plus mixing boxes), Great Bridge Middle School (partial), Butts Road Intermediate School, Great Bridge Intermediate School, Greenbrier Intermediate School, Truitt Intermediate School, Hickory High School (plus chillers), Hugo Owens Middle School, Hickory Middle School, Norfolk Highlands Primary School, Thurgood Marshall Elementary School, Western Branch Middle School and the Instructional Services Center and Edwards-Wilson Center.

## **MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

### **3. Mixing Boxes Replacement**

Mixing boxes are internal components of the HVAC system that control the distribution of air. They have a life cycle, normally 20-30 years, after which there is a need for replacement. The mixing boxes at Indian River High School, Indian River Middle School, and Western Branch Middle School need to be replaced at the beginning of the first five-year planning period (2009-2014).

### **4. Repaving School Facilities**

The paved surfaces (parking lots, bus loops, etc.) at school facilities have a useful life of approximately 10-15 years. After that time, these surfaces require repaving. The following school facilities are proposed for repaving during the first five-year planning period (2009-2014): Deep Creek Elementary School, Deep Creek High School, Western Branch Primary School, and Great Bridge High School.

**MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

**TABLE 35**  
**Project Summary<sup>1</sup>**  
**Major Mechanical and Maintenance**  
**2009-2014**

<b>Project</b>	<b>2009-2010</b>	<b>2010-2011</b>	<b>2011-2012</b>	<b>2012-2013</b>	<b>2013-2014</b>
<b>HVAC Replacement</b> , Southeastern Elementary & B. M. Williams Primary schools	C				
<b>Roof Replacement</b> , Great Bridge Primary School & the Planetarium	C				
<b>HVAC Replacement</b> , Great Bridge High & Deep Creek High schools	C				
<b>Roof Replacement</b> , Indian River Middle School	C				
<b>Mixing Boxes Replacement</b> , Indian River High, Indian River Middle, & Western Branch Middle schools	C				
<b>Roof Replacement</b> , Chittum Elementary & Rena B. Wright Primary schools	C				
<b>HVAC Replacement</b> , Treakle Elementary School	C				
<b>HVAC Replacement</b> , Western Branch Primary & Greenbrier Primary schools	C				
<b>Roof Replacement</b> , former RE-ED Center (Brentwood)	C				
<b>Repaving</b> , Deep Creek High, Deep Creek Elementary, & Western Branch Primary schools	C				
<b>Roof Replacement</b> , Butts Road Primary, Southwestern Elementary, Sparrow Road Intermediate, Western Branch Intermediate schools, Warehouse & Supply, and School Plants		C			
<b>HVAC Replacement</b> , Portlock Primary, Cedar Road Elementary, Oscar Smith High, Southwestern Elementary, Hickory Elementary, Carver Intermediate schools & the Instructional Services Center		C			
<b>Roof Replacement</b> , Great Bridge Intermediate, Butts Road Intermediate, & Greenbrier Intermediate schools			C		
<b>HVAC Replacement</b> , Deep Creek Middle, Camelot Elementary, Western Branch Intermediate (plus mixing boxes), & Great Bridge Middle (partial) schools			C		

<sup>1</sup>An "A" designates the year in which property is to be acquired by the school system. A "D" designates the year in which architectural/engineering funds are requested. A "C" designates the year in which construction funds are requested.

**MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

<b>Project</b>	<b>2009-2010</b>	<b>2010-2011</b>	<b>2011-2012</b>	<b>2012-2013</b>	<b>2013-2014</b>
<b>Roof Replacement</b> , Southeastern Elementary School				C	
<b>HVAC Replacement</b> , Butts Road Intermediate, Great Bridge Intermediate, Greenbrier Intermediate, & Truitt Intermediate, & Hickory High (plus chiller) schools				C	
<b>Roof Replacement</b> , Treakle Elementary, Camelot Elementary, Crestwood Middle, & Indian River High schools					C
<b>HVAC Replacement</b> , Hugo Owens Middle, Hickory Middle, Norfolk Highlands Primary, Thurgood Marshall Elementary, Western Branch Middle schools & Edwards-Wilson Center					C
<b>Repaving</b> , Great Bridge High School					C

**The Plan for 2014-2019**

1. Roof Replacements

Roofing materials have a finite life span, normally 15-20 years, after which there is a need for replacement. The roofs at the following facilities need to be replaced in the second five-year planning period (2014-2019): Oscar Smith High School, Hickory Elementary School, Thurgood Marshall Elementary School, Deep Creek Middle School, Western Branch Primary School, Deep Creek Central Elementary School, Deep Creek Elementary School, B.M. Williams Primary School (partial), Greenbrier Primary School, Hickory High School, Great Bridge Middle School (partial), Cedar Road Elementary School, Truitt Intermediate School, Hickory Middle School, Hugo Owens Middle School, Portlock Primary School, Western Branch High School, Norfolk Highlands Primary School, Chesapeake Center for Science & Technology, and the Edwards-Wilson Center.

## **MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

### **2. HVAC Replacement**

HVAC systems have a life cycle, normally about 15 years, after which there is a need for replacement. Several facilities will be approaching the fifteen-year period during the second five-year planning period (2014-2019). It is proposed that the HVAC systems at the following facilities be replaced: Western Branch High School, Hickory High School, Georgetown Primary School, Sparrow Road Intermediate School, Thurgood Marshall Elementary School (plus chiller), Deep Creek High School, Deep Creek Elementary School, Oscar Smith High School, Grassfield Elementary School, Greenbrier Middle, and Jolliff Middle School.

### **3. Repaving School Facilities**

The paved surfaces (parking lots, bus loops, etc.) at school facilities have a useful life of approximately 10-15 years. After that time, these surfaces require repaving. The following school facilities are proposed for repaving during the second five-year planning period (2014-2019): Butts Road Intermediate School, Great Bridge Intermediate School, Oscar Smith High School and Greenbrier Intermediate School.

### **4. Chiller Replacement**

Chillers have a life cycle, normally 20 years, after which there is a need for replacement. The chillers at Indian River Middle School and at Western Branch Middle School need replacement. It is proposed that these projects be completed during the second five-year planning period (2014-2019).

**MAJOR MECHANICAL AND MAINTENANCE PROJECTS**

**TABLE 36  
Project Summary<sup>1</sup>  
Major Mechanical and Maintenance  
2014-2019**

Project					
	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
<b><u>Roof Replacement</u></b> , Oscar Smith High & Hickory Elementary schools	C				
<b><u>HVAC Replacement</u></b> , Western Branch High School	C				
<b><u>Chiller Replacement</u></b> , Indian River Middle & Western Branch Middle schools	C				
<b><u>Roof Replacement</u></b> , Thurgood Marshall Elementary, Deep Creek Middle, Western Branch Primary, Deep Creek Central Elementary, Deep Creek Elementary, & B.M. Williams Primary (partial) schools		C			
<b><u>HVAC Replacement</u></b> , Hickory High, Georgetown Primary, Sparrow Road Intermediate, Thurgood Marshall Elementary (plus chiller), Deep Creek High, & Deep Creek Elementary schools		C			
<b><u>Roof Replacement</u></b> , Greenbrier Primary, Hickory High, & Great Bridge Middle (partial) schools			C		
<b><u>HVAC Replacement</u></b> , Oscar Smith High School			C		
<b><u>Repaving</u></b> , Butts Road Intermediate, Great Bridge Intermediate, & Greenbrier Intermediate schools			C		
<b><u>Roof Replacement</u></b> , Cedar Road Elementary, Truitt Intermediate, Hickory Middle, Hugo Owens Middle, Portlock Primary, Western Branch High schools, & Edwards-Wilson Center				C	
<b><u>HVAC Replacement</u></b> , Grassfield Elementary, Greenbrier Middle, & Jolliff Middle schools				C	
<b><u>Repaving</u></b> , Oscar Smith High School				C	
<b><u>Roof Replacement</u></b> , Norfolk Highlands Primary School & Chesapeake Center for Science & Technology					C

<sup>1</sup>A "C" designates the year in which construction funds are requested.