Facility Condition Assessment

Cumberland - Cumberland High School | *June 2017*

2600 Mendon Road, Cumberland, RI 02864

Introduction

Cumberland High School, located at 2600 Mendon Road in Cumberland, Rhode Island, was built in 1961. It comprises 314,845 gross square feet. Each school across the district was visited three times during the Facility Condition Assessments by three teams of specialists in the spring/summer of 2016.

Cumberland High School serves grades 9 - 12, has 111 instructional spaces, and has an enrollment of 1,298. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Cumberland High School is 1,800 with a resulting utilization of 72%.

For master planning purposes a 5-year need was developed to provide an understanding of the current need as well as the projected needs in the near future. For Cumberland High School the 5-year need is $26,329,088. The findings contained within this report resulted from an assessment of building systems performed by building professionals experienced in disciplines including: architecture, mechanical, plumbing, electrical, acoustics, hazardous materials, and technology infrastructure.

Figure 1: Aerial view of Cumberland High School

Approach and Methodology

A facility condition assessment evaluates each building's overall condition. Two components of the facility condition assessment are combined to total the cost for facility need. The two components of the facility condition assessment are current deficiencies and life cycle forecast.

Current Deficiencies: Deficiencies are items in need of repair or replacement as a result of being broken, obsolete, or beyond useful life. The existing deficiencies that currently require correction are identified and assigned a priority. An example of a current deficiency might include a broken lighting fixture or an inoperable roof top air conditioning unit.

Life Cycle Forecast: Life cycle analysis evaluates ages of a building's systems to forecast system replacement as they reach the end of serviceable life. An example of a life cycle system replacement is a roof with a 20-year life that has been in place for 15 years and may require replacement in five years.

Discipline Specialists

All assessment teams produced current deficiencies associated with each school. The assessment for the school facilities at the Rhode Island Department of Education included several specialties:

Facility Condition Assessment: Architectural, mechanical, and electrical engineering professionals observed conditions via a visual observation that did not include intrusive measures, destructive investigations, or testing. Additionally, the assessment incorporated input provided by district facilities and maintenance staff where applicable. The assessment team recorded existing conditions, identified problems and deficiencies, documented corrective action and quantities, and identified the priority of the repair in accordance with parameters defined during the planning phase. The team took digital photos at each school to better identify significant deficiencies.

Technology: Technology specialists visited RIDE facilities and met with technology directors to observe and assess each facility's technology infrastructure. The assessment included network architecture, major infrastructure components, classroom instructional systems, necessary building space and support for technology. The technology assessment took into account the desired technology outcome and best practices and processes to ensure results can be attained effectively.

Hazardous Materials: Schools constructed prior to 1990 were assessed by specialists to identify the presence of hazardous materials. The team focused on identifying asbestos containing building materials (ACBMs), lead-based painted (LBP) areas, polychlorinated biphenyls (PCBs), and chlorofluorocarbons (CFCs). As part of an indoor air and exterior air quality assessment, the team noted evidence of mold, water intrusion, mercury, and oil and hazardous materials (OHMs) exposure. If sampling and analysis was required, these activities were recommended but not included in the scope of work.

Traffic: A traffic specialist performed an in-office review of aerial imagery of the traffic infrastructure around the facilities in accordance with section 1.05-7 in the Rhode Island School Construction Regulations and reviewed data collected on site during the facility condition assessment. Based on this information, deficiencies and corrective actions were identified. High problem areas were identified for consideration of more detailed site-specific study and analysis in the future.

Acoustics: Specialists assessed each school's acoustics, including architectural acoustics, mechanical system noise and vibration, and environmental noise. The assessment team evaluated room acoustics with particular attention to the intelligibility of speech in learning spaces, interior and exterior sound isolation, and mechanical system noise and vibration control.

Educational Program Space Assessment: Teams evaluated schools to ensure that that all spaces adequately support the districts educational program. Standards are established for each classroom type or instructional space. Each space is evaluated to determine if it meets those standards and a listing of alterations that should be made to make the space a better environment for teaching and learning was created.

System Summaries

The following tables summarize major building systems at the Cumberland High School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Asphalt Roadway Pavement
	Asphalt Pedestrian Pavement
	Concrete Pedestrian Pavement

Building Envelope

The exterior systems for the building(s) at this campus includes:

01 - Main Building:	Brick Exterior Wall
	CMU Exterior Wall
	Fiber Cement Exterior Wall
	Aluminum Exterior Windows
	Storefront / Curtain Wall
	Storefront Entrance Doors
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors
02 - Building 02:	Brick Exterior Wall
	Metal Panel Exterior Wall
	Pre-cast Concrete Panel Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
	Storefront Entrance Doors
	Overhead Exterior Utility Doors
03 - Building 03:	Brick Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
	Storefront Entrance Doors
	Overhead Exterior Utility Doors

The roofing for the building(s) at this campus consists of:

01 - Main Building:	Single Ply Membrane Ballasted Roofing
02 - Building 02:	Composition Shingle Roofing
	EPDM Roofing
03 - Building 03:	Single Ply Membrane Ballasted Roofing

Interior

The interior systems for the building(s) at this campus include:

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Overhead Interior Coiling Doors
	Interior Door Hardware
	Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Ceramic Tile Wall
	Wood Wall Paneling
	CMU Wall
	Brick/Stone Veneer
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile Flooring
	Wood Flooring
	Rubber Tile Flooring
	Vinyl Composition Tile Flooring
	Terrazzo Flooring
	Carpet
02 - Building 02:	Steel Interior Doors
	Wood Interior Doors
	Overhead Interior Coiling Doors
	Interior Door Hardware
	Exposed Metal Structure Ceiling
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Painted Ceilings
	Ceramic Tile Wall
	CMU Wall
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile Flooring
	Wood Flooring
	Rubber Tile Flooring
	Vinyl Composition Tile Flooring
	Carpet
	Metal Ceiling Panel
03 - Building 03:	Wood Interior Doors
	Steel Interior Doors

03 - Building 03:	Interior Door Hardware
	Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Ceramic Tile Wall
	Wood Wall Paneling
	CMU Wall
	Interior Wall Painting
	Quarry Tile Flooring
	Ceramic Tile Flooring
	Wood Flooring
	Vinyl Composition Tile Flooring
	Rubber Tile Flooring
	Terrazzo Flooring
	Carpet
	Metal Ceiling Panel

Mechanical

The mechanical systems for the building(s) at this campus include:

01 - Main Building:	1,200 MBH Copper Tube Boiler
	1,600 MBH Copper Tube Boiler
	400 MBH Copper Tube Boiler
	Finned Wall Radiator
	Steam/Hot Water Heating Unit Vent
	Radiant Water Heater
	12 MBH Steam Unit Heater
	Pneumatic Heating System Controls
	2 Ton Ductless Split System
	8 Ton Outside Air Cooled Condenser
	Window Units
	Make-up Air Unit
	15 HP VFD
	1 HP or Smaller Pump
	5 HP Pump
	2-Pipe Hot Water Hydronic Distribution System
	15,000 CFM Outdoor AHU
	Ductwork
	15 Ton DX Gas Roof Top Unit
	4'x6' Ventilator/Relief Vent
	Roof Exhaust Fan
	Kitchen Exhaust Hoods

01 - Main Building:	Fire Sprinkler System
02 - Building 02:	400 MBH Copper Tube Boiler
	750 MBH Copper Tube Boiler
	Radiant Water Heater
	12 MBH Steam Unit Heater
	DDC Heating System Controls
	40 Ton Outside Air Cooled Condenser
	5 HP VFD
	1 HP or Smaller Pump
	5 HP Pump
	2-Pipe Hot Water Hydronic Distribution System
	10,000 CFM Outdoor AHU
	15,000 CFM Outdoor AHU
	Ductwork
	Roof Exhaust Fan
	Fire Sprinkler System
03 - Building 03:	1,600 MBH Copper Tube Boiler
	Steam/Hot Water Heating Unit Vent
	Radiant Water Heater
	12 MBH Steam Unit Heater
	Pneumatic Heating System Controls
	Window Units
	5 HP VFD
	1 HP or Smaller Pump
	2-Pipe Hot Water Hydronic Distribution System
	Ductwork
	5 Ton DX Gas Roof Top Unit
	Roof Exhaust Fan
	Fire Sprinkler System

Plumbing

The plumbing systems for the building(s) at this campus include:

01 - Main Building:	500 Gallon Water Storage Tank
03 - Building 03:	500 Gallon Water Storage Tank
02 - Building 02:	500 Gallon Water Storage Tank
01 - Main Building:	Gas Piping System
	80 Gallon Electric Water Heater
03 - Building 03:	Gas Piping System
	100 Gallon Gas Water Heater
02 - Building 02:	Gas Piping System
	60 Gallon Gas Water Heater
01 - Main Building:	Domestic Water Piping System

03 - Building 03:	Domestic Water Piping System
02 - Building 02:	Domestic Water Piping System
01 - Main Building:	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Showers
	Toilets
	Urinals
03 - Building 03:	Classroom Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Restroom Lavatories
	Toilets
	Urinals
02 - Building 02:	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Restroom Lavatories
	Showers
	Toilets
	Urinals
01 - Main Building:	Sump Pump
	Air Compressor (2 hp)
03 - Building 03:	Air Compressor (2 hp)

Electrical

The electrical systems for the building(s) at this campus include:

01 - Main Building:	1200 kW Emergency Generator
	Automatic Transfer Switch
	1,200 Amp Switchgear
	2,000 Amp Switchgear
	112.5 KVA Transformer
	225 KVA Transformer
	30 KVA Transformer
	45 KVA Transformer
	75 KVA Transformer
	Panelboard - 120/208 100A
	Panelboard - 120/208 125A
	Panelboard - 120/208 225A
	Panelboard - 120/208 400A
	Panelboard - 120/240 225A

01 - Main Building:	Panelboard - 277/480 100A
	Panelboard - 277/480 225A
	Panelboard - 277/480 600A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Building Mounted Lighting Fixtures
	Canopy Mounted Lighting Fixtures
	Light Fixtures
02 - Building 02:	1200 kW Emergency Generator
	Automatic Transfer Switch
	45 KVA Transformer
	Panelboard - 120/208 225A
	Panelboard - 277/480 100A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Light Fixtures
	Building Mounted Lighting Fixtures
	Canopy Mounted Lighting Fixtures
03 - Building 03:	1200 kW Emergency Generator
	Automatic Transfer Switch
	1,600 Amp Switchgear
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Light Fixtures
	Building Mounted Lighting Fixtures

Facility Deficiency Priority Levels

Deficiencies were ranked according to five priority levels, with Priority 1 items being the most critical to address:

Priority 1 – Mission Critical Concerns: Deficiencies or conditions that may directly affect the school's ability to remain open or deliver the educational curriculum. These deficiencies typically relate to building safety, code compliance, severely damaged or failing building components, and other items that require near-term correction. An example of a Priority 1 deficiency is a fire alarm system replacement.

Priority 2 – Indirect Impact to Educational Mission: Items that may progress to a Priority 1 item if not addressed in the near term. Examples of Priority 2 deficiencies include inadequate roofing that could cause deterioration of integral building systems, and conditions affecting building envelopes, such as roof and window replacements.

Priority 3 – Short-Term Conditions: Deficiencies that are necessary to the school's mission but may not require immediate attention. These items should be considered necessary improvements required to maximize facility efficiency and usefulness. Examples of Priority 3 items include site improvements and plumbing deficiencies.

Priority 4 – Long-Term Requirements: Items or systems that may be considered improvements to the instructional environment. The improvements may be aesthetic or provide greater functionality. Examples include cabinets, finishes, paving, removal of abandoned equipment, and educational accommodations associated with special programs.

Priority 5 – Enhancements: Deficiencies aesthetic in nature or considered enhancements. Typical deficiencies in this priority include repainting, replacing carpet, improved signage, or other improvements to the facility environment.

The following chart summarizes this site's current deficiencies by building system and priority. The listing details current deficiencies including deferred maintenance, functional deficiencies, code compliance, capital renewal, hazardous materials and technology categories.

Table 1: System by Priority

	Priority						
System	1	2	3	4	5	Total	% of Total
Site	-	-	$23,570	-	-	$23,570	0.15 %
Roofing	-	-	-	-	-	$0	0.00 %
Structural	$9,507	-	-	-	-	$9,507	0.06 %
Exterior	-	$129,951	-	-	-	$129,951	0.82 %
Interior	-	-	$1,784,448	$2,497,604	$18,805	$4,300,857	27.27 %
Mechanical	-	$2,143,357	-	$2,184,562	-	$4,327,919	27.44 %
Electrical	-	-	-	-	$176,630	$176,630	1.12 %
Plumbing	-	-	$2,469,038	-	$111,932	$2,580,970	16.36 %
Fire and Life Safety	$159,717	-	-	-	-	$159,717	1.01 %
Technology	-	-	$3,824,063	-	-	$3,824,063	24.24 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$82,140	$39,149	$119,788	$241,077	1.53 %
Total	$169,224	$2,273,308	$8,183,259	$4,721,315	$427,155	$15,774,261	

**Displayed totals may not sum exactly due to mathematical rounding*

The building systems with the most need include:

Mechanical	-	$4,327,919
Interior	-	$4,300,857
Technology	-	$3,824,063

The chart below represents the building systems and associated deficiency costs.

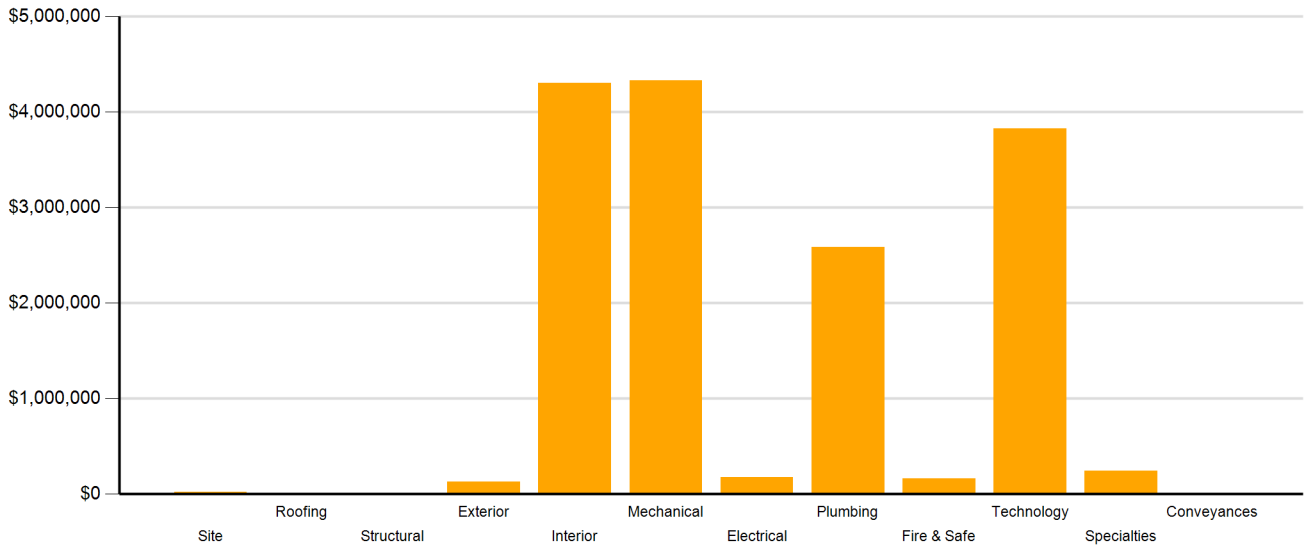

Figure 2: System Deficiencies

Current Deficiencies by Category

Deficiencies have been further grouped according to the observed category.

• **Acoustics** deficiencies relate to room acoustics, sound insolation, and mechanical systems and vibration control modeled after ANSI/ASA Standard S12.60-2010 and ASHRAE Handbook, Chapter 47 on Sound and Vibration Control.

• **Barrier to Accessibility** deficiencies relate to the Americans with Disabilities Act and the Rhode Island Governors Commission on Disability. Additional items related to accessibility may be included other categories.

• **Capital Renewal** items have reached or exceeded serviceable life and require replacement. These are current and do not include life cycle capital renewal forecasts. Also included are deficiencies correcting planned work postponed beyond its regular life expectancy.

• **Code Compliance** deficiencies related to current codes. Many may fall under grandfather clauses, which allow buildings to continue operating under codes effective at the time of construction. However, there are instances where the level of renovation requires full compliance which are reflected in the master plan.

• **Educational Adequacy** deficiencies identify where facilities do not align with the Basic Education Program and the RIDE School Construction Regulations.

• **Functional Deficiencies** are deficiencies for components or systems that have failed before the end of expected life or are not the right application, size, or design.

• **Hazardous Materials** include deficiencies for building systems or components containing potentially hazardous material. The team focused on identifying asbestos containing building materials (ACBMs), lead based painted (LBP) areas, polychlorinated biphenyls (PCBs), and chlorofluorocarbons (CFCs). As part of an indoor air and exterior air quality assessment, the team noted evidence of mold, water intrusion, mercury, and oil and hazardous materials (OHMs) exposure. With other scopes of work there may be other costs associated with hazardous materials.

• **Technology** deficiencies relate to network architecture, technology infrastructure, classroom systems, and support. Examples of technology deficiencies include: security cameras, secure electronic access, telephone handsets, and dedicated air conditioning for telecommunication rooms.

• **Traffic** deficiencies relate to vehicle or pedestrian traffic, such as bus loops, crosswalks, and pavement markings.

The following chart and table represent the deficiency category by priority. This listing includes current deficiencies for all building systems.

Table 2: Deficiency Category by Priority

	Priority					
Category	**1**	**2**	**3**	**4**	**5**	**Total**
Acoustics	-	-	$439,697	-	-	$439,697
Barrier to Accessibility	-	-	$18,824	-	-	$18,824
Capital Renewal	$9,507	$2,273,308	$3,794,965	$2,618,436	-	$8,696,216
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$159,717	-	$207,517	$347,284	$427,155	$1,141,673
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$1,755,595	-	$1,755,595
Technology	-	-	$3,698,687	-	-	$3,698,687
Traffic	-	-	$23,570	-	-	$23,570
Total	$169,224	$2,273,308	$8,183,259	$4,721,315	$427,155	$15,774,261

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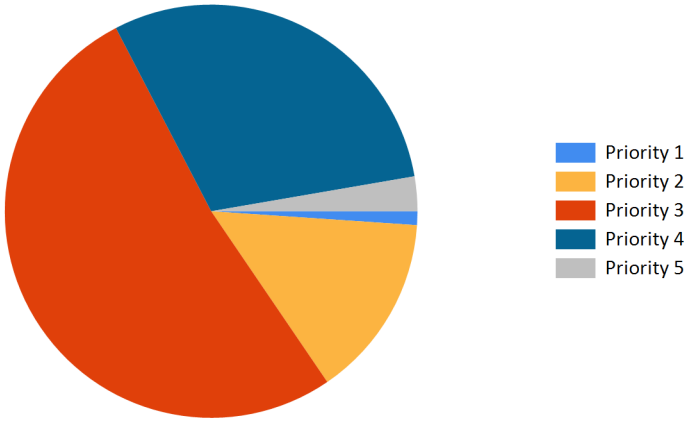

Figure 3: Current deficiencies by priority

Life Cycle Capital Renewal Forecast

During the facility condition assessment, assessors inspected all major building systems. If a need for immediate replacement was identified, a deficiency was created with the estimated repair costs. The identified deficiency contributes to the facility's total current repair costs.

Capital planning scenarios span multiple years, as opposed to being constrained to immediate repairs. Construction projects may begin several years after the initial facility condition assessment. Therefore, in addition to the current year repair costs, it is necessary to forecast the facility's future costs using a 5-year life cycle renewal forecast model.

Life cycle renewal is the projection of future building system costs based upon each individual system's expected serviceable life. Building systems and components age over time, eventually break down, reach the end of their useful lives, and may require replacement. While an item may be in good condition now, it might reach the end of its life before a planned construction project occurs.

The following chart shows all current deficiencies and the subsequent 5-year life cycle capital renewal projections. The projections outline costs for major building systems in which a component is expected to reach the end of its useful life and require capital funding for replacement.

Table 3: Capital Renewal Forecast

		Life Cycle Capital Renewal Projections						
System	Current Deficiencies	Year 1 2017	Year 2 2018	Year 3 2019	Year 4 2020	Year 5 2021	LC Yr. 1-5 Total	Total 5-Year Need
Site	$23,570	$0	$0	$1,015,716	$42,727	$599,931	$1,658,374	$1,681,944
Roofing	$0	$0	$0	$0	$0	$0	$0	$0
Structural	$9,507	$0	$0	$0	$0	$0	$0	$9,507
Exterior	$129,951	$0	$0	$0	$0	$0	$0	$129,951
Interior	$4,300,857	$0	$0	$0	$944,468	$645,944	$1,590,412	$5,891,269
Mechanical	$4,327,919	$0	$0	$1,142,427	$662,127	$4,303,386	$6,107,940	$10,435,860
Electrical	$176,630	$0	$0	$0	$0	$805,201	$805,201	$981,831
Plumbing	$2,580,970	$0	$0	$0	$38,066	$340,924	$378,990	$2,959,960
Fire and Life Safety	$159,717	$0	$0	$0	$0	$0	$0	$159,717
Technology	$3,824,063	$0	$0	$0	$0	$0	$0	$3,824,064
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$241,077	$0	$0	$0	$0	$0	$0	$241,077
Total	**$15,774,261**	**$0**	**$0**	**$2,158,143**	**$1,687,388**	**$6,695,386**	**$10,540,917**	**$26,315,178**

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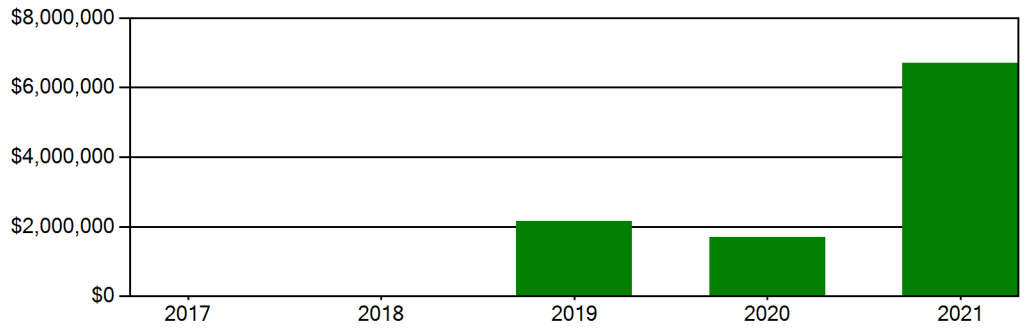
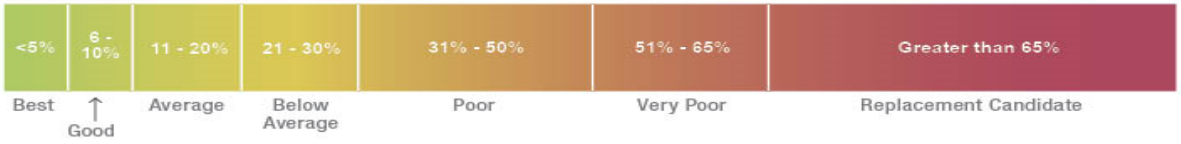


Figure 4: Life Cycle Capital Renewal Forecast

Facility Condition Index (FCI)

The Facility Condition Index (FCI) is used throughout the facility condition assessment industry as a general indicator of a building's health. Since 1991, the facility management industry has used an index called the FCI to benchmark the relative condition of a group of schools. The FCI is derived by dividing the total repair cost, including educational adequacy and site-related repairs, by the total replacement cost. A facility with a higher FCI percentage has more need, or higher priority, than a facility with a lower FCI. It should be noted that costs in the New Construction category are not included in the FCI calculation.



Financial modeling has shown that over a 30-year period, it is more cost effective to replace than repair schools with a FCI of 65 percent or greater. This is due to efficiency gains with facilities that are more modern and the value of the building at the end of the analysis period. It is important to note that the FCI at which a facility should be considered for replacement is typically debated and adjusted based on property owners and facility managers approach to facility management. Of course, FCI is not the only factor used to identify buildings that need renovation, replacement, or even closure. Historical significance, enrollment trends, community sentiment, and the availability of capital are additional factors that are analyzed when making school facility decisions.

For master planning purposes, the total current deficiencies and the first five years of projected life cycle needs were combined. This provides an understanding of the current needs of a facility as well as the projected needs in the near future. A 5-year FCI was calculated by dividing the 5-year need by the total replacement cost. Costs associated with new construction are not included in the FCI calculation.

The replacement value represents the estimated cost of replacing the current building with another building of like size, based on today's estimated cost of construction in the Providence, Rhode Island area. The estimated replacement cost for this facility is $113,344,200. For planning purposes, the total 5-year need at the Cumberland High School is $26,329,088 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Cumberland High School facility has a 5-year FCI of 23.22%.

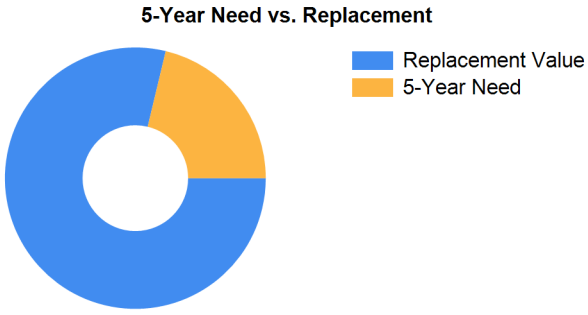


Figure 5: 5-Year FCI

It is important to reiterate that this FCI replacement threshold is not conclusive, but is intended to initiate planning discussion in which other relevant issues with regard to a facility's disposition must be incorporated. This merely suggests where conversations regarding replacement might occur.

Rhode Island Aspirational Capacity

The capacity of a school reflects how many students the school's physical facility can effectively serve. There are various methodologies that exist to calculate capacity. It is not uncommon to review an existing building only to find that the capacity that had once been assigned is greater than what can be reasonably accommodated today. This is primarily because of a change in how programs are delivered.

The Rhode Island Aspirational Capacity is based on the Rhode Island School Construction Regulations (SCRs) and is an aspirational goal of space use. The capacity for each individual public school in the state of Rhode Island was designed to conform to Section 1.06-2 Space Allowance Guidelines of the Rhode Island Department of Education (RIDE) SCRs. These regulations outline the allowed gross square feet (GSF) per student at each school type (ES, MS, HS) by utilizing a sliding scale based on projected enrollment. The resulting capacities reflect how school capacities align to the SCRs for new construction. The existing enrollment was multiplied by the GSF per student for the appropriate bracket. For the purposes of this analysis, Pre-K centers were rolled into the elementary totals, and K-8 facilities were counted as middle schools.

The most consistent and equitable way a state can determine school capacities across a variety of districts and educational program offerings is to use square-foot-per-student standards. In contrast, in the 2013 Public Schoolhouse Assessment Report, LEAs self-reported capacities for their elementary, middle and high schools. Districts typically report "functional capacity," which is defined as the number of students each classroom can accommodate. Functional capacity counts how many students can occupy a space, not how much room students and teachers have within that space. For example, a 650-square-foot classroom and a 950-square-foot classroom can both have a reported capacity of 25 students, but the actual teaching and learning space per student varies greatly.

The variation in square feet per student impacts the kinds of teaching practices possible in each space. The lowest allocation of space per student restricts group and project-based learning strategies and requires teachers to teach in more traditional, lecture-style formats, due to a lack of space. Furthermore, the number of students that can be accommodated in a classroom does not account for access to sufficient common spaces such as libraries, cafeterias, and gymnasiums. When cafeterias are undersized relative to the population, schools must host four or more lunch periods a day, resulting in some students eating lunch mid-morning and some mid-afternoon. Similarly, undersized libraries and gymnasiums create scheduling headaches for schools and restrict student access. Finally, a classroom count-only approach to school capacity does not consider the inherent scheduling challenges schools face.

Applying the Rhode Island Aspirational Capacity, a facility of this size could ideally support an enrollment of approximately 1,702 students.

Facility New Construction

As part of the Educational Program Space Assessment, select core spaces were compared to the RI School Construction Regulations. If it was determined that a facility was in need of square footage related to a cafeteria or library/media center, a cost for additional space was estimated. This cost is not included in the total 5-year need or the 5-year FCI calculation.

The New Construction cost to bring the Cumberland High School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $0.

Summary of Findings

The Cumberland High School comprises 314,845 square feet and was constructed in 1961. Current deficiencies at this school total $15,788,171. Five year capital renewal costs total $10,540,917. The total identified need for the Cumberland High School (current deficiencies and 5-year capital renewal costs) is $26,329,088. The 5-year FCI is 23.22%.

Table 4: Facility Condition by Building

	Gross Sq Ft	Year Built	Current Deficiencies	LC Yr. 1-5 Total	Total 5 Yr Need (Yr 1-5 + Current Defs)	5-Year FCI
Cumberland High School Totals	314,845	1961	$15,788,171	$10,540,917	$26,329,088	23.22%

**Displayed totals may not sum exactly due to mathematical rounding*

The following pages provide a listing of all current deficiencies and 5-year life cycle need and the associated costs, followed by photos taken during the assessment.

Cost Estimating

Cost estimates are derived from local cost estimating expertise and enhanced by industry best practices, historical cost data, and relevance to the Rhode Island region. Costs have been developed from current market rates as of the 2nd quarter in 2016. All costs are based on a replace-in-kind approach, unless the item was not in compliance with national or state regulations or standards.

For planning and budgeting purposes, facility assessments customarily add a soft cost multiplier onto deficiency repair cost estimates. This soft cost multiplier accounts for costs that are typically incurred when contracting for renovation and construction services. Soft costs typically include construction cost factors, such as contractor overhead and profit, as well as labor and material inflation, professional fees, and administrative costs. Based on the Rhode Island School Construction Regulations, a soft cost multiplier of 20% is included on all cost estimates. Other project allowances are included in the cost estimates based on school attributes such as age, location, and historic designation. All stated costs in the assessment report will include soft costs for planning and budgeting purposes. These are estimates, and costs will vary at the time of construction.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
New Sidewalk Is Required	Traffic	840	SF	3	$19,037	11648
Note: Add sidewalk on campus along southwest driveway (140' long x 6' wide)						
Traffic Signage Is Required	Traffic	2	Ea.	3	$4,533	11649
Note: Add school zone signs with flashing beacon						
	Sub Total for System	**2**	**items**		**$23,570**	
	Sub Total for School and Site Level	**2**	**items**		**$23,570**	

Building: 01 - Main Building

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Panel Exterior Requires Replacement	Capital Renewal	2,236	SF Wall	2	$85,030	53396
Note: Exterior wall metal panels are rusting and failing, letting water inside the building and breaking the weather barrier required by SBC-1, Section 1405.2. Water infiltration into walls can lead to mold, damage to wall finishes, and damage to non-friable ACM causing it to become friable. RISBC 1504.6. 1507.13, 1508.2, and 1510.3.						
	Sub Total for System	**1**	**items**		**$85,030**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	50	Ea.	3	$439,697	19758
Note: All classrooms						
The Carpet Flooring Requires Replacement	Capital Renewal	4,003	SF	3	$87,090	11017
The Interior Door Hardware Requires Replacement	Barrier to Accessibility	6	Door	3	$18,824	11019
Note: Non-compliant door hardware should be replaced.						
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	56,038	SF	4	$1,598,255	Rollup
Paint (probable pre-1978 in base (layers(s)) - large areas (> 10 sq. ft.) of peeling/damage & area in active use - children (measurement unit - each)	Hazardous Material	431	Ea.	4	$122,925	Rollup
Paint (probable pre-1978 in base layer(s)) - large areas (> 10 sq. ft.) of peeling/damage & area in active use - children (measurement unit - linear feet)	Hazardous Material	700	LF	4	$15,972	Rollup
Paint (probable pre-1978 in base layer(s)) - large areas (> 10 sq. ft.) of peeling/damage & area in active use - children (measurement unit - square feet)	Hazardous Material	200	SF	4	$1,901	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - each)	Hazardous Material	8	Ea.	4	$2,282	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - square feet)	Hazardous Material	1,500	SF	4	$14,260	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	380	SF	4	$14,480	Rollup
Classroom Door Requires Vision Panel	Educational Adequacy	3	Ea.	5	$6,100	Rollup
Room lacks appropriate sound control.	Educational Adequacy	300	SF	5	$10,439	Rollup
	Sub Total for System	**12**	**items**		**$2,332,224**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	1	Ea.	2	$1,675	11021
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	200,135	SF	2	$1,542,679	11022
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	200,135	SF	4	$1,351,852	11023
Lab lacks an appropriate fume hood.	Educational Adequacy	14	Ea.	4	$307,801	Rollup
	Sub Total for System	**4**	**items**		**$3,204,008**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room Has Insufficient Electrical Outlets	Educational Adequacy	264	Ea.	5	$131,014	Rollup
	Sub Total for System	**1**	**items**		**$131,014**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	200,135	SF	3	$1,610,263	11020
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$116,765	11024
Room lacks a drinking fountain.	Educational Adequacy	6	Ea.	5	$6,617	Rollup
Room lacks a private shower area.	Educational Adequacy	3	Ea.	5	$30,706	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	45	Ea.	5	$68,022	Rollup
	Sub Total for System	**5**	**items**		**$1,832,373**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks shut-off valves for utilities. (International Fuel Gas Code, Section 409.6)	Educational Adequacy	14	Ea.	1	$159,717	Rollup
	Sub Total for System	**1**	**items**		**$159,717**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	17	Ea.	3	$96,971	Rollup
Technology: Classroom AV/Multimedia systems are in need of improvements.	Technology	1	Ea.	3	$9,507	10795
Technology: Classroom AV/Multimedia systems are inadequate and/or near end of useful life.	Technology	91	Ea.	3	$1,816,782	10790
Technology: Instructional spaces do not have local sound reinforcement.	Technology	91	Ea.	3	$432,567	10791
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,324	10782
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,324	10788
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$37,648	10774
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$37,648	10776
Technology: Intermediate Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$16,732	10779
Technology: Intermediate Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$16,732	10781
Technology: Intermediate Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$16,732	10784
Technology: Intermediate Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$4,753	10785
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	10775
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	10778
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	10780
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	10783
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$5,324	10787
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$42,591	10773
Technology: Network system inadequate and/or near end of useful life	Technology	12	Ea.	3	$91,267	10792
Technology: Network system inadequate and/or near end of useful life	Technology	44	Ea.	3	$209,153	10793

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Network system inadequate and/or near end of useful life	Technology	319,000	SF	3	$90,982	10794
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	319,000	SF	3	$545,890	10796
Technology: Special Space AV/Multimedia systems are in need of minor improvements.	Technology	15	Room	3	$285,209	10789
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	10777
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	10786
	Sub Total for System	**25**	**items**		**$3,795,658**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	16	Ea.	3	$73,014	Rollup
The Metal Student Lockers Require Replacement	Capital Renewal	65	Ea.	4	$31,979	11025
Location: Pool locker rooms						
Work Tables Are Required	Educational Adequacy	2	Ea.	4	$7,170	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	14	Ea.	5	$119,788	Rollup
	Sub Total for System	**4**	**items**		**$231,951**	
	Sub Total for Building 01 - Main Building	**53**	**items**		**$11,771,975**	

Building: 02 - Building 02

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Door Requires Vision Panel	Educational Adequacy	1	Ea.	5	$2,266	Rollup
	Sub Total for System	**1**	**items**		**$2,266**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room Has Insufficient Electrical Outlets	Educational Adequacy	12	Ea.	5	$5,915	Rollup
	Sub Total for System	**1**	**items**		**$5,915**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks a drinking fountain.	Educational Adequacy	4	Ea.	5	$4,382	Rollup
	Sub Total for System	**1**	**items**		**$4,382**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	3	Ea.	3	$16,997	Rollup
	Sub Total for System	**1**	**items**		**$16,997**	
	Sub Total for Building 02 - Building 02	**4**	**items**		**$29,560**	

Building: 03 - Building 03

Structural

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Foundation Study Recommended	Capital Renewal	1	Job	1	$9,507	11440
Note: Structural damage (cracks) in brick columns and CMU in the corners of second floor classrooms. Investigate further to address structural condition.						
	Sub Total for System	**1**	**items**		**$9,507**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	7	Door	2	$44,920	11026
	Sub Total for System	**1**	**items**		**$44,920**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Interior CMU Walls Require Repair	Capital Renewal	313	SF	3	$11,367	11031
Note: Cracked CMU in Rooms 200, 201, 202 and 203.						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	59,837	SF	3	$540,425	11027
The Carpet Flooring Requires Replacement	Capital Renewal	6,994	SF	3	$152,163	11028
The Vinyl Composition Tile Requires Replacement	Capital Renewal	46,626	SF	3	$534,882	11029
Ceiling Grid Requires Replacement	Capital Renewal	59,837	SF	4	$709,697	11036
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	468	SF	4	$17,833	Rollup
	Sub Total for System	**6**	**items**		**$1,966,366**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	77,710	SF	2	$599,004	11032
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	77,710	SF	4	$524,908	11034
	Sub Total for System	**2**	**items**		**$1,123,911**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room Has Insufficient Electrical Outlets	Educational Adequacy	80	Ea.	5	$39,701	Rollup
	Sub Total for System	**1**	**items**		**$39,701**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	77,710	SF	3	$625,246	11030
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$116,765	11035
Room lacks a drinking fountain.	Educational Adequacy	2	Ea.	5	$2,206	Rollup
	Sub Total for System	**3**	**items**		**$744,216**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	2	Ea.	3	$11,408	Rollup
	Sub Total for System	**1**	**items**		**$11,408**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	2	Ea.	3	$9,127	Rollup
	Sub Total for System	**1**	**items**		**$9,127**	
	Sub Total for Building 03 - Building 03	**16**	**items**		**$3,949,157**	
	Total for Campus	**75**	**items**		**$15,774,261**	

Cumberland High School - Life Cycle Summary Yrs 1-5

Site Level Life Cycle Items

Site

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Parking Lot Pavement	Asphalt		307	CAR	$1,015,716	3
Pedestrian Pavement	Sidewalks - Asphalt		5,000	SF	$42,727	4
Roadway Pavement	Asphalt		156	CAR	$516,129	5
Pedestrian Pavement	Sidewalks - Concrete		4,100	SF	$83,802	5
		Sub Total for System	**4**	**items**	**$1,658,374**	
		Sub Total for Building -	**4**	**items**	**$1,658,374**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)		80,054	SF	$528,944	4
Carpeting	Carpet		14,009	SF	$304,783	4
Wall Paneling	Wood Panel wall		8,002	SF	$73,032	5
Resilient Flooring	Rubber Tile Flooring		12,008	SF	$224,324	5
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles		14,009	SF	$126,524	5
		Sub Total for System	**5**	**items**	**$1,257,606**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Exhaust Air	Ventilator/Relief Vent (4'x6')		6	Ea.	$114,084	4
Decentralized Cooling	Window Units		16	Ea.	$53,422	5
Decentralized Cooling	Ductless Split System (2 Ton)		25	Ea.	$170,793	5
Facility Hydronic Distribution	Pump - 5HP		8	Ea.	$76,238	5
Decentralized Heating Equipment	Radiant Heater - Radiator Water		107	Ea.	$552,771	5
Decentralized Heating Equipment	Heating Unit Vent - Steam/Hot water		109	Ea.	$1,843,713	5
Decentralized Heating Equipment	Unit Heater Steam/HW (12 MBH)		37	Ea.	$88,362	5
Exhaust Air	Roof Exhaust Fan		66	Ea.	$343,472	5
Facility Hydronic Distribution	Pump - 1HP or Less (Ea.)		21	Ea.	$160,196	5
Air Distribution	Make-up Air Unit		3	Ea.	$47,698	5
Note:	Heating hot water coil					
		Sub Total for System	**10**	**items**	**$3,450,749**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Electrical Service	Switchgear - Main Dist Panel (1200 Amps)		2	Ea.	$138,117	5
Electrical Service	Switchgear - Main Dist Panel (2000 Amps)		1	Ea.	$72,339	5
		Sub Total for System	**2**	**items**	**$210,456**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Compressed-Air Systems	Air Compressor (2 hp)		2	Ea.	$12,766	5
Plumbing Fixtures	Mop/Service Sinks		16	Ea.	$41,222	5
Plumbing Fixtures	Refrigerated Drinking Fountain		14	Ea.	$103,284	5
		Sub Total for System	**3**	**items**	**$157,272**	
		Sub Total for Building 01 - Main Building	**20**	**items**	**$5,076,083**	

Building: 02 - Building 02

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Carpeting	Carpet		370	SF	$8,050	4
Wall Painting and Coating	Painting/Staining (Bldg SF)		5,550	SF	$36,671	5
		Sub Total for System	**2**	**items**	**$44,721**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Facility Hydronic Distribution	Pump - 1HP or Less (Ea.)		2	Ea.	$15,257	5

Mechanical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Facility Hydronic Distribution	Pump - 5HP	2	Ea.	$19,060	5
Note:	7.5 HP				
Other HVAC Distribution Systems	VFD (5 HP)	4	Ea.	$24,049	5
	Sub Total for System	**3**	**items**	**$58,365**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 60 gallon	1	Ea.	$3,797	5
Note:	55 gallon				
	Sub Total for System	**1**	**items**	**$3,797**	
	Sub Total for Building 02 - Building 02	**6**	**items**	**$106,883**	

Building: 03 - Building 03

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)	15,542	SF	$102,691	4
Wall Paneling	Wood Panel wall	15,542	SF	$141,847	5
Resilient Flooring	Rubber Tile Flooring	2,331	SF	$43,546	5
	Sub Total for System	**3**	**items**	**$288,084**	

Mechanical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
HVAC Air Distribution	Ductwork (Bldg.SF)	77,710	SF	$1,142,427	3
Decentralized Heating Equipment	Heating Unit Vent - Steam/Hot water	30	Ea.	$507,444	4
Decentralized Heating Equipment	Unit Heater Steam/HW (12 MBH)	17	Ea.	$40,599	4
Decentralized Heating Equipment	Radiant Heater - Radiator Water	139	Ea.	$718,086	5
Decentralized Cooling	Window Units	25	Ea.	$83,471	5
Facility Hydronic Distribution	Pump - 1HP or Less (Ea.)	14	Ea.	$106,798	5
	Sub Total for System	**6**	**items**	**$2,598,825**	

Electrical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Light Fixtures (Bldg SF)	77,710	SF	$461,742	5
Lighting Fixtures	Building Mounted Fixtures (Ea.)	10	Ea.	$14,926	5
Power Distribution	Panelboard - 120/208 100A	10	Ea.	$48,486	5
Power Distribution	Panelboard - 120/208 225A	12	Ea.	$69,591	5
	Sub Total for System	**4**	**items**	**$594,744**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Classroom Lavatories	14	Ea.	$38,066	4
Plumbing Fixtures	Non-Refrigerated Drinking Fountain	6	Ea.	$61,320	5
Plumbing Fixtures	Toilets	16	Ea.	$45,633	5
Plumbing Fixtures	Urinals	4	Ea.	$5,316	5
Plumbing Fixtures	Mop/Service Sinks	4	Ea.	$10,306	5
Plumbing Fixtures	Restroom Lavatories	16	Ea.	$50,897	5
Compressed-Air Systems	Air Compressor (2 hp)	1	Ea.	$6,383	5
	Sub Total for System	**7**	**items**	**$217,921**	
	Sub Total for Building 03 - Building 03	**20**	**items**	**$3,699,574**	
	Total for: Cumberland High School	**50**	**items**	**$10,540,913**	

Supporting Photos


Generator


Building Mounted Fixture

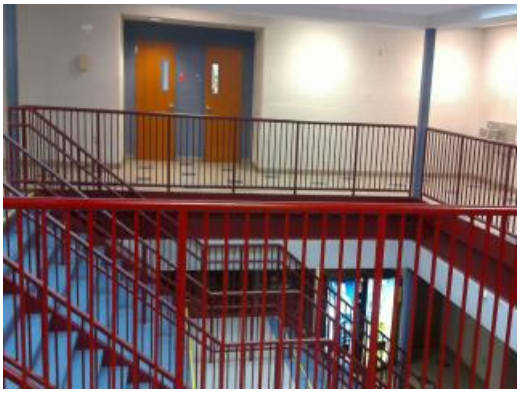
Boiler


Typical VFD

Pumps

Radiant Heater

Corroded Exterior Metal Door



Typical Corridor

Site Aerial

Disconnects


Exhaust Fans


Stained Ceiling Tiles

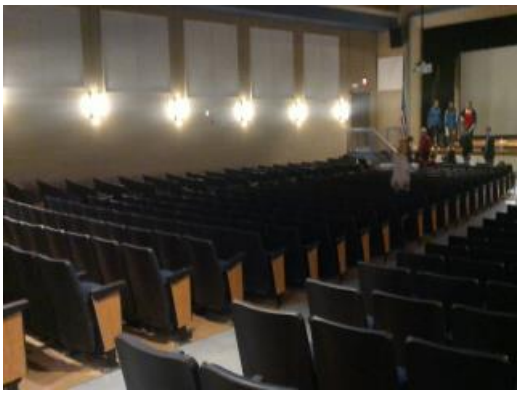

Typical Boiler


Typical Restroom


Kitchen Hood


Cafeteria


Typical Science Lab


Auditorium


Canopy Mounted Fixture


Finned Wall Heater


Typical VCT


Computer Lab


Restroom Lavatory


Cracked CMU


Elevation


Air Handling Unit


Fire Alarm Panel


Transformer


Elevation


Pumps


Gymnasium

Elevation


Hot Water Storage Tank

Ductless Split System


Old Cafeteria

Elevation


Corridor Finishes


Weight Room


Elevation


Unit Heater


Typical Drinking Fountain


Air Compressor


Elevation


Cabinet Heater


Elevation


Restroom Finishes


Exterior Finishes


Exterior Brick


Exhaust Fan


Panelboards


Brick Exterior


Pool

Condensing Unit And Exhaust Fan

Transformer

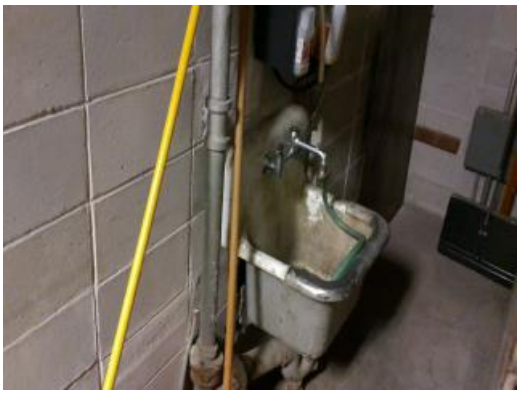
Transfer Switch

Aged Pool Lockers

Rooftop AHU

Restroom Lavatories


Window Unit


Mop Sink


Mop Sink


Backflow Preventers


Worn VCT


Elevation

Typical Classroom