North Providence

LEA Summary

North Providence totals 501,510 square feet and consists of the school type(s) detailed below. School(s) were visited three times during the Statewide Facilities Assessment by teams of specialists from February-April 2016. This report provides LEA summary findings for the statewide assessment program.

School Type by Count

School Type	SqFt
Elementary School	161,723
Middle School	128,500
High School	211,287
Total:	**501,510**

72.1 % Utilization

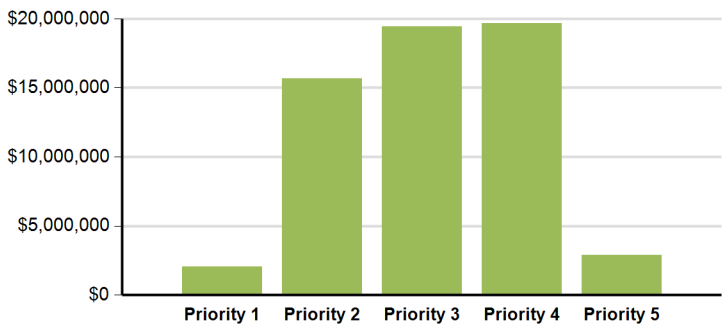
Demographics

Enrollment is projected to increase by 8.6% over the next 10 years in North Providence. The total LEA enrollment at 9 school (s) is 3,493 students with a total capacity of 4,847 as reported by the LEA. Utilization is calculated by dividing enrollment by capacity, resulting in 72.1% utilization at North Providence.

Educational Program Space Analysis

In North Providence there are 262 instructional spaces; of these spaces 10.7% meet or exceed the space size standards. Of the total current deficiencies identified, $3,910,648 are related to the educational program space assessment. Addressing these identified deficiencies will improve the learning environment and bring the school(s) in the district closer to 21st century learning facilities.

Total Current Deficiencies



Five Year Need Summary

The current deficiencies total $59,693,130, with 32.9% categorized as Priority 4 and another 32.6% as Priority 3. The building systems with the highest current deficiency costs are Interior and Mechanical.

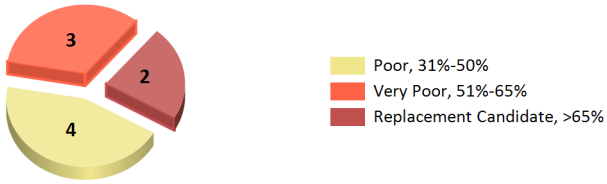
The projected life cycle need in Years 1 through 5 is $30,971,278. It is anticipated that the majority of the need will occur in Year 4. School(s) with the greatest need are represented in the adjacent table and make up 63.9% of the combined 5-Year need at North Providence.

School(s) with Greatest Need	Combined 5-Year Need
North Providence High School	$41,198,465
Dr. Edward A. Ricci Middle School	$8,415,271
Marieville Elementary School	$8,314,252

Five Year Facility Condition Index (FCI)

For master planning purposes, the total current deficiencies, less new construction, and the first 5 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. The 5-Year need is $90,664,408 with a district replacement value of $175,071,370. The resulting 5-Year FCI is 51.8%.

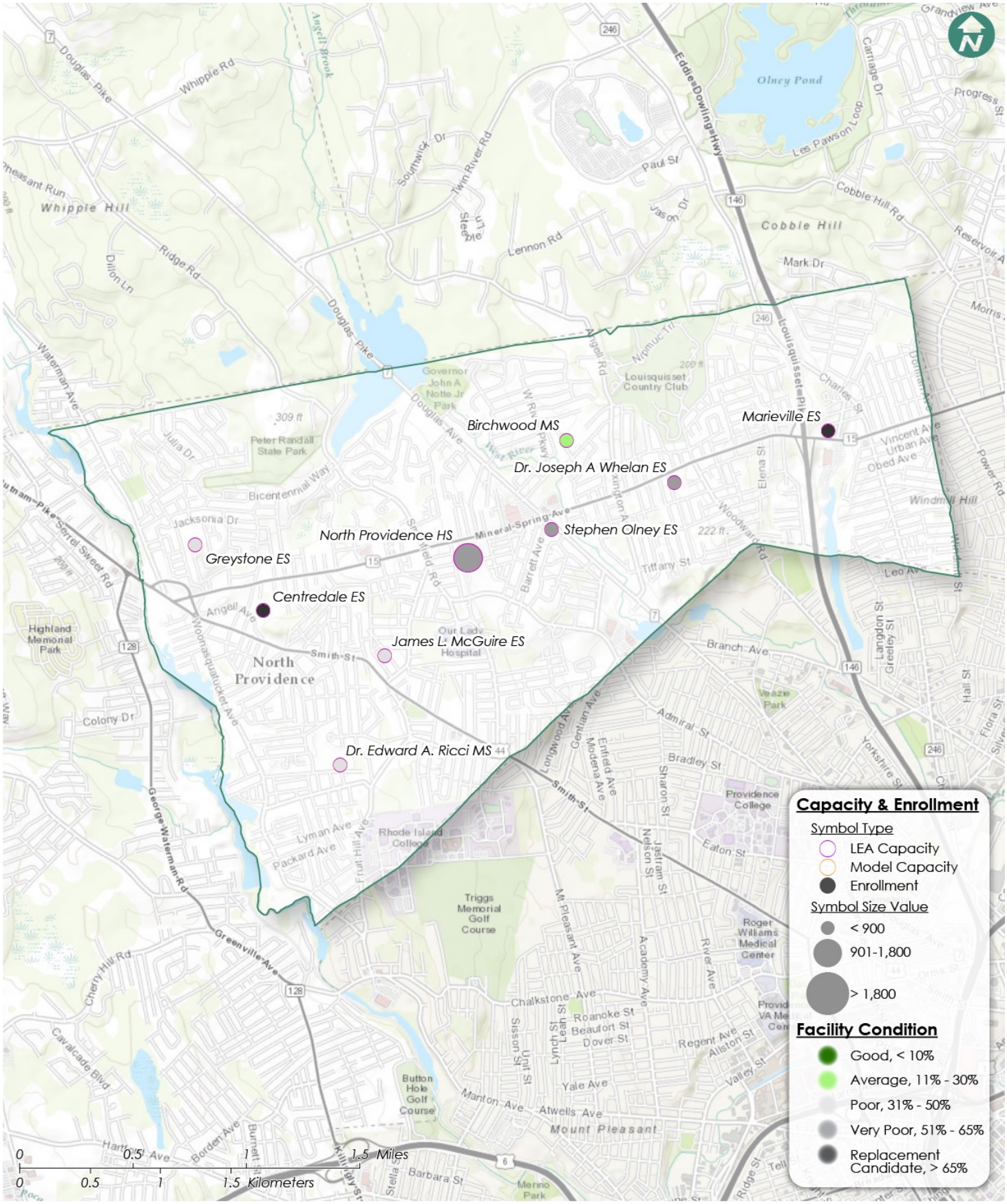
5-Year FCI Ranges



LEA Summary Data

Gross SqFt	Avg Year Built	Current Deficiencies (Less New Construction)	Life Cycle Year 1-5 Total	Total 5-Year Need (Year 1-5 + Current Defs)	5-Year FCI
501,510	1949	$59,693,130	$30,971,278	$90,664,408	51.8%

North Providence



Facility Condition Assessment

North Providence - Birchwood Middle School | *June 2017*

10 Birchwood Drive, North Providence, RI 02904

Introduction

Birchwood Middle School, located at 10 Birchwood Drive in North Providence, Rhode Island, was built in 1966. It comprises 64,900 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.

Birchwood Middle School serves grades 6 - 8, has 31 instructional spaces, and has an enrollment of 430. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Birchwood Middle School is 574 with a resulting utilization of 75%.

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 Birchwood Middle School the 5-year need is $6,459,477. 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 Birchwood Middle 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 Birchwood Middle School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Asphalt Roadway 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
	E.I.F.S. Exterior Wall
	Aluminum Exterior Windows
	Storefront / Curtain Wall
	Storefront Entrance Doors
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors

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

01 - Main Building:	Composition Shingle Roofing
	EPDM Roofing
	Built-Up Roofing With Ballast

Interior

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

01 - Main Building:	Wood Interior Doors
	Interior Door Hardware
	Door Hardware
	Exposed Metal Structure Ceiling
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Painted Ceilings
	Ceramic Tile Wall
	CMU Wall
	Brick/Stone Veneer
	Interior Wall Painting
	Concrete Flooring
	Quarry Tile Flooring

01 - Main Building:	Ceramic Tile Flooring
	Wood Flooring
	Rubber Tile Flooring
	Vinyl Composition Tile Flooring

Mechanical

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

01 - Main Building:	400 MBH Cast Iron Water Boiler
	4,488 MBH Cast Iron Water Boiler
	Steam/Hot Water Heating Unit Vent
	Fin Tube Water Radiant Heater
	20 MBH Gas Unit Heater
	320 MBH Gas Unit Heater
	DDC Heating System Controls
	1 Ton Ductless Split System
	2 Ton Thru-Wall A/C
	Window Units
	10 Ton Package DX Unit
	Make-up Air Unit
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	Roof Exhaust Fan
	Wall Exhaust Fan
	Kitchen Exhaust Hoods
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	250 Gallon Water Storage Tank
	2" Backflow Preventers
	Gas Piping System
	40 Gallon Gas Water Heater
	50 Gallon Gas Water Heater
	6.4 GPM Instant Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories

01 - Main Building:	Showers
	Toilets
	Urinals

Electrical

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

01 - Main Building:	800 Amp Switchgear
	400 Amp Distribution Panel
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	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	-	-	$261,740	$1,255,121	$421,178	$1,938,039	43.62 %
Roofing	-	$215,692	$1,343	-	-	$217,035	4.89 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	-	$1,103	-	$1,103	0.02 %
Interior	-	-	$2,857	$273,759	$132,288	$408,903	9.20 %
Mechanical	-	$442,939	$117,111	$182,128	-	$742,179	16.71 %
Electrical	$4,288	$5,112	$9,442	-	$74,285	$93,128	2.10 %
Plumbing	-	-	$15,944	$108,150	$25,885	$149,979	3.38 %
Fire and Life Safety	$34,642	-	-	-	-	$34,642	0.78 %
Technology	-	-	$831,550	-	-	$831,550	18.72 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	-	$25,982	$25,982	0.58 %
Total	$38,930	$663,743	$1,239,988	$1,820,259	$679,618	$4,442,539	

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

The building systems with the most need include:

Site	-	$1,938,039
Technology	-	$831,550
Mechanical	-	$742,179

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

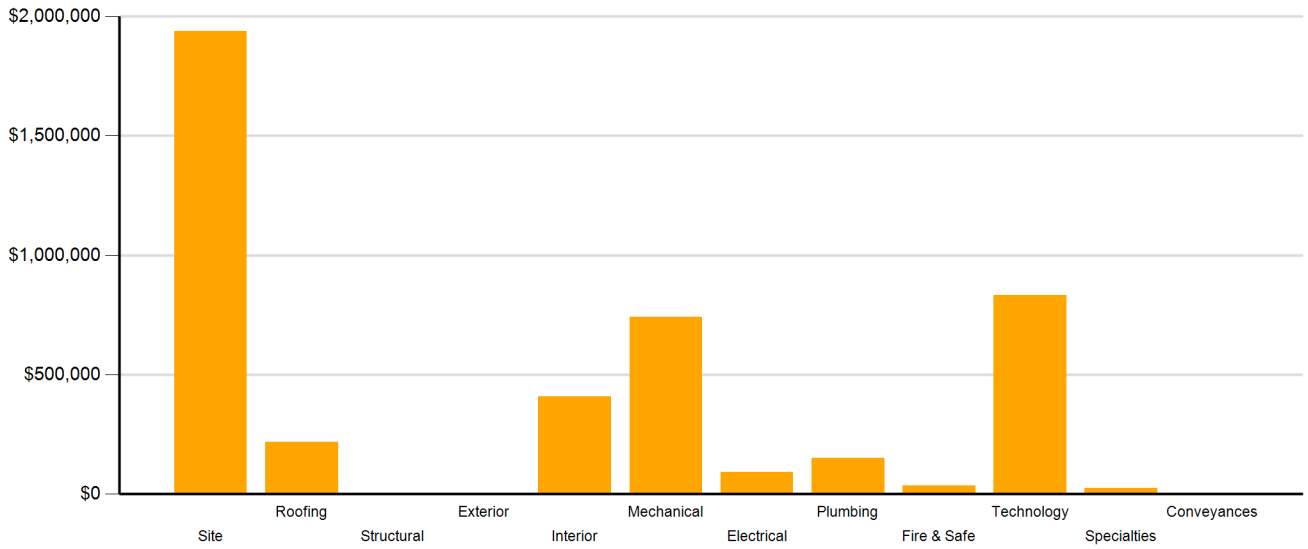


Figure 2: System Deficiencies

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	-	-	$100,348	$97,431	-	$197,779
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$663,743	$46,350	$1,518,108	$139,252	$2,367,453
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$38,930	-	$5,774	$36,662	$540,366	$621,732
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$168,058	-	$168,058
Technology	-	-	$825,777	-	-	$825,777
Traffic	-	-	$261,740	-	-	$261,740
Total	$38,930	$663,743	$1,239,988	$1,820,259	$679,618	$4,442,539

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

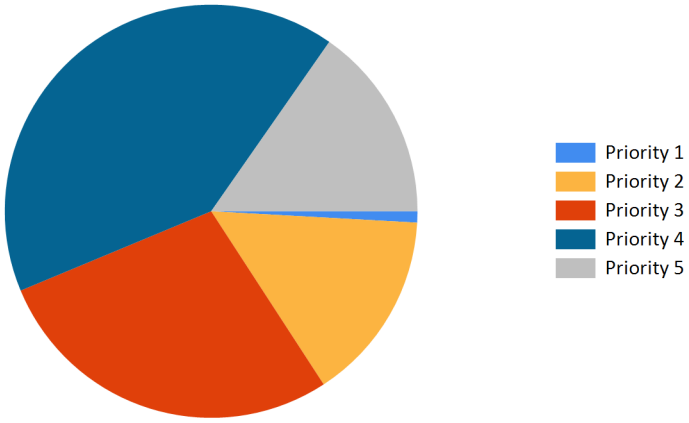


Figure 3: Current deficiencies by priority

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	$1,938,039	$0	$0	$343,840	$0	$0	$343,840	$2,281,879
Roofing	$217,035	$0	$0	$0	$0	$0	$0	$217,035
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$1,103	$0	$0	$0	$0	$0	$0	$1,103
Interior	$408,903	$0	$0	$0	$581,494	$334,539	$916,033	$1,324,936
Mechanical	$742,179	$0	$0	$185,097	$0	$269,337	$454,434	$1,196,613
Electrical	$93,128	$0	$0	$0	$0	$0	$0	$93,128
Plumbing	$149,979	$0	$0	$38,361	$0	$264,270	$302,631	$452,610
Fire and Life Safety	$34,642	$0	$0	$0	$0	$0	$0	$34,642
Technology	$831,550	$0	$0	$0	$0	$0	$0	$831,550
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$25,982	$0	$0	$0	$0	$0	$0	$25,982
Total	**$4,442,539**	**$0**	**$0**	**$567,298**	**$581,494**	**$868,146**	**$2,016,938**	**$6,459,477**

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

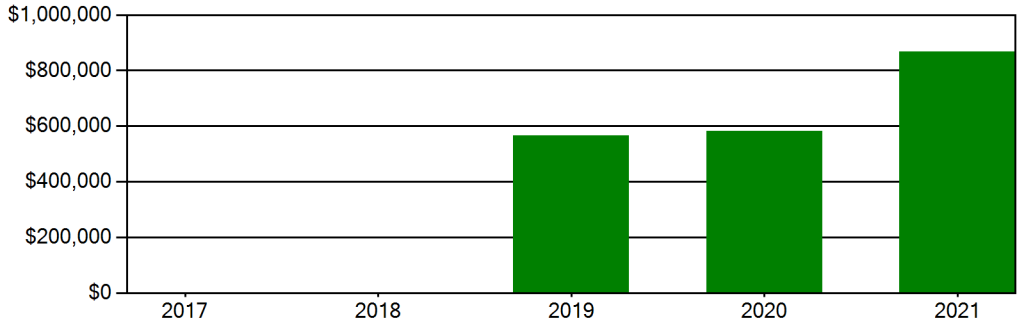
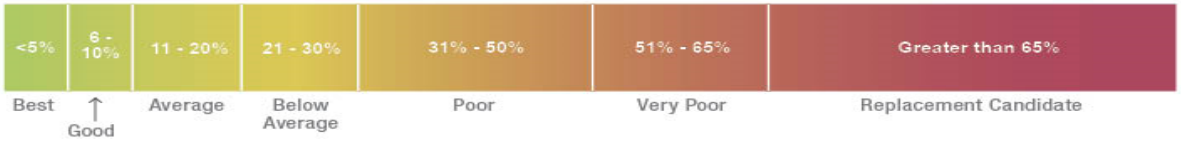


Figure 4: Life Cycle Capital Renewal Forecast

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 $21,417,000. For planning purposes, the total 5-year need at the Birchwood Middle School is $6,459,477 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Birchwood Middle School facility has a 5-year FCI of 30.16%.

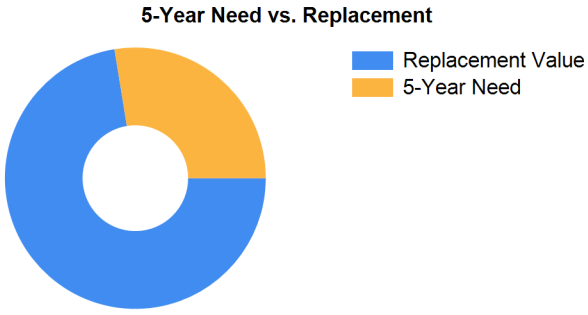


Figure 5: 5-Year FCI

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 342 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 Birchwood Middle School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $296,525.

Summary of Findings

The Birchwood Middle School comprises 64,900 square feet and was constructed in 1966. Current deficiencies at this school total $4,442,539. Five year capital renewal costs total $2,016,938. The total identified need for the Birchwood Middle School (current deficiencies and 5-year capital renewal costs) is $6,459,477. The 5-year FCI is 30.16%.

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
Birchwood Middle School Totals	64,900	1966	$4,442,539	$2,016,938	$6,459,477	30.16%

**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
Install New Bus Drop Or Parent Drop Area	Traffic	1	Ea.	3	$192,456	4464
Note: Add parent pick up/drop off area along Brookdale Road						
New Sidewalk Is Required	Traffic	2,400	SF	3	$69,284	4465
Note: Add sidewalk from Helm Street and Brookdale Road to building (6' sidewalk)						
Asphalt Paving Requires Replacement	Capital Renewal	85	CAR	4	$355,813	1673
Note: Roadway cracking and splitting.						
Asphalt Paving Requires Replacement	Capital Renewal	129	CAR	4	$539,999	1674
Note: Parking lot cracking and splitting.						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$36,086	28521
Note: Backstops Require Replacement						
Fencing Requires Replacement (8' Chain Link Fence)	Capital Renewal	1,400	LF	4	$119,082	1651
Note: Fence rusted and falling down.						
Location: Baseball field						
Fencing Requires Replacement (8' Chain Link Fence)	Capital Renewal	2,400	LF	4	$204,141	1672
Note: Fence is rusted and falling down.						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,398	28764
Note: Exterior Basketball Goals are Required						
School lacks a competition track.	Educational Adequacy	1	Ea.	5	$413,780	28253
Note: School lacks a competition track.						
	Sub Total for System	**9**	**items**		**$1,938,039**	
	Sub Total for School and Site Level	**9**	**items**		**$1,938,039**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	16,179	SF	2	$215,692	1676
Note: Portions of this roof appear to have caused leaks in the rooms below. The roof should be resurfaced to prevent future problems.						
The Metal Downspouts Require Installation or Replacement	Capital Renewal	20	LF	3	$1,343	1680
Note: Some of the downspouts on the gymnasium appear to have either fallen or been torn off of the building.						
	Sub Total for System	**2**	**items**		**$217,035**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Handrail Requires Repainting	Capital Renewal	100	LF	4	$1,103	1677
Note: Exterior handrails should be painted.						
	Sub Total for System	**1**	**items**		**$1,103**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	300	SF	3	$2,857	1679
Note: While the majority of the acoustic ceiling tiles are in good shape, a few show stains and signs of potential roof leaks; notable areas are the music room (#45), the main office, and custodial closets.						
12 x 12 Floor Tiles Are Lifting or Broken and Highly Likely Contain Asbestos	Hazardous Material	4,950	SF	4	$148,853	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	20	LF	4	$401	Rollup
Interior Toilet Partition Requires Repair	Capital Renewal	15	Ea.	4	$8,270	1681
Note: Partitions in the boys restrooms are typically rusted and in need of repair.						
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	37	Ea.	4	$11,126	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	90	LF	4	$2,165	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	140	SF	4	$1,403	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	4	Ea.	4	$1,203	Rollup

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
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	290	SF	4	$2,907	Rollup
Partitions Provide Insufficient Sound Isolation	Acoustics	1,440	SF	4	$43,303	4637
Note: Shared wall between cafeteria and offices						
Partitions Provide Insufficient Sound Isolation	Acoustics	1,800	SF	4	$54,128	4638
Note: Shared wall between Wood Shop and learning spaces						
Interior Walls Require Repainting (Bldg SF)	Capital Renewal	17,978	SF	5	$125,244	Rollup
Room lacks appropriate sound control.	Educational Adequacy	200	SF	5	$7,044	Rollup
	Sub Total for System	**13**	**items**		**$408,903**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Replace Unit Vent	Capital Renewal	16	Ea.	2	$285,348	1653
Note: Coils clogged and units rusted.						
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	85	Ea.	2	$150,126	1655
Note: Coils clogged and units rusted.						
Through The Wall AC Requires Replacement	Capital Renewal	1	Ea.	2	$7,466	1669
Note: Unit not maintained. Coils clogged and sheet metal rusting.						
The Make Up Air Equipment Requires Replacement	Capital Renewal	1	Ea.	3	$16,764	1631
Note: Clogged and rusted.						
Unit Ventilators Are Excessively Noisy	Acoustics	15	Ea.	3	$100,348	4639
Note: All classrooms excessively loud, ones not at end of useful life require replacement due to noise						
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	9	Ea.	4	$72,388	1632
Note: Pumps leaking and overheating.						
The Exhaust Hood Requires Replacement	Capital Renewal	20	Ea.	4	$109,740	1663
Note: Casing rusting and cages clogged.						
	Sub Total for System	**7**	**items**		**$742,179**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room last power shut-off valves for utilities	Educational Adequacy	3	Ea.	1	$4,288	Rollup
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$5,112	1633
The Mounted Building Lighting Requires Replacement	Capital Renewal	6	Ea.	3	$9,442	1825
Remove Abandoned Equipment	Capital Renewal	2	Ea.	5	$7,004	1634
Note: Abandoned electrical equipment.						
Remove Abandoned Equipment	Capital Renewal	1	Ea.	5	$3,502	1647
Note: Abandoned fuel tank.						
Remove Abandoned Equipment	Capital Renewal	1	Ea.	5	$3,502	1662
Note: AHU no longer in use and should be removed.						
Room Has Insufficient Electrical Outlets	Educational Adequacy	120	Ea.	5	$60,277	Rollup
	Sub Total for System	**7**	**items**		**$93,128**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Gas Water Heater Requires Replacement	Capital Renewal	1	Ea.	3	$3,332	1670
Note: Connections corroded.						
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	9	Ea.	3	$12,612	1661
Note: Aged and stained urinal fixtures.						
Floor Drains Are Required	Educational Adequacy	1	Ea.	4	$577	Rollup
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$10,776	1666
Note: Unit corroded and stained.						
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	13	Ea.	4	$37,268	1657
Note: Units stained and rusting.						
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	3	Ea.	4	$8,149	1658
Note: Sink stained and rusting.						

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	1	Ea.	4	$7,778	1667
Note: Non-functional						
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	1	Ea.	4	$3,354	1656
Note: Stainless steel rusting.						
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	12	Ea.	4	$40,247	1659
Room lacks a drinking fountain.	Educational Adequacy	4	Ea.	5	$4,465	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	14	Ea.	5	$21,420	Rollup
	Sub Total for System	**11**	**items**		**$149,979**	

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	3	Ea.	1	$34,642	Rollup
	Sub Total for System	**1**	**items**		**$34,642**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,774	Rollup
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	296	Ea.	3	$148,352	3752
Technology: Instructional spaces do not have local sound reinforcement.	Technology	25	Ea.	3	$125,297	3759
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,017	3748
Technology: Main Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$52,925	3747
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	240	Ea.	3	$108,257	3750
Technology: Network system inadequate and/or near end of useful life	Technology	16	Ea.	3	$80,190	3751
Technology: Network system inadequate and/or near end of useful life	Technology	2	Ea.	3	$16,038	3753
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	64,900	SF	3	$117,097	3758
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$57,135	3754
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$52,925	3749
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	33	Ea.	3	$52,925	3757
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,618	3756
	Sub Total for System	**13**	**items**		**$831,550**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks an appropriate refrigerator.	Educational Adequacy	3	Ea.	5	$25,982	Rollup
	Sub Total for System	**1**	**items**		**$25,982**	
	Sub Total for Building 01 - Main Building	**56**	**items**		**$2,504,500**	
	Total for Campus	**65**	**items**		**$4,442,539**	

Birchwood Middle School - Life Cycle Summary Yrs 1-5

Site Level Life Cycle Items

Site

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Playfield Areas	MS Athletic Components	1	Ea.	$343,840	3
Note:	Baseball field				
	Sub Total for System	**1**	**items**	**$343,840**	
	Sub Total for Building -	**1**	**items**	**$343,840**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Suspended Plaster and	Painted ceilings	12,034	SF	$50,952	4
Resilient Flooring	Vinyl Composition Tile Flooring	45,691	SF	$530,542	4
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles	36,595	SF	$334,539	5
	Sub Total for System	**3**	**items**	**$916,033**	

Mechanical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Facility Hydronic Distribution	Pump - 1HP or Less (Ea.)	2	Ea.	$15,443	3
Decentralized Cooling	Package DX Unit (10 Ton)	6	Ea.	$134,319	3
Decentralized Cooling	Ductless Split System (1 Ton)	2	Ea.	$28,576	3
Decentralized Cooling	Window Units	2	Ea.	$6,759	3
Facility Hydronic Distribution	2-Pipe Water System (Hot)	32,450	SF	$253,178	5
Exhaust Air	Kitchen Exhaust Hoods	1	Ea.	$16,159	5
Note:	1,500 cfm				
	Sub Total for System	**6**	**items**	**$454,433**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Instant 6.4 GPM	1	Ea.	$5,293	3
Domestic Water Equipment	Water Heater - Gas - 40 gallon	1	Ea.	$3,199	3
Plumbing Fixtures	Refrigerated Drinking Fountain	4	Ea.	$29,869	3
Domestic Water Piping	Domestic Water Piping System (Bldg.SF)	32,450	SF	$264,270	5
	Sub Total for System	**4**	**items**	**$302,630**	
	Sub Total for Building 01 - Main Building	**13**	**items**	**$1,673,097**	
	Total for: Birchwood Middle School	**14**	**items**	**$2,016,937**	

Supporting Photos

Site Aerial

Rusting Baseball Fencing

Damaged Fencing

Broken Building Mounted Fixture


Cracked Parking Lot Asphalt


Main Distribution Panel


Chipped Wall Paint


Gymnasium


Girls Locker Room


Typical Rust On Bathroom Partition

Main Disconnect Panel


Stained Ceiling Tile


Abandoned Electrical Equipment


Damaged Thru Wall AC Unit


Abandoned AHU

Water Heater


Drinking Fountain


Woodworking Shop


Damaged Roof

1968 Dedication Plaque

Instant Hot Water Heater


Rusting Handrail


Library


Cafeteria And Kitchen


Computer Lab


Stained Custodial Sink


Restroom Lavatories


Damaged Fin Tube Radiant Heater


Restroom Fixtures And Finishes


Boys Locker Room


Ductless Unit


Aged Boiler


Typical Science Classroom


Unit Heater

Main Entrance


Aged Roof Exhaust


Fire Panel

2002 Addition Dedication Plaque


Stained Kitchen Mop Sink


2002 Addition Boiler


Kitchen Hood


Rusting Lavatory


Non-Functional Drinking Fountain


Missing Gutter/Drainpipe


100A Panel


Make Up Air Unit

Classroom Lavatory

Typical Classroom

Circulation Pumps Leaking And Overheating

Facility Condition Assessment

North Providence - Centredale School | *June 2017*

41 Angell Avenue, North Providence, RI 02911

Introduction

Centredale School, located at 41 Angell Avenue in North Providence, Rhode Island, was built in 1962. It comprises 25,333 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.

Centredale School serves grades PK - 5, has 18 instructional spaces, and has an enrollment of 279. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Centredale School is 375 with a resulting utilization of 74%.

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 Centredale School the 5-year need is $6,200,260. 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 Centredale 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 Centredale School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Concrete Pedestrian Pavement

Building Envelope

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

01 - Main Building:	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:	Built-Up Roofing With Ballast

Interior

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

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Interior Door Hardware
	Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Ceramic Tile Wall
	Wood Wall Paneling
	Interior Wall Painting
	Ceramic Tile Flooring
	Vinyl Composition Tile Flooring
	Athletic/Sport Flooring

Mechanical

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

01 - Main Building:	4,488 MBH Cast Iron Water Boiler
	Finned Wall Radiator
	320 MBH Gas Unit Heater
	50 MBH Steam Unit Heater

01 - Main Building:	Electronic Heating System Controls
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	Small Roof Exhaust Fan
	Kitchen Exhaust Hoods
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	Gas Piping System
	40 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Toilets
	Urinals

Electrical

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

01 - Main Building:	600 Amp Switchgear
	45 KVA Transformer
	400 Amp Distribution Panel
	Panelboard - 120/240 225A
	Electrical Disconnect
	Light 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	-	-	$94,614	$39,488	-	$134,102	2.66 %
Roofing	-	$1,488,863	-	-	-	$1,488,863	29.59 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	-	-	-	$0	0.00 %
Interior	-	-	$141,149	$1,103,643	$3,312	$1,248,104	24.80 %
Mechanical	-	$869,112	$8,342	$33,378	$3,300	$914,132	18.17 %
Electrical	-	$93,686	$5,132	-	$36,166	$134,984	2.68 %
Plumbing	-	-	$345,024	$119,850	$14,167	$479,042	9.52 %
Fire and Life Safety	$41,599	-	-	-	-	$41,599	0.83 %
Technology	-	-	$563,615	-	-	$563,615	11.20 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$27,714	-	-	$27,714	0.55 %
Total	$41,599	$2,451,661	$1,185,591	$1,296,359	$56,945	$5,032,155	

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

The building systems with the most need include:

Roofing	-	$1,488,863
Interior	-	$1,248,104
Mechanical	-	$914,132

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

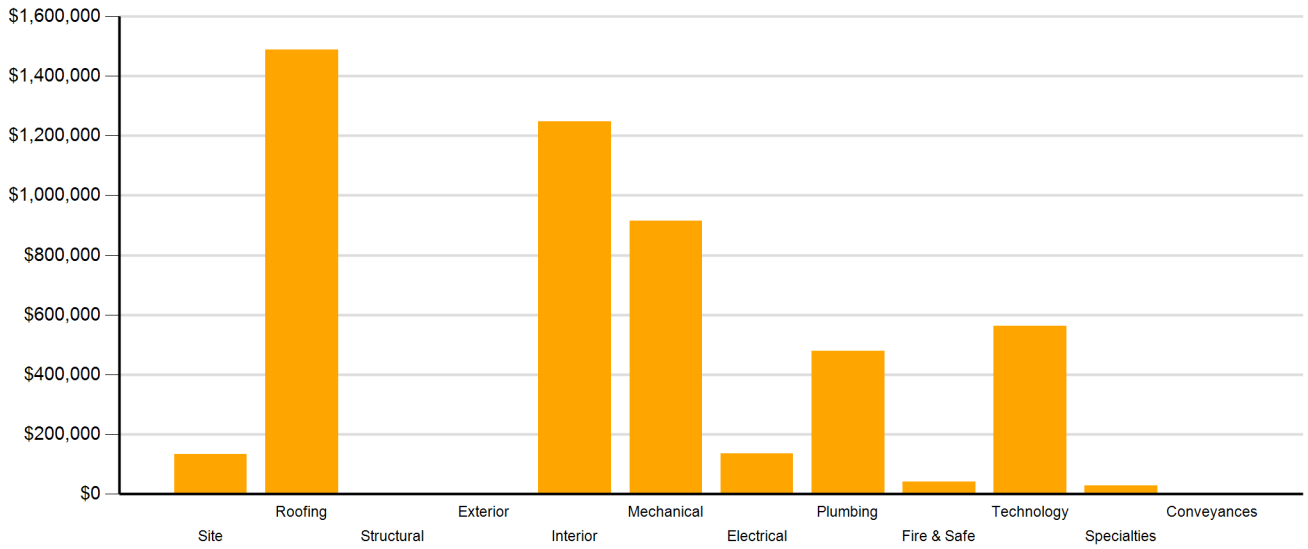


Figure 2: System Deficiencies

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	-	-	$114,085	-	-	$114,085
Barrier to Accessibility	-	-	$115,905	-	-	$115,905
Capital Renewal	$41,599	$2,451,661	$358,498	$167,477	$4,302	$3,023,537
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$45,035	$45,342	$52,643	$143,020
Functional Deficiency	-	-	-	$1,206	-	$1,206
Hazardous Material	-	-	-	$1,082,334	-	$1,082,334
Technology	-	-	$546,294	-	-	$546,294
Traffic	-	-	$5,774	-	-	$5,774
Total	$41,599	$2,451,661	$1,185,591	$1,296,359	$56,945	$5,032,155

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

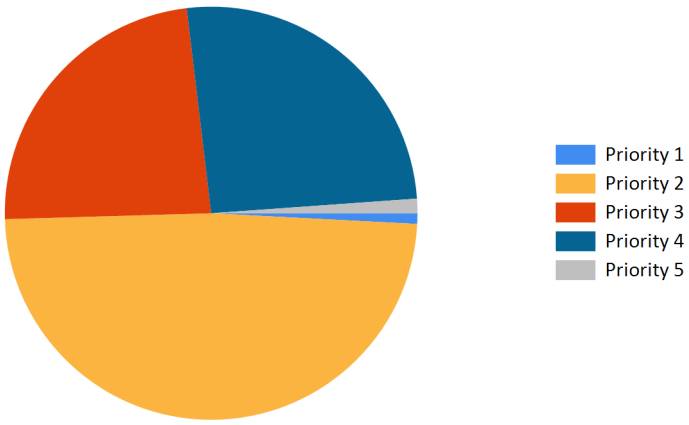


Figure 3: Current deficiencies by priority

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	$134,102	$0	$0	$90,722	$0	$7,829	$98,551	$232,653
Roofing	$1,488,863	$0	$0	$0	$0	$0	$0	$1,488,863
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$0	$0	$0	$0	$0	$0	$0	$0
Interior	$1,248,104	$0	$0	$51,622	$263,965	$352,478	$668,065	$1,916,169
Mechanical	$914,132	$0	$0	$0	$0	$0	$0	$914,132
Electrical	$134,984	$0	$0	$0	$0	$152,359	$152,359	$287,343
Plumbing	$479,042	$0	$0	$0	$0	$0	$0	$479,042
Fire and Life Safety	$41,599	$0	$0	$0	$0	$0	$0	$41,599
Technology	$563,615	$0	$0	$0	$0	$0	$0	$563,615
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$27,714	$0	$249,130	$0	$0	$0	$249,130	$276,844
Total	**$5,032,155**	**$0**	**$249,130**	**$142,344**	**$263,965**	**$512,666**	**$1,168,105**	**$6,200,260**

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

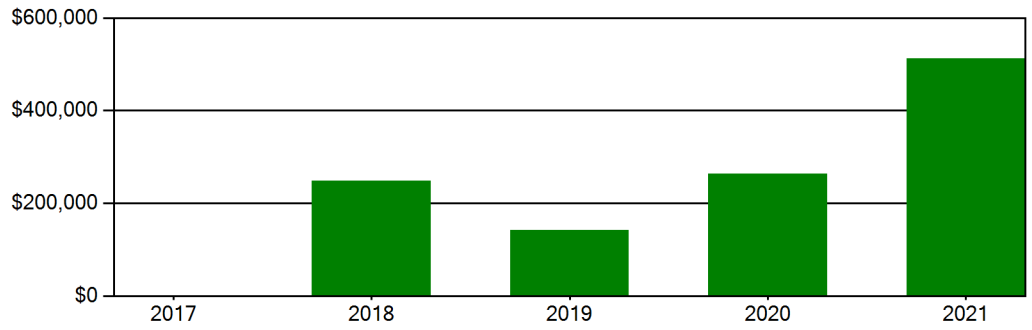
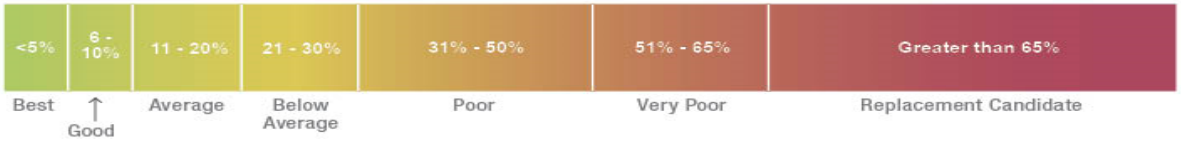


Figure 4: Life Cycle Capital Renewal Forecast

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 $8,866,550. For planning purposes, the total 5-year need at the Centredale School is $6,200,260 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Centredale School facility has a 5-year FCI of 69.93%.

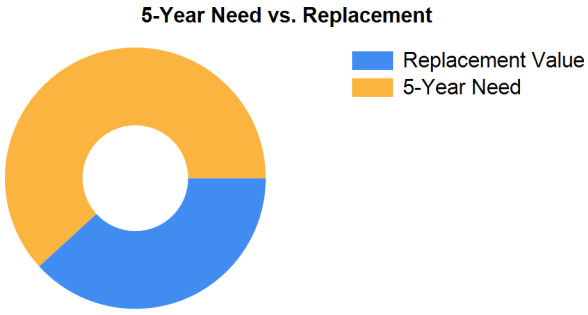


Figure 5: 5-Year FCI

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 141 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 Centredale School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $461,160.

Summary of Findings

The Centredale School comprises 25,333 square feet and was constructed in 1962. Current deficiencies at this school total $5,032,155. Five year capital renewal costs total $1,168,105. The total identified need for the Centredale School (current deficiencies and 5-year capital renewal costs) is $6,200,260. The 5-year FCI is 69.93%.

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
Centredale School Totals	25,333	1962	$5,032,155	$1,168,105	$6,200,260	69.93%

**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
Crosswalk: Needs to be added	Traffic	4	Ea.	3	$3,849	4409
Note: Add crosswalks at intersection of Angell Ave and Ferncliff Ave and intersection of Angell Ave and East Ave						
Install New Playground Equipment	Barrier to Accessibility	1	SF	3	$88,841	54904
Note: Install New Playground Equipment						
Pavement Markings: Words/Symbols Are Required	Traffic	4	Ea.	3	$1,925	4411
Note: Add pavement markings (lines and arrows) to control parent drop off/pick up flow						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$36,086	28519
Note: Backstops Require Replacement						
Fencing Requires Replacement (8' Chain Link Fence)	Capital Renewal	40	LF	4	$3,402	339
	Sub Total for System	**5**	**items**		**$134,102**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Pole Lighting Requires Repair	Capital Renewal	1	Ea.	3	$4,631	589
	Sub Total for System	**1**	**items**		**$4,631**	
	Sub Total for School and Site Level	**6**	**items**		**$138,733**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Tectum Decking Requires Replacement	Capital Renewal	19,033	SF	2	$1,488,863	1868
	Sub Total for System	**1**	**items**		**$1,488,863**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	13	Ea.	3	$114,085	4648
Note: All classrooms						
Existing Door Hardware Is Not ADA Compliant	Barrier to Accessibility	9	Door	3	$27,064	328
12 x 12 Floor Tiles Are Lifting or Broken and Highly Likely Contain Asbestos	Hazardous Material	1,800	SF	4	$54,128	Rollup
Acoustic ceiling tile - large area (>10%) of broken or falling broken tiles	Hazardous Material	12,800	SF	4	$157,964	Rollup
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	25,580	SF	4	$769,223	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	492	LF	4	$9,863	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	11	Ea.	4	$3,308	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - linear feet)	Hazardous Material	350	LF	4	$8,420	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	1,100	SF	4	$11,026	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	6,332	SF	4	$63,470	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - each)	Hazardous Material	14	Ea.	4	$4,210	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - linear feet)	Hazardous Material	30	LF	4	$722	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	240	SF	4	$9,256	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Capital Renewal	300	SF	4	$12,053	246
Location: Storage room						
Classroom Door Requires Vision Panel	Educational Adequacy	1	Ea.	5	$2,309	Rollup
Interior Doors Require Repair	Capital Renewal	1	Door	5	$1,002	249
Location: Storage room near reception						
	Sub Total for System	**16**	**items**		**$1,248,104**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Gas Piping Requires Replacement (SF Basis)	Capital Renewal	25,333	SF	2	$578,309	1369
Gas Unit Heater Requires Replacement	Capital Renewal	1	Ea.	2	$3,971	269
Steam/HW Unit Heater Requires Replacement	Capital Renewal	5	Ea.	2	$15,597	280
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	37	Ea.	2	$65,349	266
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	25,333	SF	2	$205,886	1861
The Small Diameter Exhausts/Hoods Require Replacement	Capital Renewal	3	Ea.	3	$8,342	301
Make-Up Air Should Be Increased	Functional Deficiency	500	SF	4	$1,206	254
Note: No makeup air in boiler room for combustion.						
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	4	Ea.	4	$32,172	291
Remove Abandoned Equipment	Capital Renewal	1	Ea.	5	$3,300	284
Note: Remove abandoned pneumatic controls.						
	Sub Total for System	**9**	**items**		**$914,132**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Switchgear Is Needed Or Requires Replacement	Capital Renewal	1	Ea.	2	$20,328	1367
The Distribution Panel Requires Replacement	Capital Renewal	1	Ea.	2	$27,064	1862
The Electrical Disconnect Requires Replacement	Capital Renewal	3	Ea.	2	$5,798	1368
Location: Boiler Room						
The Panelboard Requires Replacement	Capital Renewal	4	Ea.	2	$40,496	248
Wall Pack Lighting Requires Repair	Capital Renewal	1	Ea.	3	$251	271
Location: Entry						
Wall Pack Lighting Requires Repair	Capital Renewal	1	Ea.	3	$251	294
Location: Door 8						
Room Has Insufficient Electrical Outlets	Educational Adequacy	72	Ea.	5	$36,166	Rollup
	Sub Total for System	**7**	**items**		**$130,353**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	25,333	SF	3	$214,906	582
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$123,112	257
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	5	Ea.	3	$7,007	263
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	3	Ea.	4	$32,327	276
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	14	Ea.	4	$40,135	260
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	1	Ea.	4	$2,716	259
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	1	Ea.	4	$7,778	277
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	11	Ea.	4	$36,893	261
Room lacks a drinking fountain.	Educational Adequacy	9	Ea.	5	$10,046	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	4	Ea.	5	$4,121	Rollup
	Sub Total for System	**10**	**items**		**$479,042**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Emergency Lighting Is Inadequate Or Not Present And Should be Installed	Capital Renewal	8,000	SF	1	$12,738	244
Location: Hallway 1, gym, hallway 2, entry						
Fire Sprinkler System Requires Replacement (SF Basis) per NFPA 13	Capital Renewal	600	SF	1	$12,029	288
Location: Mechanical Room						
Replace Kitchen Exhaust Hood	Capital Renewal	1	Ea.	1	$16,832	304
Note: No hood in warming kitchen.						
	Sub Total for System	**3**	**items**		**$41,599**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	3	Ea.	3	$17,321	Rollup

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	144	Ea.	3	$72,171	3710
Technology: Instructional spaces do not have local sound reinforcement.	Technology	19	Ea.	3	$95,226	3716
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,613	3707
Technology: Intermediate Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$47,713	3704
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$5,012	3706
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,017	3703
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$44,906	3701
Technology: Network system inadequate and/or near end of useful life	Technology	20	Ea.	3	$100,238	3708
Technology: Network system inadequate and/or near end of useful life	Technology	2	Ea.	3	$16,038	3709
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	25,333	SF	3	$45,708	3715
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$57,135	3711
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,019	3702
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$5,012	3705
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	18	Ea.	3	$28,868	3714
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,618	3713
	Sub Total for System	**16**	**items**		**$563,615**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	6	Ea.	3	$27,714	Rollup
	Sub Total for System	**1**	**items**		**$27,714**	
	Sub Total for Building 01 - Main Building	**63**	**items**		**$4,893,421**	
	Total for Campus	**69**	**items**		**$5,032,155**	

Centredale School - Life Cycle Summary Yrs 1-5

Site Level Life Cycle Items

Site

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Playfield Areas	ES Playgrounds		1	Ea.	$45,131	3
Fences and Gates	Fencing - Chain Link (8 Ft)		670	LF	$45,591	3
Parking Lot Lighting	Pole Mounted Fixtures (Ea.)		1	Ea.	$7,829	5
		Sub Total for System	**3**	**items**	**$98,551**	
		Sub Total for Building -	**3**	**items**	**$98,551**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Acoustical Suspended Ceilings	Ceilings - Acoustical Grid System		4,300	SF	$51,622	3
Resilient Flooring	Vinyl Composition Tile Flooring		22,733	SF	$263,965	4
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles		4,300	SF	$39,309	5
Acoustical Suspended Ceilings	Exposed Tectum Ceilings		2,000	SF	$150,193	5
Note:	Exposed wood structure					
Wall Paneling	Wood Panel wall		750	SF	$6,928	5
Wall Painting and Coating	Painting/Staining (Bldg SF)		23,333	SF	$156,048	5
		Sub Total for System	**6**	**items**	**$668,064**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Light Fixtures (Bldg SF)		25,333	SF	$152,359	5
		Sub Total for System	**1**	**items**	**$152,359**	

Specialties

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Casework	Fixed Cabinetry		22	Room	$249,130	2
		Sub Total for System	**1**	**items**	**$249,130**	
		Sub Total for Building 01 - Main Building	**8**	**items**	**$1,069,553**	
		Total for: Centredale School	**11**	**items**	**$1,168,105**	

Supporting Photos

Site Aerial

Typical Classroom

Aged Panelboard

Missing Kitchen Exhaust Hood


Rear Elevation


Library


West Elevation


Exterior Finishes


Unit Heater


Typical Classroom Sink


Building Mounted Lighting


Rusting Custodial Sink

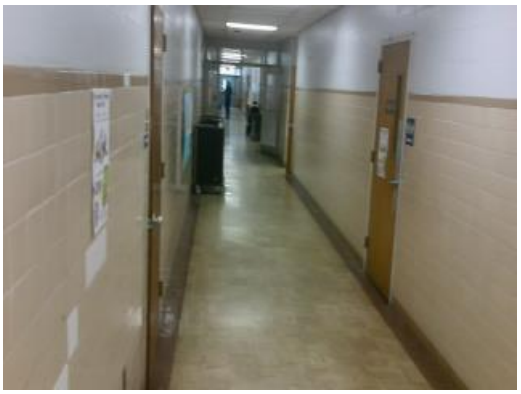

Gymnasium


Pole Lighting


Drinking Fountain


Classroom


Baseboard Heater


Hallway Finishes


Restroom Sink


Main Entry


Gymnasium


Aged Panelboard


Circulating Pumps


Rusted Chain Link Fence

Facility Condition Assessment

North Providence - Dr. Edward A. Ricci Middle School | *June 2017*

51 Intervale Avenue, North Providence, RI 02911

Introduction

Dr. Edward A. Ricci Middle School, located at 51 Intervale Avenue in North Providence, Rhode Island, was built in 1968. It comprises 63,600 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.

Dr. Edward A. Ricci Middle School serves grades 6 - 8, has 37 instructional spaces, and has an enrollment of 441. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Dr. Edward A. Ricci Middle School is 658 with a resulting utilization of 67%.

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 Dr. Edward A. Ricci Middle School the 5-year need is $8,415,271. 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 Dr. Edward A. Ricci Middle 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 Dr. Edward A. Ricci Middle School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Concrete Pedestrian Pavement
	Gravel Pedestrian Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	CMU Exterior Wall
	E.I.F.S. Exterior Wall
	Aluminum Exterior Windows
	Storefront / Curtain Wall
	Storefront Entrance Doors
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors

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

01 - Main Building:	Composition Shingle Roofing
	EPDM Roofing
	Single Ply Roofing

Interior

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

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Interior Door Hardware
	Door Hardware
	Exposed Metal Structure Ceiling
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Ceramic Tile Wall
	CMU Wall
	Brick/Stone Veneer
	Concrete Flooring
	Ceramic Tile Flooring

01 - Main Building:	Quarry Tile Flooring
	Vinyl Composition Tile Flooring
	Athletic/Sport Flooring

Mechanical

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

01 - Main Building:	1,275 MBH Cast Iron Water Boiler
	400 MBH Cast Iron Water Boiler
	Finned Wall Radiator
	DDC Heating System Controls
	2 Ton Thru-Wall A/C
	Make-up Air Unit
	1 HP or Smaller Pump
	5 HP Pump
	2-Pipe Hot Water Hydronic Distribution System
	5 Ton DX Gas Roof Top Unit
	Kitchen Exhaust Hoods
	Wall Exhaust Fan
	Roof Exhaust Fan
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	250 Gallon Water Storage Tank
	Gas Piping System
	60 Gallon Gas Water Heater
	75 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Showers
	Toilets
	Urinals

Electrical

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

01 - Main Building:	Motor Controller

01 - Main Building:	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Light Fixtures
	Building Mounted Lighting Fixtures
	Canopy 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	-	-	-	$70,836	$434,169	$505,005	6.62 %
Roofing	-	$1,008,860	-	-	-	$1,008,860	13.23 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	-	-	-	$0	0.00 %
Interior	-	-	$392,672	$2,077,399	$11,182	$2,481,253	32.55 %
Mechanical	-	$386,470	$16,764	$475,739	$6,600	$885,572	11.62 %
Electrical	-	$92,307	$9,442	-	$51,888	$153,638	2.02 %
Plumbing	-	-	$175,795	$242,294	$28,339	$446,428	5.86 %
Fire and Life Safety	$1,309,430	-	-	-	-	$1,309,430	17.18 %
Technology	-	-	$794,283	-	-	$794,283	10.42 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$13,764	-	$25,807	$39,570	0.52 %
Total	$1,309,430	$1,487,637	$1,402,720	$2,866,268	$557,985	$7,624,039	

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

The building systems with the most need include:

Interior	-	$2,481,253
Fire and Life Safety	-	$1,309,430
Roofing	-	$1,008,860

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

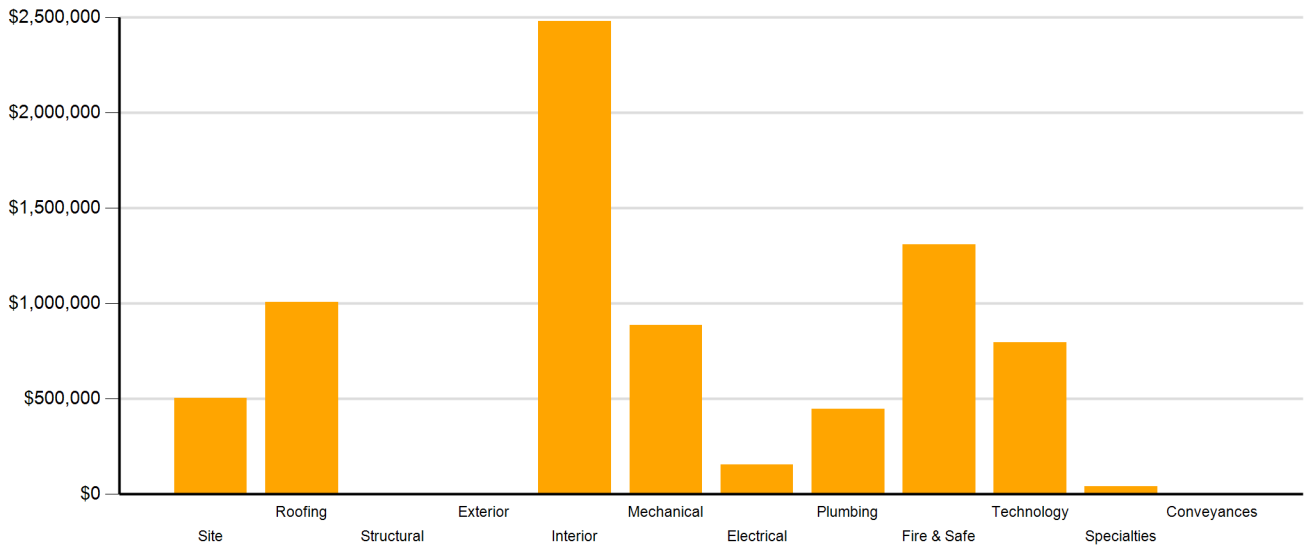


Figure 2: System Deficiencies

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	-	-	-	$74,156	-	$74,156
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	$1,275,021	$1,487,637	$594,673	$1,270,296	$20,392	$4,648,019
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$34,409	-	$19,498	$57,998	$537,592	$649,498
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$1,463,818	-	$1,463,818
Technology	-	-	$788,548	-	-	$788,548
Traffic	-	-	-	-	-	$0
Total	$1,309,430	$1,487,637	$1,402,720	$2,866,268	$557,985	$7,624,039

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

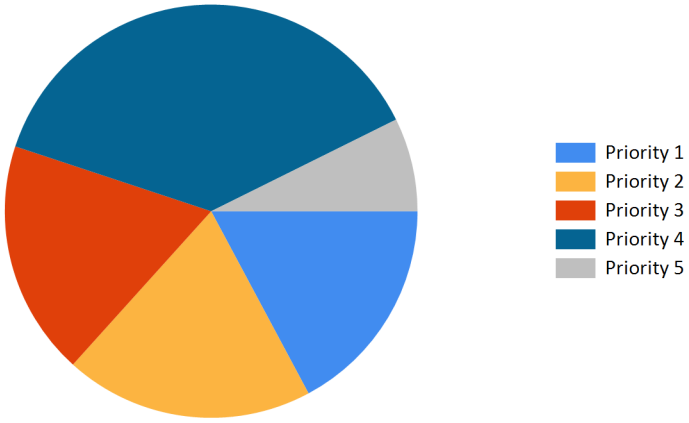


Figure 3: Current deficiencies by priority

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	$505,005	$0	$0	$401,860	$0	$23,487	$425,347	$930,352
Roofing	$1,008,860	$0	$0	$0	$0	$0	$0	$1,008,860
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$0	$0	$0	$0	$0	$0	$0	$0
Interior	$2,481,253	$0	$0	$0	$0	$0	$0	$2,481,253
Mechanical	$885,572	$0	$0	$196,344	$0	$121,306	$317,650	$1,203,222
Electrical	$153,638	$0	$0	$34,632	$0	$0	$34,632	$188,270
Plumbing	$446,428	$0	$0	$0	$0	$13,603	$13,603	$460,031
Fire and Life Safety	$1,309,430	$0	$0	$0	$0	$0	$0	$1,309,430
Technology	$794,283	$0	$0	$0	$0	$0	$0	$794,283
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$39,570	$0	$0	$0	$0	$0	$0	$39,570
Total	**$7,624,039**	**$0**	**$0**	**$632,836**	**$0**	**$158,396**	**$791,232**	**$8,415,271**

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

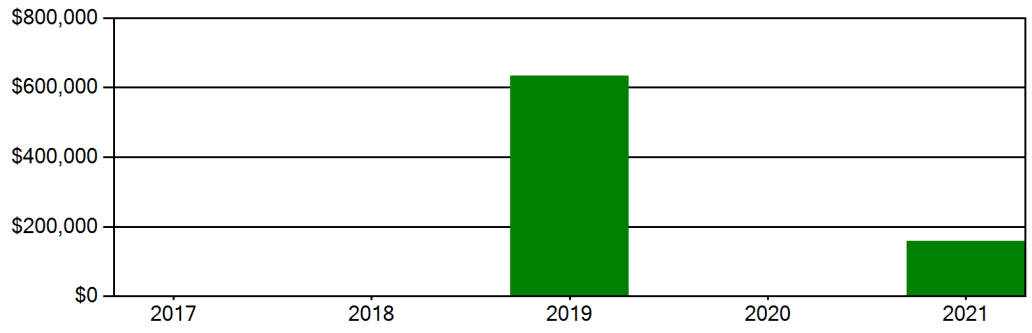
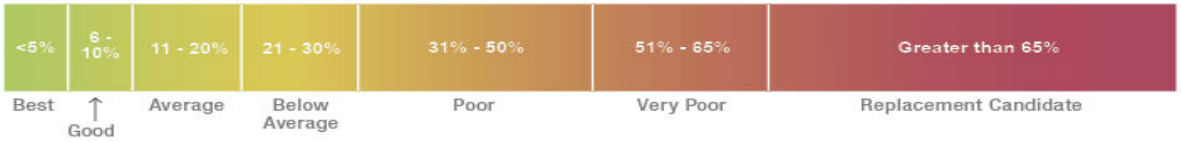


Figure 4: Life Cycle Capital Renewal Forecast

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 $20,988,000. For planning purposes, the total 5-year need at the Dr. Edward A. Ricci Middle School is $8,415,271 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Dr. Edward A. Ricci Middle School facility has a 5-year FCI of 40.10%.

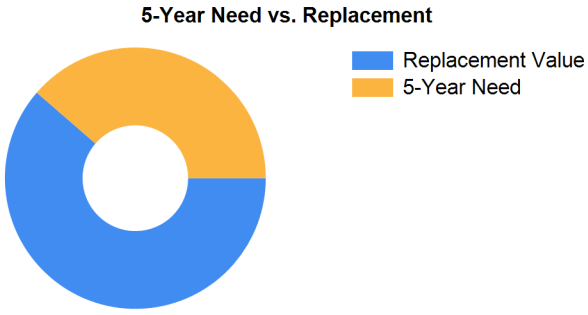


Figure 5: 5-Year FCI

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 335 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 Dr. Edward A. Ricci Middle School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $0.

Summary of Findings

The Dr. Edward A. Ricci Middle School comprises 63,600 square feet and was constructed in 1968. Current deficiencies at this school total $7,624,039. Five year capital renewal costs total $791,232. The total identified need for the Dr. Edward A. Ricci Middle School (current deficiencies and 5-year capital renewal costs) is $8,415,271. The 5-year FCI is 40.10%.

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
Dr. Edward A. Ricci Middle School Totals	63,600	1968	$7,624,039	$791,232	$8,415,271	40.10%

**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
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$36,086	28522
Note: Backstops Require Replacement						
Replace Natural Turf (Grass) Playfield	Capital Renewal	3	Ea.	4	$34,750	489
Note: Soccer field, baseball field, and track area are all extremely worn						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,398	28765
Note: Exterior Basketball Goals are Required						
School lacks a competition track.	Educational Adequacy	1	Ea.	5	$413,780	28254
Note: School lacks a competition track.						
Tennis Courts, Nets, And Equipment Require Repair	Capital Renewal	4	Ea.	5	$12,991	491
Note: There are no nets in the tennis courts and the area requires repair						
	Sub Total for System	**5**	**items**		**$505,005**	
	Sub Total for School and Site Level	**5**	**items**		**$505,005**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	47,701	SF	2	$635,930	1378
Shingle Roof Requires Replacement	Capital Renewal	9,540	SF	2	$286,880	1377
The Single-Ply Membrane Roof Covering Requires Replacement	Capital Renewal	6,359	SF	2	$86,050	1379
	Sub Total for System	**3**	**items**		**$1,008,860**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	41,236	SF	3	$392,672	443
Note: Tiles are stained and moldy due to numerous leaks in roofing.						
12 x 12 Floor Tiles Are Lifting or Broken and Highly Likely Contain Asbestos	Hazardous Material	47,701	SF	4	$1,434,429	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	20	LF	4	$401	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	41,236	SF	4	$515,665	1376
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	1,200	SF	4	$12,029	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - each)	Hazardous Material	6	Ea.	4	$1,804	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - linear feet)	Hazardous Material	630	LF	4	$15,156	Rollup
Room Is Excessively Reverberant	Acoustics	1,200	SF	4	$11,006	4724
Note: Gym						
Room Is Excessively Reverberant (Install Fiberglass Wall Panel)	Acoustics	1,050	SF	4	$63,150	4725
Note: Cafeteria						
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	572	SF	4	$21,912	Rollup
The Plaster Ceilings Require Repair	Capital Renewal	100	SF	4	$1,847	475
Note: Gypsum board ceiling is cracking in the atrium.						
Classroom Door Requires Vision Panel	Educational Adequacy	3	Ea.	5	$6,882	Rollup
Room lacks appropriate sound control.	Educational Adequacy	100	SF	5	$3,498	Rollup
The Concrete Flooring Requires Repair Or Repainting	Capital Renewal	100	SF	5	$802	462
Note: Foundation on gymnasium hallway and parts of 2002 addition appears to be sinking or settling, causing cracks and leaks. Repair cracks						
	Sub Total for System	**14**	**items**		**$2,481,253**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	2	Ea.	2	$158,794	421
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	112	Ea.	2	$197,813	444

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Through The Wall AC Requires Replacement	Capital Renewal	4	Ea.	2	$29,863	455
The Make Up Air Equipment Requires Replacement	Capital Renewal	1	Ea.	3	$16,764	436
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	2	Ea.	4	$5,646	426
Note: Combustion exhaust fan						
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	63,600	SF	4	$403,767	1815
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	5	Ea.	4	$50,239	423
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	2	Ea.	4	$16,086	453
Remove Abandoned Equipment	Capital Renewal	2	Ea.	5	$6,600	438
	Sub Total for System	**9**	**items**		**$885,572**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Motor Control Center Requires Replacement	Capital Renewal	9	Ea.	2	$37,276	425
The Panelboard Requires Replacement	Capital Renewal	9	Ea.	2	$55,030	1382
Note: Most electrical equipment is original to the building.						
The Mounted Building Lighting Requires Replacement	Capital Renewal	6	Ea.	3	$9,442	492
Room Has Insufficient Electrical Outlets	Educational Adequacy	104	Ea.	5	$51,888	Rollup
	Sub Total for System	**4**	**items**		**$153,638**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Showers Plumbing Fixtures Require Replacement	Capital Renewal	20	Ea.	3	$160,380	449
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	11	Ea.	3	$15,415	452
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	2	Ea.	4	$21,551	439
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	12	Ea.	4	$34,402	442
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	4	Ea.	4	$10,866	457
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	1	Ea.	4	$7,778	1380
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	46	Ea.	4	$154,282	445
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	4	Ea.	4	$13,416	1381
Room lacks a drinking fountain.	Educational Adequacy	5	Ea.	5	$5,544	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	15	Ea.	5	$22,796	Rollup
	Sub Total for System	**10**	**items**		**$446,428**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Fire Sprinkler System Requires Replacement (SF Basis) per NFPA 13	Capital Renewal	63,600	SF	1	$1,275,021	460
Room lacks shut-off valves for utilities. (International Fuel Gas Code, Section 409.6)	Educational Adequacy	3	Ea.	1	$34,409	Rollup
	Sub Total for System	**2**	**items**		**$1,309,430**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,735	Rollup
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	344	Ea.	3	$172,409	3780
Technology: Instructional spaces do not have local sound reinforcement.	Technology	32	Ea.	3	$160,380	3789
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,017	3779
Technology: Main Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$52,925	3777
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	80	Ea.	3	$36,086	3781
Technology: Network system inadequate and/or near end of useful life	Technology	1	Ea.	3	$8,019	3787
Technology: Network system inadequate and/or near end of useful life	Technology	30	Ea.	3	$150,356	3788

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	63,600	SF	3	$114,752	3786
Technology: Special Space AV/Multimedia systems are in need of minor improvements.	Technology	1	Ea.	3	$10,024	3782
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,019	3778
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	38	Ea.	3	$60,944	3785
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,618	3784
	Sub Total for System	**13**	**items**		**$794,283**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	3	Ea.	3	$13,764	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	3	Ea.	5	$25,807	Rollup
	Sub Total for System	**2**	**items**		**$39,570**	
	Sub Total for Building 01 - Main Building	**57**	**items**		**$7,119,034**	
	Total for Campus	**62**	**items**		**$7,624,039**	

Dr. Edward A. Ricci Middle 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		120	CAR	$401,860	3
Parking Lot Lighting	Pole Mounted Fixtures (Ea.)		3	Ea.	$23,487	5
		Sub Total for System	**2**	**items**	**$425,347**	
		Sub Total for Building -	**2**	**items**	**$425,347**	

Building: 01 - Main Building

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
HVAC Air Distribution	Roof Top Unit - DX Gas (5 Ton)		10	Ea.	$196,344	3
Exhaust Air	Roof Exhaust Fan		22	Ea.	$115,885	5
Exhaust Air	Wall Exhaust Fan		2	Ea.	$5,421	5
		Sub Total for System	**3**	**items**	**$317,650**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Building Mounted Fixtures (Ea.)		22	Ea.	$33,237	3
Lighting Fixtures	Canopy Mounted Fixtures (Ea.)		1	Ea.	$1,395	3
		Sub Total for System	**2**	**items**	**$34,632**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 75 Gallons		1	Ea.	$5,916	5
Domestic Water Equipment	Water Heater - Gas - 60 gallon		2	Ea.	$7,687	5
		Sub Total for System	**2**	**items**	**$13,603**	
		Sub Total for Building 01 - Main Building	**7**	**items**	**$365,885**	
		Total for: Dr. Edward A. Ricci Middle School	**9**	**items**	**$791,232**	

Supporting Photos

Site Aerial

Art Room

Stained Custodial Sink

Cafeteria Make Up Air

Typical Classroom

Radiant Heater

Typical Student Restroom

Restroom Lavatories

Library

Damaged Building Mounted Light


Pumps


Classroom Lavatories


Cafeteria


Combustion Exhaust Fan


Music Room

Main Entrance


Boiler


Showers


Elevation Along Intervale Avenue


Unit Heater


Motor Control


Tennis Courts


Cracked Gypsum Board Ceiling


Gymnasium Elevation


Window Unit


Hot Water Pumps


Soccer Field And Track


Typical Urinal Fixtures

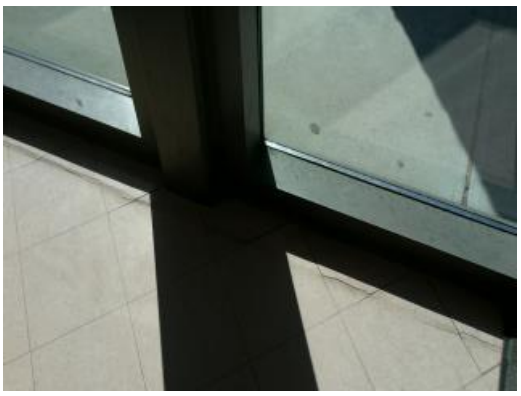

Girls Locker Room


Boys Locker Room


Typical Science Lab


2002 Gymnasium Addition


Baseball Fields


Foundation Separation In Entry Lobby

Facility Condition Assessment

North Providence - Dr. Joseph A Whelan Elementary School | *June 2017*

1440 Mineral Spring Avenue, North Providence, RI 02904

Introduction

Dr. Joseph A Whelan Elementary School, located at 1440 Mineral Spring Avenue in North Providence, Rhode Island, was built in 1976. It comprises 22,886 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.

Dr. Joseph A Whelan Elementary School serves grades KG - 5, has 17 instructional spaces, and has an enrollment of 261. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Dr. Joseph A Whelan Elementary School is 350 with a resulting utilization of 75%.

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 Dr. Joseph A Whelan Elementary School the 5-year need is $4,175,543. 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.

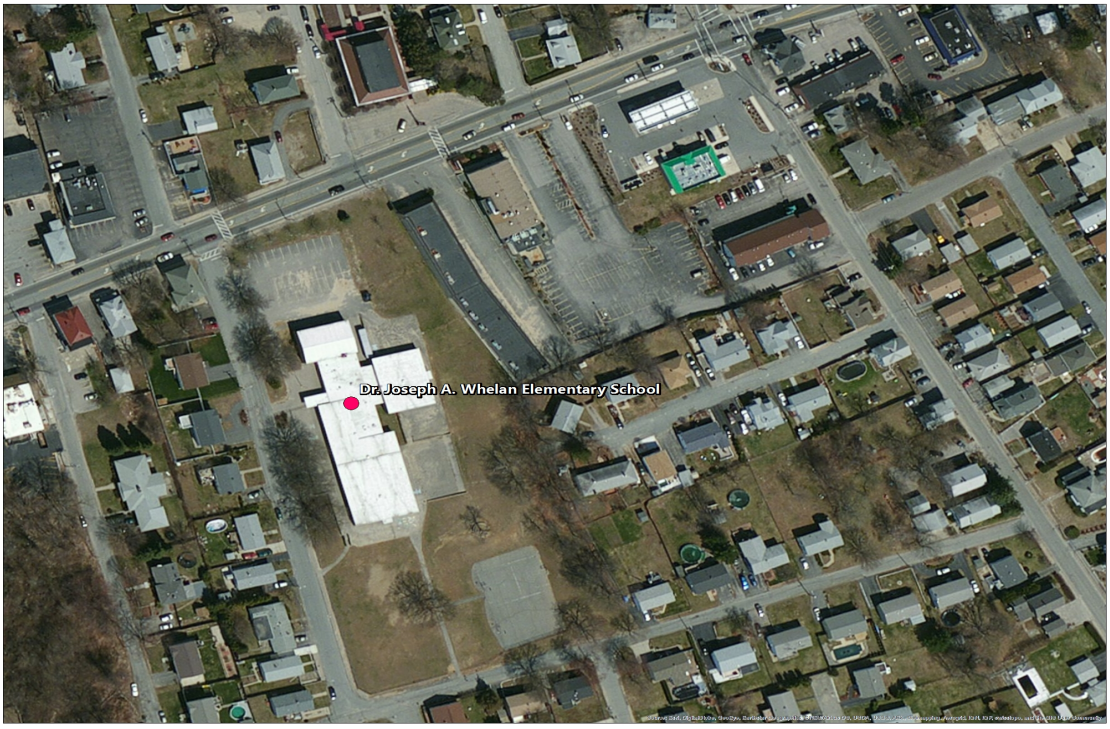


Figure 1: Aerial view of Dr. Joseph A Whelan Elementary School

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 Dr. Joseph A Whelan Elementary School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Asphalt Pedestrian Pavement

Building Envelope

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

01 - Main Building:	CMU Exterior Wall
	Aluminum Exterior Windows
	Storefront / Curtain Wall
	Storefront Entrance Doors
	Wood Exterior Doors
	Steel Exterior Entrance Doors

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

01 - Main Building:	EPDM Roofing

Interior

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

01 - Main Building:	Steel Interior Doors
	Aluminum/Glass Storefront Interior Doors
	Wood Interior Doors
	Interior Door Hardware
	Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Ceramic Tile Wall
	Interior Wall Painting
	Vinyl Composition Tile Flooring

Mechanical

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

01 - Main Building:	3,264 MBH Cast Iron Water Boiler
	Radiant Water Heater
	Pneumatic Heating System Controls
	1 HP or Smaller Pump
	2-Pipe Hot Water Hydronic Distribution System

01 - Main Building:	2,000 CFM Interior AHU
	Roof Exhaust Fan
	Wall Exhaust Fan

Plumbing

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

01 - Main Building:	Gas Piping System
	100 Gallon Gas Water Heater
	Domestic Water Piping System
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Toilets
	Urinals

Electrical

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

01 - Main Building:	600 Amp Switchgear
	Panelboard - 120/240 100A
	Building Mounted Lighting Fixtures
	Canopy Mounted Lighting Fixtures
	Light 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	-	-	-	$291,434	-	$291,434	7.83 %
Roofing	-	$305,107	-	-	-	$305,107	8.20 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$8,776	-	-	-	$8,776	0.24 %
Interior	-	-	$598,453	$652,585	-	$1,251,038	33.60 %
Mechanical	-	$508,322	$100,348	$181,502	-	$790,172	21.22 %
Electrical	-	$32,557	$4,721	-	$33,927	$71,205	1.91 %
Plumbing	-	-	$205,358	$97,774	$12,991	$316,123	8.49 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$641,901	-	-	$641,901	17.24 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	$47,184	-	$47,184	1.27 %
Total	$0	$854,762	$1,550,781	$1,270,478	$46,918	$3,722,939	

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

The building systems with the most need include:

Interior	-	$1,251,038
Mechanical	-	$790,172
Technology	-	$641,901

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

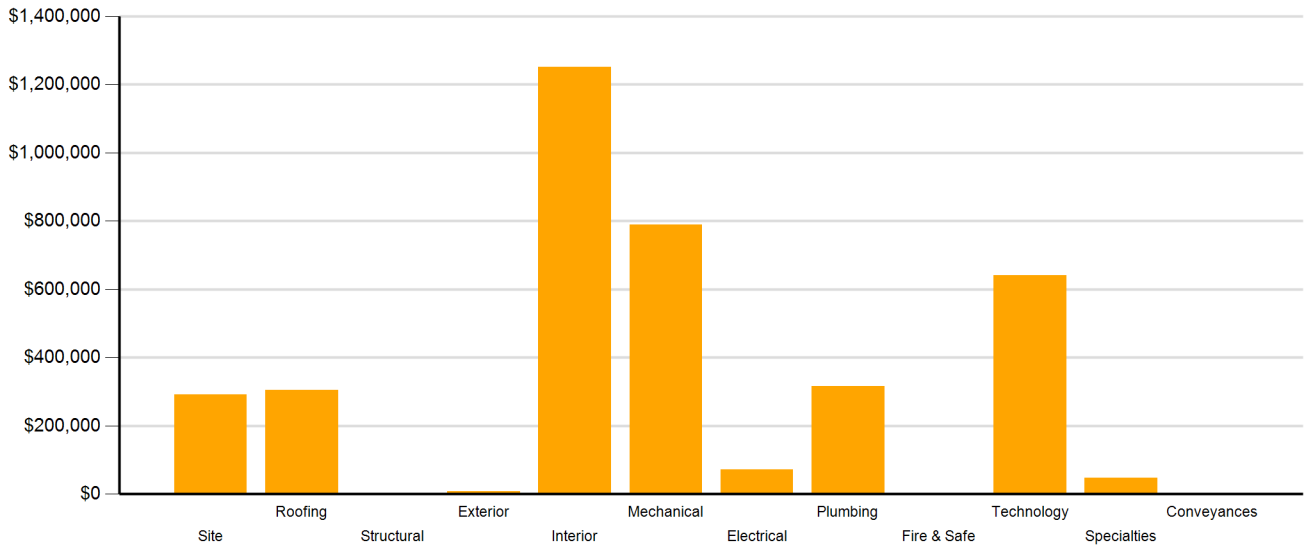


Figure 2: System Deficiencies

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	-	-	$129,808	-	-	$129,808
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$854,762	$429,559	$838,227	-	$2,122,548
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$5,735	$49,264	$46,918	$101,917
Functional Deficiency	-	-	$349,513	-	-	$349,513
Hazardous Material	-	-	-	$382,987	-	$382,987
Technology	-	-	$636,166	-	-	$636,166
Traffic	-	-	-	-	-	$0
Total	$0	$854,762	$1,550,781	$1,270,478	$46,918	$3,722,939

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

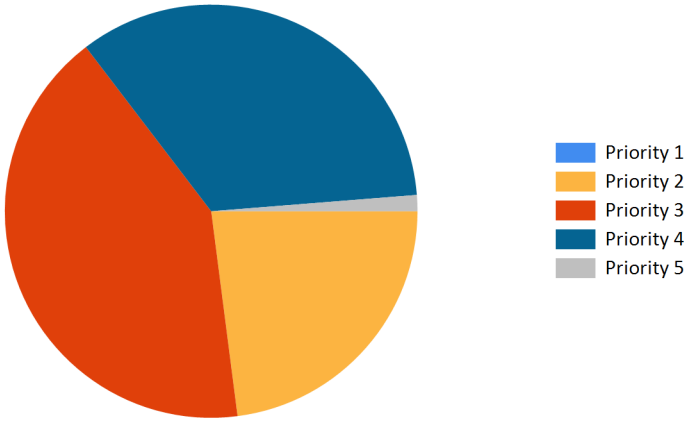


Figure 3: Current deficiencies by priority

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	$291,434	$0	$0	$45,131	$0	$12,974	$58,105	$349,539
Roofing	$305,107	$0	$0	$0	$0	$0	$0	$305,107
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$8,776	$0	$0	$0	$0	$0	$0	$8,776
Interior	$1,251,038	$0	$0	$126,251	$111,308	$151,553	$389,112	$1,640,150
Mechanical	$790,172	$0	$0	$0	$0	$0	$0	$790,172
Electrical	$71,205	$0	$0	$0	$0	$0	$0	$71,205
Plumbing	$316,123	$0	$0	$0	$0	$5,387	$5,387	$321,510
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$641,901	$0	$0	$0	$0	$0	$0	$641,901
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$47,184	$0	$0	$0	$0	$0	$0	$47,184
Total	**$3,722,939**	**$0**	**$0**	**$171,382**	**$111,308**	**$169,914**	**$452,604**	**$4,175,543**

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

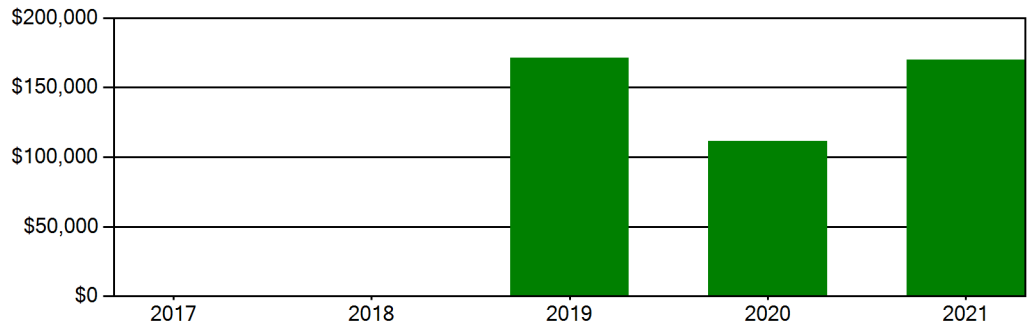
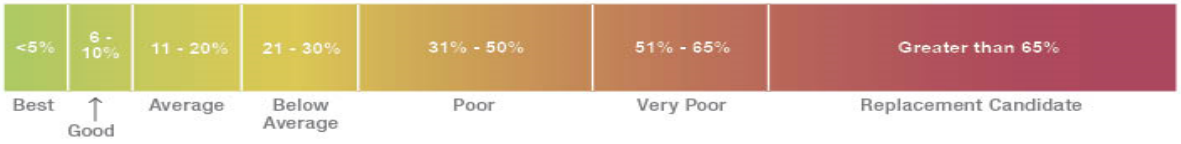


Figure 4: Life Cycle Capital Renewal Forecast

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 $8,010,100. For planning purposes, the total 5-year need at the Dr. Joseph A Whelan Elementary School is $4,175,543 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Dr. Joseph A Whelan Elementary School facility has a 5-year FCI of 52.13%.

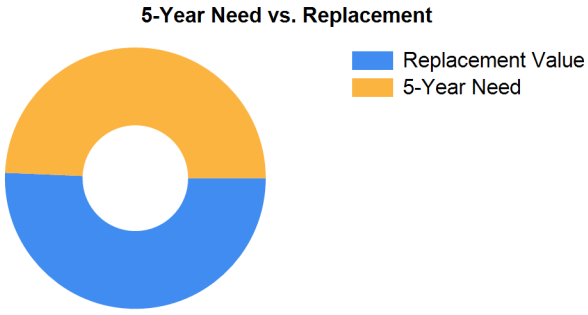


Figure 5: 5-Year FCI

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 127 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 Dr. Joseph A Whelan Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $467,208.

Summary of Findings

The Dr. Joseph A Whelan Elementary School comprises 22,886 square feet and was constructed in 1976. Current deficiencies at this school total $3,722,939. Five year capital renewal costs total $452,604. The total identified need for the Dr. Joseph A Whelan Elementary School (current deficiencies and 5-year capital renewal costs) is $4,175,543. The 5-year FCI is 52.13%.

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
Dr. Joseph A Whelan Elementary School Totals	22,886	1976	$3,722,939	$452,604	$4,175,543	52.13%

**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
Asphalt Paving Requires Replacement	Capital Renewal	61	CAR	4	$255,348	1361
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$36,086	28518
Note: Backstops Require Replacement						
	Sub Total for System	**2**	**items**		**$291,434**	
	Sub Total for School and Site Level	**2**	**items**		**$291,434**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	22,886	SF	2	$305,107	65
	Sub Total for System	**1**	**items**		**$305,107**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Wood Exterior Door Requires Replacement	Capital Renewal	1	Door	2	$8,776	1362
	Sub Total for System	**1**	**items**		**$8,776**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Functional Deficiency	15	Ea.	3	$131,637	1440
Note: All Classrooms						
Classroom Interior Doors Provide Insufficient Sound Isolation	Functional Deficiency	1	Ea.	3	$9,272	1441
Note: Communicating door to boiler room						
Classroom Interior Doors Provide Insufficient Sound Isolation	Acoustics	14	Ea.	3	$129,808	27986
Note: Classroom Doors						
CMU Walls Between Classrooms Provide Insufficient Sound Isolation	Functional Deficiency	5,400	SF	3	$108,257	1442
Note: All Classrooms						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	20,000	SF	3	$190,451	1900
The Vinyl Composition Tile Requires Replacement	Capital Renewal	2,400	SF	3	$29,029	895
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	10,900	SF	4	$327,777	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	485	LF	4	$9,723	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	20,000	SF	4	$250,104	43
Interior Ceramic Walls Require Repair Or Replacement	Capital Renewal	225	SF Wall	4	$6,315	49
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	33	Ea.	4	$9,924	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	48	Ea.	4	$14,434	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - linear feet)	Hazardous Material	420	LF	4	$10,104	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	1,000	SF	4	$10,024	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	344	SF	4	$13,178	Rollup
Wall/ceiling materials - large areas (> 10 sq. ft.) of damage & area in active use - children	Hazardous Material	100	SF	4	$1,002	Rollup
	Sub Total for System	**16**	**items**		**$1,251,038**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Air Handler HVAC Component Requires Replacement	Capital Renewal	1	Ea.	2	$45,482	46
Note: Gym unit rusted with failed 2-pipe, a broken belt, and exposed exterior parts.						
The Boiler HVAC Component Requires Replacement	Capital Renewal	1	Ea.	2	$179,602	66
Note: 2163 MBH - Insulation is deteriorated.						
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	38	Ea.	2	$206,982	52
Note: Radiators around gym.						
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	14	Ea.	2	$76,257	85

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Unit Ventilators Are Excessively Noisy	Functional Deficiency	15	Ea.	3	$100,348	1443
Note: All Classrooms						
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	2	Ea.	4	$5,646	56
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	22,886	SF	4	$99,412	89
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	2	Ea.	4	$16,086	71
The Exhaust Hood Requires Replacement	Capital Renewal	11	Ea.	4	$60,357	82
	Sub Total for System	**9**	**items**		**$790,172**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Switchgear Is Needed Or Requires Replacement	Capital Renewal	1	Ea.	2	$20,328	896
Note: 400 amp main switchgear						
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$12,229	579
The Mounted Building Lighting Requires Replacement	Capital Renewal	3	Ea.	3	$4,721	1
Room Has Insufficient Electrical Outlets	Educational Adequacy	68	Ea.	5	$33,927	Rollup
	Sub Total for System	**4**	**items**		**$71,205**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	22,886	SF	3	$194,148	1364
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	8	Ea.	3	$11,211	78
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$10,776	88
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	2	Ea.	4	$5,433	80
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	1	Ea.	4	$7,778	75
Note: Using duct tape for support.						
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	22	Ea.	4	$73,787	897
Room lacks a drinking fountain.	Educational Adequacy	8	Ea.	5	$8,870	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	4	Ea.	5	$4,121	Rollup
	Sub Total for System	**8**	**items**		**$316,123**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,735	Rollup
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	48	Ea.	3	$24,057	908
Technology: Campus wireless infrastructure meets standards but does not cover all areas of campus.	Technology	5	Ea.	3	$7,017	910
Technology: Instructional spaces do not have local sound reinforcement.	Technology	27	Ea.	3	$135,321	917
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,017	907
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$44,906	903
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	48	Ea.	3	$21,651	905
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	50	Ea.	3	$22,553	906
Technology: Network system inadequate and/or near end of useful life	Technology	20	Ea.	3	$100,238	911
Technology: Network system inadequate and/or near end of useful life	Technology	1	Ea.	3	$8,019	912
Technology: Number of current, up to date, network switch ports are insufficient to support campus technology.	Technology	92	Ea.	3	$46,109	909
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	22,866	SF	3	$41,257	913

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Special Space AV/Multimedia system is inadequate.	Technology	2	Ea.	3	$114,271	914
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,019	904
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	30	Ea.	3	$48,114	915
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,618	916
	Sub Total for System	**16**	**items**		**$641,901**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Replace Cabinetry In Classes/Labs	Capital Renewal	4	Room	4	$47,184	578
	Sub Total for System	**1**	**items**		**$47,184**	
	Sub Total for Building 01 - Main Building	**56**	**items**		**$3,431,505**	
	Total for Campus	**58**	**items**		**$3,722,939**	

Dr. Joseph A Whelan Elementary School - Life Cycle Summary Yrs 1-5

Site Level Life Cycle Items

Site

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Playfield Areas	ES Playgrounds	1	Ea.	$45,131	3
Pedestrian Pavement	Sidewalks - Asphalt	1,500	SF	$12,974	5
	Sub Total for System	**2**	**items**	**$58,105**	
	Sub Total for Building -	**2**	**items**	**$58,105**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Interior Door Supplementary Components	Door Hardware	28	Door	$88,915	3
Interior Swinging Doors	Wood	8	Door	$37,336	3
Resilient Flooring	Vinyl Composition Tile Flooring	9,586	SF	$111,308	4
Wall Painting and Coating	Painting/Staining (Bldg SF)	22,661	SF	$151,553	5
	Sub Total for System	**4**	**items**	**$389,112**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 100 Gallon	1	Ea.	$5,387	5
	Sub Total for System	**1**	**items**	**$5,387**	
	Sub Total for Building 01 - Main Building	**5**	**items**	**$394,499**	
	Total for: Dr. Joseph A Whelan Elementary School	**7**	**items**	**$452,604**	

Supporting Photos

Site Aerial

Front Entrance

Wall Exhaust Air

Aged Pumps


Aged Boiler

Typical Classroom Exterior Door

Gym Exit Door

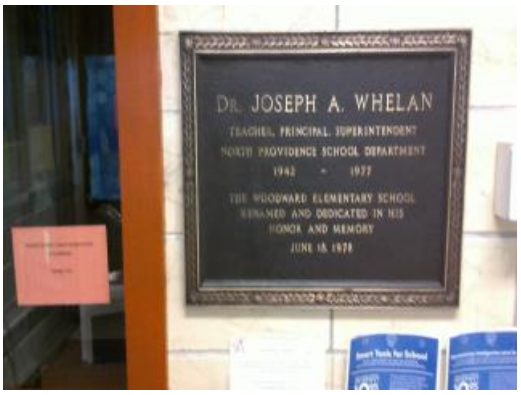

Kitchen Ceiling


Non-Refrigerated Drinking Fountain


Gym Ceiling

Roof Drain

Evidence Of Ponding On Roof



School Plaque

Typical Urinal Fixture

Exterior Finishes

Drinking Fountain


Aged Radiator


Gymnasium HVAC


Parking Lot Paving


Damaged Roof Exhaust Hood

Facility Condition Assessment

North Providence - Greystone School | *June 2017*

100 Morgan Avenue, North Providence, RI 02911

Introduction

Greystone School, located at 100 Morgan Avenue in North Providence, Rhode Island, was built in 1966. It comprises 31,455 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.

Greystone School serves grades PK - 5, has 22 instructional spaces, and has an enrollment of 322. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Greystone School is 375 with a resulting utilization of 86%.

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 Greystone School the 5-year need is $5,360,957. 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 Greystone 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 Greystone School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Asphalt Pedestrian Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors

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

01 - Main Building:	Single Ply Roofing
	Aluminum Canopy Roofing

Interior

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

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Interior Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Ceramic Tile Wall
	Wood Wall Paneling
	Interior Wall Painting
	Concrete Flooring
	Quarry Tile Flooring
	Wood Flooring
	Vinyl Composition Tile Flooring

Mechanical

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

01 - Main Building:	1,275 MBH Cast Iron Steam Boiler
	Radiant Steam Heater
	DDC Heating System Controls
	Pneumatic Heating System Controls

01 - Main Building:	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	Small Roof Exhaust Fan
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	Gas Piping System
	40 Gallon Gas Water Heater
	Domestic Water Piping System
	Lavatories
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Toilets
	Urinals

Electrical

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

01 - Main Building:	400 Amp Distribution Panel
	Panelboard - 120/208 225A
	Electrical Disconnect
	Light 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	-	-	$517,704	$830,127	$7,398	$1,355,228	26.04 %
Roofing	-	-	-	$40,095	-	$40,095	0.77 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	-	-	-	$0	0.00 %
Interior	-	-	$588,117	$1,226,750	$5,012	$1,819,879	34.97 %
Mechanical	-	$473,517	$13,903	$112,013	-	$599,433	11.52 %
Electrical	-	$262,428	$146,796	-	$44,203	$453,427	8.71 %
Plumbing	-	-	$282,255	$127,528	$17,930	$427,712	8.22 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$507,983	-	-	$507,983	9.76 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	-	-	$0	0.00 %
Total	$0	$735,945	$2,056,758	$2,336,512	$74,543	$5,203,757	

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

The building systems with the most need include:

Interior	-	$1,819,879
Site	-	$1,355,228
Mechanical	-	$599,433

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

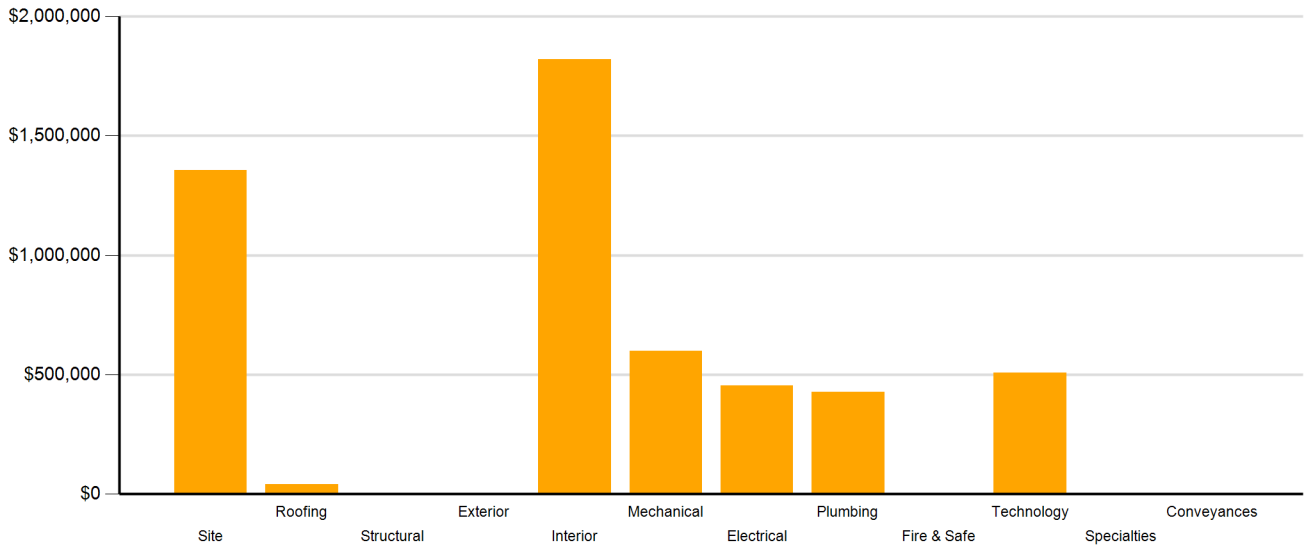


Figure 2: System Deficiencies

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	-	-	$149,188	$45,859	-	$195,047
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$735,945	$884,045	$1,387,756	-	$3,007,746
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$5,774	$75,346	$69,531	$150,651
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$827,551	$5,012	$832,563
Technology	-	-	$502,209	-	-	$502,209
Traffic	-	-	$515,542	-	-	$515,542
Total	$0	$735,945	$2,056,758	$2,336,512	$74,543	$5,203,757

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

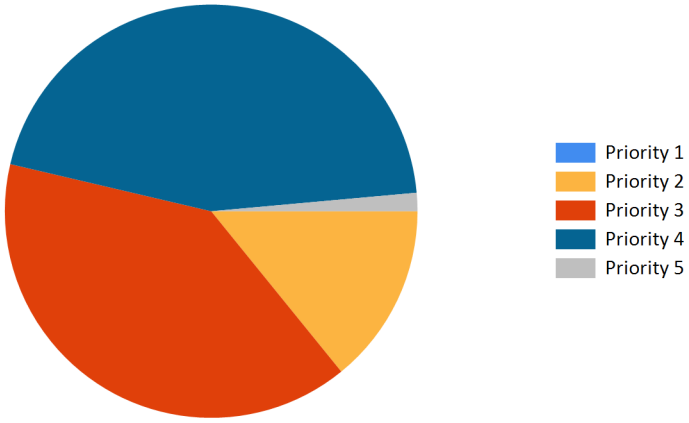


Figure 3: Current deficiencies by priority

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	$1,355,228	$0	$0	$0	$0	$0	$0	$1,355,228
Roofing	$40,095	$0	$0	$0	$0	$0	$0	$40,095
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$0	$0	$0	$0	$0	$0	$0	$0
Interior	$1,819,879	$0	$0	$0	$0	$154,001	$154,001	$1,973,880
Mechanical	$599,433	$0	$0	$0	$0	$0	$0	$599,433
Electrical	$453,427	$0	$0	$0	$0	$0	$0	$453,427
Plumbing	$427,712	$0	$0	$0	$0	$3,199	$3,199	$430,911
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$507,983	$0	$0	$0	$0	$0	$0	$507,983
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$5,203,757**	**$0**	**$0**	**$0**	**$0**	**$157,200**	**$157,200**	**$5,360,957**

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

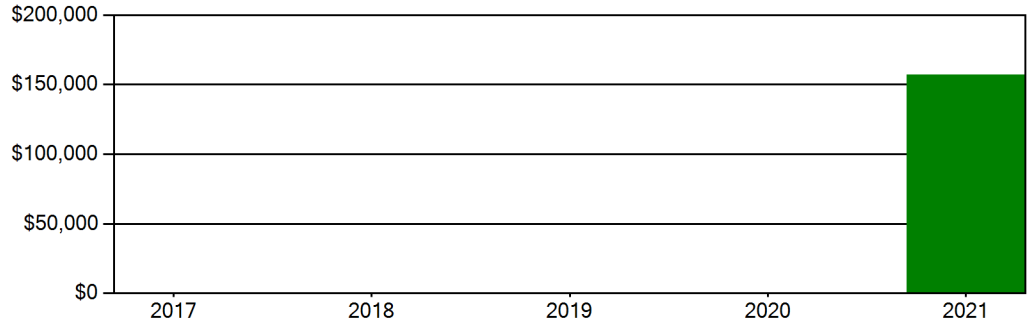
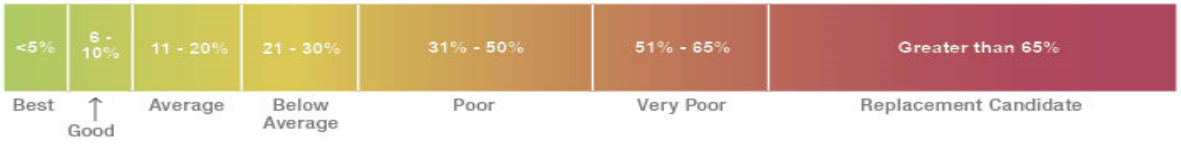


Figure 4: Life Cycle Capital Renewal Forecast

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 $11,009,250. For planning purposes, the total 5-year need at the Greystone School is $5,360,957 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Greystone School facility has a 5-year FCI of 48.70%.

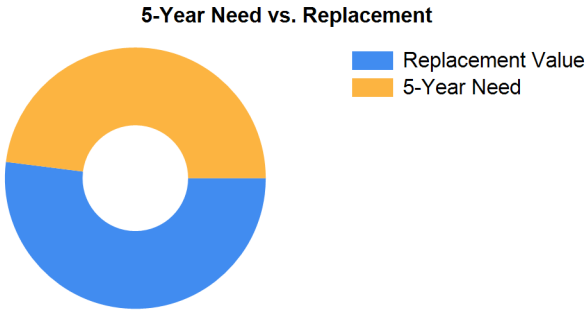


Figure 5: 5-Year FCI

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 175 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 Greystone School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $423,360.

Summary of Findings

The Greystone School comprises 31,455 square feet and was constructed in 1966. Current deficiencies at this school total $5,203,757. Five year capital renewal costs total $157,200. The total identified need for the Greystone School (current deficiencies and 5-year capital renewal costs) is $5,360,957. The 5-year FCI is 48.70%.

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
Greystone School Totals	31,455	1966	$5,203,757	$157,200	$5,360,957	48.70%

**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
Asphalt Walks Require Replacement	Capital Renewal	200	SF	3	$2,162	467
Crosswalk: Needs to be added	Traffic	2	Ea.	3	$1,925	4415
Note: Add crosswalks on campus from parking lot to school building.						
Install Curbs	Traffic	1,735	LF	3	$166,956	4414
Note: Install curb along sidewalk on Morgan Avenue.						
New Sidewalk Is Required	Traffic	8,675	SF	3	$250,433	4413
Note: Install sidewalks along Morgan Avenue from Jacksonia Drive to Mineral Spring Avenue (1735' long x 5' wide [excludes school driveway).						
Traffic Signage Is Required	Traffic	2	Ea.	3	$96,228	4416
Note: Add school zone signage along Morgan Avenue.						
Asphalt Paving Requires Replacement	Capital Renewal	134	CAR	4	$560,929	469
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$36,086	28520
Note: Backstops Require Replacement						
Fencing Requires Replacement (4' Chain Link Fence)	Capital Renewal	2,850	LF	4	$233,112	472
Note: Fencing is missing top railing/shielding.						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,398	28763
Note: Exterior Basketball Goals are Required						
	Sub Total for System	**9**	**items**		**$1,355,228**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Pole Lighting Requires Replacement	Capital Renewal	15	Ea.	3	$146,796	474
Note: Pole lights aimed at field and street, minimal illumination on parking lot building.						
	Sub Total for System	**1**	**items**		**$146,796**	
	Sub Total for School and Site Level	**10**	**items**		**$1,502,024**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Aluminum Panel Canopy Or Awning Requires Replacement	Capital Renewal	200	SF	4	$40,095	488
	Sub Total for System	**1**	**items**		**$40,095**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	17	Ea.	3	$149,188	4685
Note: All classroom						
Interior Doors Require Replacement	Capital Renewal	41	Door	3	$199,322	494
Note: 41 wood interior doors are not ADA at janitor closets, supply closets, staff restrooms, and doors between classrooms (teacher use only).						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	25,162	SF	3	$239,607	484
Ceiling Grid Requires Replacement	Capital Renewal	25,162	SF	4	$314,656	485
Note: Ceiling grid is aged and stained and should be replaced with the tiles.						
Light Deterioration or Damage of 9x9 Asbestos Floor Tile is Present	Hazardous Material	23,309	SF	4	$700,931	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	16	Ea.	4	$4,811	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	9,150	SF	4	$91,717	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	35	Ea.	4	$10,525	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - linear feet)	Hazardous Material	480	LF	4	$11,547	Rollup
Room Is Excessively Reverberant	Acoustics	5,000	SF	4	$45,859	4686
Note: Gym						
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	1,003	SF	4	$38,684	Rollup
Wall/ceiling materials - large areas (> 10 sq. ft.) of damage & area in active use - children	Hazardous Material	800	SF	4	$8,019	Rollup

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Wall/ceiling materials - area < 9 sq. ft. AND NOT in children-accessible area	Hazardous Material	500	SF	5	$5,012	Rollup
	Sub Total for System	**13**	**items**		**$1,819,879**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	31,455	SF	2	$255,641	1881
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	40	Ea.	2	$217,876	483
The Small Diameter Exhausts/Hoods Require Replacement	Capital Renewal	5	Ea.	3	$13,903	486
Note: Failed fan by each building exit.						
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	15,728	SF	4	$112,013	1882
Note: Half of the building has digital controls that are trying to be implemented with the predecessor pneumatic system. The pneumatics should be upgraded to DDC.						
	Sub Total for System	**4**	**items**		**$599,433**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Distribution Panel Requires Replacement	Capital Renewal	1	Ea.	2	$27,064	493
The Electrical Disconnect Requires Replacement	Capital Renewal	4	Ea.	2	$7,730	490
The Lighting Fixtures Require Replacement	Capital Renewal	31,455	SF	2	$197,061	497
The Panelboard Requires Replacement	Capital Renewal	5	Ea.	2	$30,572	496
Note: Missing breakers in panels, tape used to cover certain breakers. Fire alarm breaker in one panel was screwed in so that it would stay on.						
Room Has Insufficient Electrical Outlets	Educational Adequacy	88	Ea.	5	$44,203	Rollup
	Sub Total for System	**5**	**items**		**$306,631**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	31,455	SF	3	$266,840	487
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	11	Ea.	3	$15,415	479
Floor Drains Are Required	Educational Adequacy	1	Ea.	4	$577	Rollup
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$10,776	477
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	2	Ea.	4	$15,557	478
Note: Drinking fountain leaks from bottom. Recycling bin was placed below to catch water.						
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	30	Ea.	4	$100,618	476
Room lacks a drinking fountain.	Educational Adequacy	11	Ea.	5	$12,279	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	5	Ea.	5	$5,651	Rollup
	Sub Total for System	**8**	**items**		**$427,712**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,774	Rollup
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	48	Ea.	3	$24,057	3725
Technology: Instructional spaces do not have local sound reinforcement.	Technology	18	Ea.	3	$90,214	3731
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,017	3718
Technology: Main Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$52,925	3717
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	24	Ea.	3	$10,826	3722
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	48	Ea.	3	$21,651	3720
Technology: Network system inadequate and/or near end of useful life	Technology	20	Ea.	3	$100,238	3723

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Network system inadequate and/or near end of useful life	Technology	1	Ea.	3	$8,019	3724
Technology: Number of current, up to date, network switch ports are insufficient to support campus technology.	Technology	48	Ea.	3	$24,057	3721
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	31,455	SF	3	$56,753	3730
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$57,135	3726
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,019	3719
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	21	Ea.	3	$33,680	3729
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,618	3728
	Sub Total for System	**15**	**items**		**$507,983**	
	Sub Total for Building 01 - Main Building	**46**	**items**		**$3,701,733**	
	Total for Campus	**56**	**items**		**$5,203,757**	

Greystone School - Life Cycle Summary Yrs 1-5

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Wall Paneling	Wood Panel wall	1,500	SF	$13,857	5
Wall Painting and Coating	Painting/Staining (Bldg SF)	20,955	SF	$140,144	5
Note:	All wall types are painted excluding ceramic tile and wood panel				
	Sub Total for System	**2**	**items**	**$154,001**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 40 gallon	1	Ea.	$3,199	5
	Sub Total for System	**1**	**items**	**$3,199**	
	Sub Total for Building 01 - Main Building	**3**	**items**	**$157,199**	
	Total for: Greystone School	**3**	**items**	**$157,199**	

Supporting Photos

Site Aerial

Damaged Ceiling Tile

Aged Drinking Fountain

Main Panel Disconnect


Exterior Finishes


Library


Light Fixtures


Cracked Pedestrian Paving


Damaged Asphalt In Parking Lot


Main Panel 400 Amps


Damaged VCT Floor


Stained Ceiling Tiles


Restroom Fixtures And Finishes


Main Entry


Urinals

Canopy Lighting

Typical Classroom

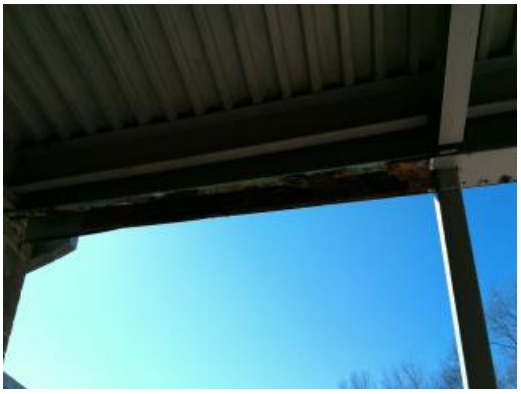
Radiant Heater

Gymnasium

Damaged Pavement In Parking Lot

Side Elevation

Leaking Drinking Fountain


Wood Rotting Around Canopy Roofing


Stained Ceiling Grid


Damaged Fence


Corridor Finishes


Site Lighting

Facility Condition Assessment

North Providence - James L. McGuire School | *June 2017*

55 Central Avenue, North Providence, RI 02911

Introduction

James L. McGuire School, located at 55 Central Avenue in North Providence, Rhode Island, was built in 1900. It comprises 25,008 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.

James L. McGuire School serves grades KG - 5, has 16 instructional spaces, and has an enrollment of 268. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for James L. McGuire School is 250 with a resulting utilization of 107%.

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 James L. McGuire School the 5-year need is $4,321,843. 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.

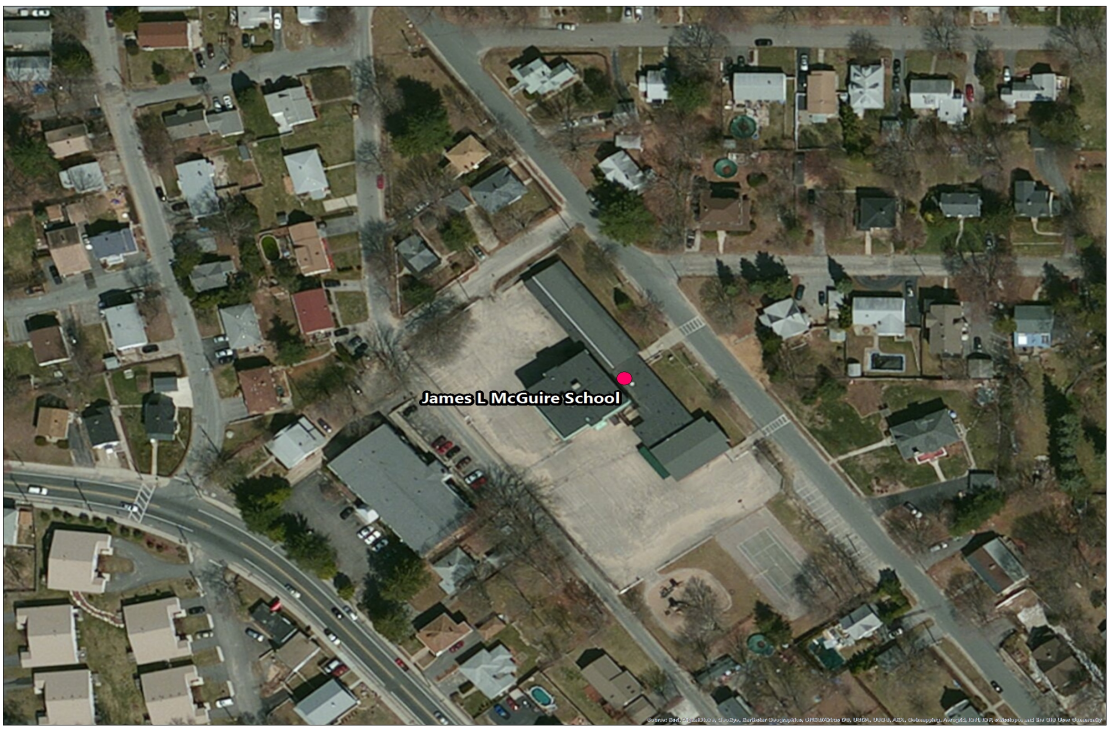


Figure 1: Aerial view of James L. McGuire School

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 James L. McGuire 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

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors

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

01 - Main Building:	Composition Shingle Roofing
	EPDM Roofing

Interior

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

01 - Main Building:	Steel Interior Doors
	Interior Door Hardware
	Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Wood Ceilings
	Ceramic Tile Wall
	Wood Wall Paneling
	Brick/Stone Veneer
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile Flooring
	Wood Flooring
	Vinyl Composition Tile Flooring
	Carpet

Mechanical

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

01 - Main Building:	1,275 MBH Cast Iron Steam Boiler
	Steam/Hot Water Heating Unit Vent
	Fin Tube Water Radiant Heater
	Radiant Steam Heater
	250 MBH Steam Unit Heater
	Electronic Heating System Controls
	5 HP Pump
	2-Pipe Steam Hydronic Distribution System
	2-Pipe Hot Water Hydronic Distribution System
	Ductwork
	Wall Exhaust Fan
	Small Roof Exhaust Fan
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	Gas Piping System
	40 Gallon Gas Water Heater
	Domestic Water Piping System
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Toilets
	Urinals

Electrical

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

01 - Main Building:	600 Amp Switchgear
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Building Mounted Lighting Fixtures
	Canopy Mounted Lighting Fixtures
	Light 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	-	-	$112,163	$413,613	$72,444	$598,221	16.97 %
Roofing	-	$138,649	-	-	-	$138,649	3.93 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$133,697	-	-	-	$133,697	3.79 %
Interior	-	-	$341,167	$777,829	-	$1,118,996	31.74 %
Mechanical	-	$275,458	-	$185,228	-	$460,686	13.07 %
Electrical	-	$19,077	$8,183	-	$32,148	$59,408	1.69 %
Plumbing	-	-	$348,671	$11,207	$15,026	$374,904	10.63 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$493,937	-	-	$493,937	14.01 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	$147,213	-	$147,213	4.18 %
Total	$0	$566,881	$1,304,122	$1,535,090	$119,618	$3,525,711	

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

The building systems with the most need include:

Interior	-	$1,118,996
Site	-	$598,221
Technology	-	$493,937

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

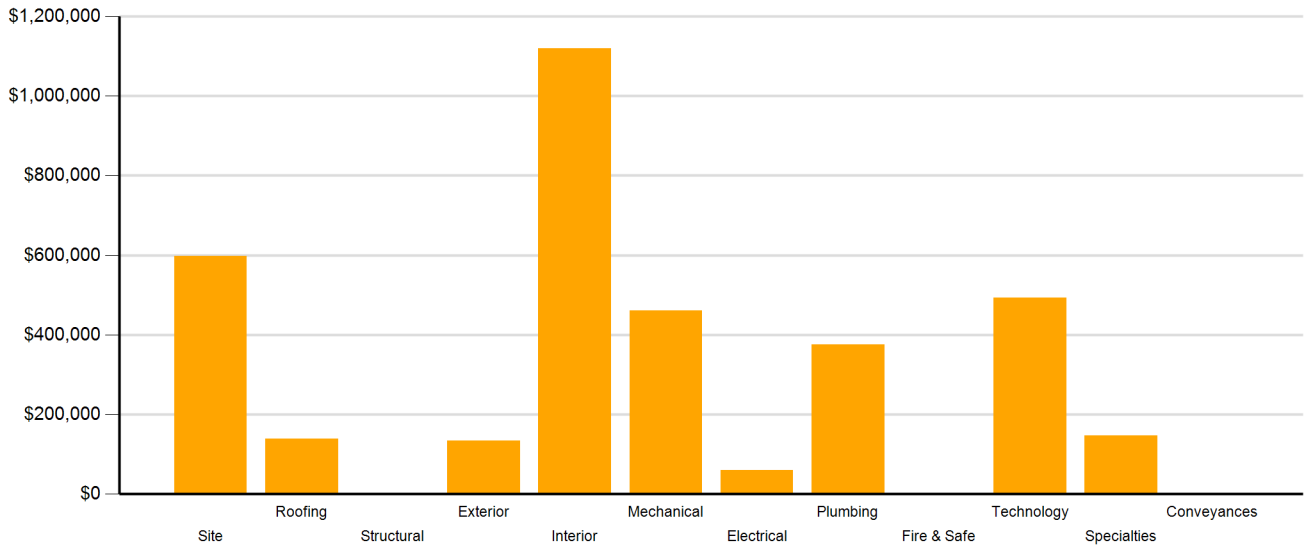


Figure 2: System Deficiencies

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	-	-	$136,902	$33,385	-	$170,287
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$566,881	$561,119	$994,414	-	$2,122,413
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	-	$113,268	$119,618	$232,886
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$394,024	-	$394,024
Technology	-	-	$493,937	-	-	$493,937
Traffic	-	-	$112,163	-	-	$112,163
Total	$0	$566,881	$1,304,122	$1,535,090	$119,618	$3,525,711

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

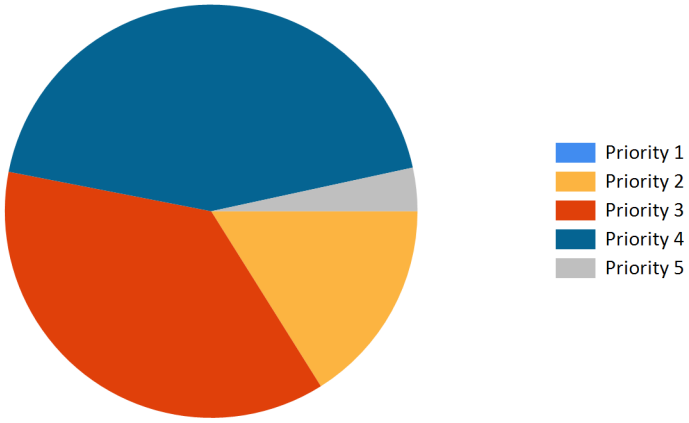


Figure 3: Current deficiencies by priority

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	$598,221	$0	$0	$0	$0	$47,726	$47,726	$645,947
Roofing	$138,649	$0	$0	$0	$0	$0	$0	$138,649
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$133,697	$0	$0	$0	$0	$0	$0	$133,697
Interior	$1,118,996	$0	$0	$145,180	$184,135	$6,928	$336,243	$1,455,239
Mechanical	$460,686	$0	$0	$0	$215,097	$2,710	$217,807	$678,493
Electrical	$59,408	$0	$0	$1,395	$0	$174,827	$176,222	$235,630
Plumbing	$374,904	$0	$0	$14,935	$0	$3,199	$18,134	$393,038
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$493,937	$0	$0	$0	$0	$0	$0	$493,937
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$147,213	$0	$0	$0	$0	$0	$0	$147,213
Total	**$3,525,711**	**$0**	**$0**	**$161,510**	**$399,232**	**$235,390**	**$796,132**	**$4,321,843**

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

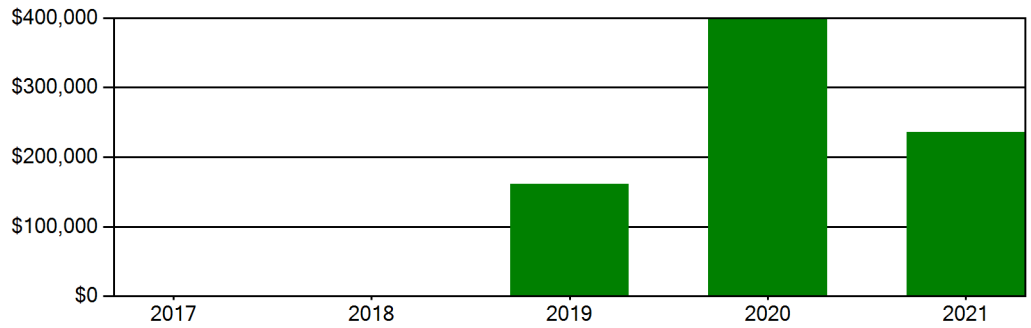
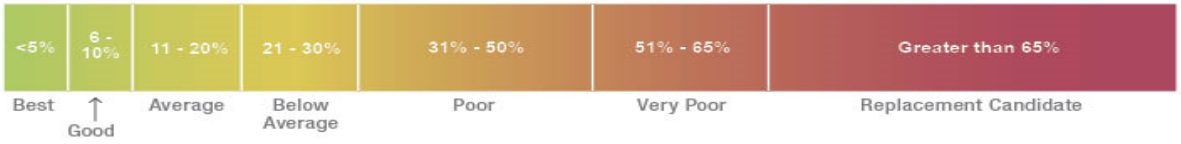


Figure 4: Life Cycle Capital Renewal Forecast

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 $8,752,800. For planning purposes, the total 5-year need at the James L. McGuire School is $4,321,843 (Life Cycle Years 1-5 plus the FCI deficiency cost). The James L. McGuire School facility has a 5-year FCI of 49.38%.

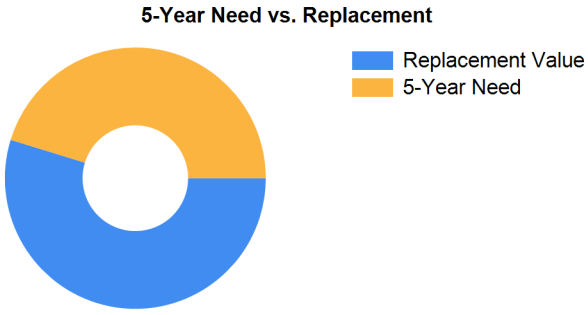


Figure 5: 5-Year FCI

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 139 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 James L. McGuire School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $498,204.

Summary of Findings

The James L. McGuire School comprises 25,008 square feet and was constructed in 1900. Current deficiencies at this school total $3,525,711. Five year capital renewal costs total $796,132. The total identified need for the James L. McGuire School (current deficiencies and 5-year capital renewal costs) is $4,321,843. The 5-year FCI is 49.38%.

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
James L. McGuire School Totals	25,008	1900	$3,525,711	$796,132	$4,321,843	49.38%

**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
Sidewalk Requires Replacement	Traffic	3,760	SF	3	$112,163	4397
Note: Upgrade sidewalk along Central Avenue (opposite side of street from school) [940' long x 4' wide]						
Asphalt Paving Requires Replacement	Capital Renewal	12	CAR	4	$51,907	2881
Note: Paved play area asphalt cracking.						
Asphalt Paving Requires Replacement	Capital Renewal	75	CAR	4	$324,418	2882
Note: Parking lot cracked and worn.						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$37,288	28514
Note: Backstops Require Replacement						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,644	28760
Note: Exterior Basketball Goals are Required						
PE / Recess Playfield is Missing and is Needed	Educational Adequacy	1	Ea.	5	$64,800	54899
Note: PE / Recess Playfield is Missing and is Needed						
	Sub Total for System	**6**	**items**		**$598,221**	
	Sub Total for School and Site Level	**6**	**items**		**$598,221**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	10,000	SF	2	$138,649	2833
	Sub Total for System	**1**	**items**		**$138,649**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	19	Door	2	$133,697	2835
	Sub Total for System	**1**	**items**		**$133,697**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	15	Ea.	3	$136,902	4703
Note: All classrooms						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	5,570	SF	3	$55,162	2840
The Carpet Flooring Requires Replacement	Capital Renewal	6,250	SF	3	$149,102	2839
12 x 12 Floor Tiles Are Lifting or Broken and Highly Likely Contain Asbestos	Hazardous Material	4,200	SF	4	$131,351	Rollup
Acoustic ceiling tile - large area (>10%) of broken or falling broken tiles	Hazardous Material	730	SF	4	$9,369	Rollup
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	2,100	SF	4	$65,676	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	110	LF	4	$2,293	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	6,300	SF	4	$81,934	2841
Light Deterioration or Damage of 9x9 Asbestos Floor Tile is Present	Hazardous Material	680	SF	4	$21,266	Rollup
Metal Interior Doors Require Replacement	Capital Renewal	41	Door	4	$192,507	2842
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	37	Ea.	4	$11,571	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	1,266	LF	4	$31,674	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	11,020	SF	4	$114,880	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. AND NOT in children-accessible area (measurement unit - each)	Hazardous Material	4	Ea.	4	$1,251	Rollup
Room Is Excessively Reverberant	Acoustics	3,500	SF	4	$33,385	4704
Note: Gym						
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	1,970	SF	4	$75,979	Rollup
Wall/ceiling materials -large areas (> 10 sq. ft.) of damage & area in active use-adults only	Hazardous Material	450	SF	4	$4,691	Rollup
	Sub Total for System	**17**	**items**		**$1,118,996**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Radiant Heat HVAC Component Requires Replacement	Capital Renewal	14	Ea.	2	$116,844	2838
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	28	Ea.	2	$158,614	2837
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	25,008	SF	4	$185,228	2850
	Sub Total for System	**3**	**items**		**$460,686**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Panelboard Requires Replacement	Capital Renewal	3	Ea.	2	$19,077	2845
The Mounted Building Lighting Requires Replacement	Capital Renewal	5	Ea.	3	$8,183	2884
Room Has Insufficient Electrical Outlets	Educational Adequacy	64	Ea.	5	$32,148	Rollup
	Sub Total for System	**3**	**items**		**$59,408**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	25,008	SF	3	$220,635	2843
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$128,036	2846
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$11,207	2844
Room lacks a drinking fountain.	Educational Adequacy	7	Ea.	5	$7,814	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	7	Ea.	5	$7,212	Rollup
	Sub Total for System	**5**	**items**		**$374,904**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	48	Ea.	3	$25,019	3740
Technology: Instructional spaces do not have local sound reinforcement.	Technology	18	Ea.	3	$93,822	3746
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,297	3733
Technology: Main Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$55,042	3732
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	48	Ea.	3	$22,517	3737
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	16	Ea.	3	$7,506	3735
Technology: Network system inadequate and/or near end of useful life	Technology	20	Ea.	3	$104,247	3738
Technology: Network system inadequate and/or near end of useful life	Technology	1	Ea.	3	$8,340	3739
Technology: Number of current, up to date, network switch ports are insufficient to support campus technology.	Technology	24	Ea.	3	$12,510	3736
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	25,008	SF	3	$46,926	3745
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$59,421	3741
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,340	3734
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	21	Ea.	3	$35,027	3744
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,923	3743
	Sub Total for System	**14**	**items**		**$493,937**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Replace Cabinetry In Classes/Labs	Capital Renewal	12	Room	4	$147,213	2834
	Sub Total for System	**1**	**items**		**$147,213**	

Sub Total for Building 01 - Main Building	**45 items**	**$2,927,490**
Total for Campus	**51 items**	**$3,525,711**

James L. McGuire School - Life Cycle Summary Yrs 1-5

Site Level Life Cycle Items

Site

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Playfield Areas	ES Playgrounds		1	Ea.	$45,131	5
Pedestrian Pavement	Sidewalks - Asphalt		300	SF	$2,595	5
		Sub Total for System	**2**	**items**	**$47,726**	
		Sub Total for Building -	**2**	**items**	**$47,726**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)		21,708	SF	$145,180	3
Resilient Flooring	Vinyl Composition Tile Flooring		15,858	SF	$184,135	4
Wall Paneling	Wood Panel wall		750	SF	$6,928	5
		Sub Total for System	**3**	**items**	**$336,244**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Decentralized Heating Equipment	Heating Unit Vent - Steam/Hot water		12	Ea.	$205,451	4
Facility Hydronic Distribution	Pump - 5HP		1	Ea.	$9,646	4
Exhaust Air	Wall Exhaust Fan		1	Ea.	$2,710	5
		Sub Total for System	**3**	**items**	**$217,807**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Canopy Mounted Fixtures (Ea.)		1	Ea.	$1,395	3
Electrical Service	Switchgear - Main Dist Panel (600 Amp)		1	Ea.	$19,515	5
Power Distribution	Panelboard - 120/208 100A		1	Ea.	$4,908	5
Lighting Fixtures	Light Fixtures (Bldg SF)		25,008	SF	$150,404	5
		Sub Total for System	**4**	**items**	**$176,222**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Refrigerated Drinking Fountain		2	Ea.	$14,935	3
Domestic Water Equipment	Water Heater - Gas - 40 gallon		1	Ea.	$3,199	5
		Sub Total for System	**2**	**items**	**$18,133**	
		Sub Total for Building 01 - Main Building	**12**	**items**	**$748,406**	
		Total for: James L. McGuire School	**14**	**items**	**$796,132**	

Supporting Photos

Site Aerial

Typical Classroom In Addition

Typical Classroom First Floor

Building Entrance

Facility Condition Assessment

North Providence - Marieville Elementary School | *June 2017*

1135 Mineral Spring Avenue, North Providence, RI 02904

Introduction

Marieville Elementary School, located at 1135 Mineral Spring Avenue in North Providence, Rhode Island, was built in 1920. It comprises 28,210 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.

Marieville Elementary School serves grades KG - 5, has 19 instructional spaces, and has an enrollment of 232. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Marieville Elementary School is 300 with a resulting utilization of 77%.

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 Marieville Elementary School the 5-year need is $8,314,252. 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.

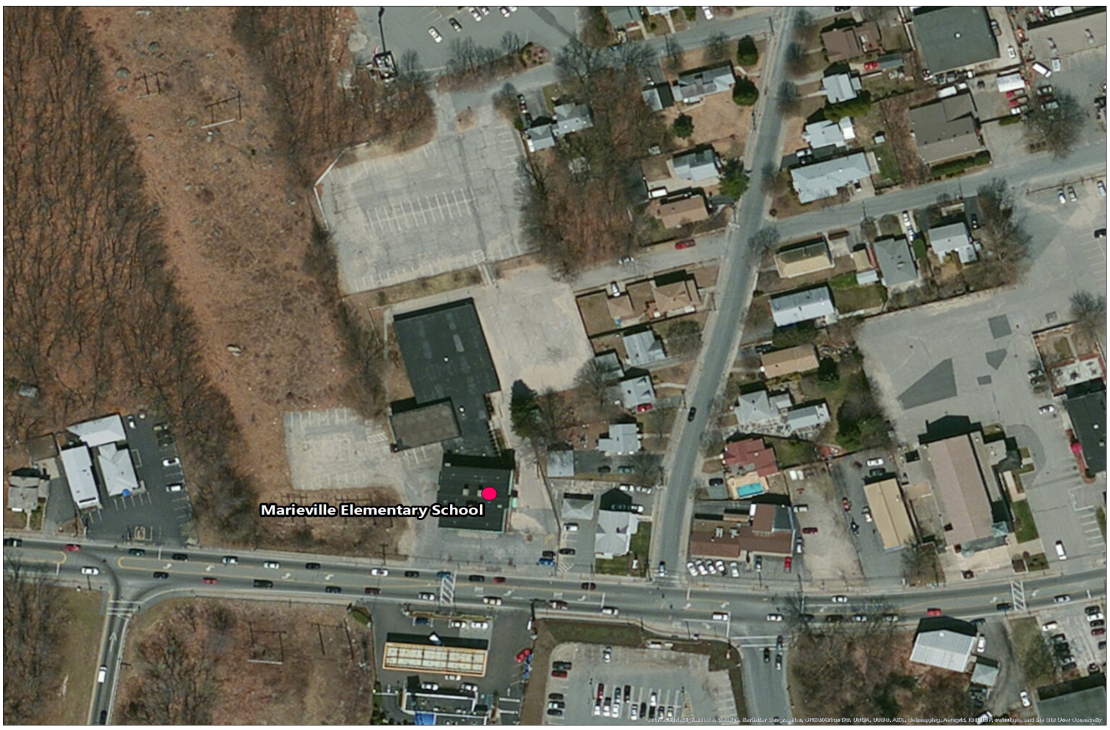


Figure 1: Aerial view of Marieville Elementary School

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 Marieville Elementary School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
	Storefront Entrance Doors
	Wood Exterior Doors

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

01 - Main Building:	Built-Up Roofing With Ballast
	Modified Bitumen Roofing

Interior

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

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

Mechanical

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

01 - Main Building:	1,275 MBH Cast Iron Water Boiler
	3,264 MBH Cast Iron Water Boiler
	Steam/Hot Water Heating Unit Vent
	Radiant Steam Heater
	DDC Heating System Controls
	Make-up Air Unit
	1 HP or Smaller Pump
	2-Pipe Hot Water Hydronic Distribution System
	Large Roof Exhaust Fan
	Small Roof Exhaust Fan
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	Gas Piping System
	50 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Toilets
	Urinals

Electrical

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

01 - Main Building:	600 Amp Switchgear
	Panelboard - 120/208 100A
	Panelboard - 120/240 225A
	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	-	-	$188,276	$851,778	$72,444	$1,112,498	13.56 %
Roofing	-	$759,335	-	-	-	$759,335	9.26 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	$7,589	-	-	$7,589	0.09 %
Interior	-	-	$378,580	$1,264,211	-	$1,642,791	20.02 %
Mechanical	-	$2,408,137	$59,471	$127,440	$10,295	$2,605,343	31.76 %
Electrical	-	$228,114	$36,592	-	$38,176	$302,881	3.69 %
Plumbing	-	-	$401,352	$81,359	$35,344	$518,055	6.31 %
Fire and Life Safety	$613,181	-	-	-	-	$613,181	7.47 %
Technology	-	-	$642,074	-	-	$642,074	7.83 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	-	-	$0	0.00 %
Total	$613,181	$3,395,586	$1,713,935	$2,324,787	$156,259	$8,203,749	

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

The building systems with the most need include:

Mechanical	-	$2,605,343
Interior	-	$1,642,791
Site	-	$1,112,498

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

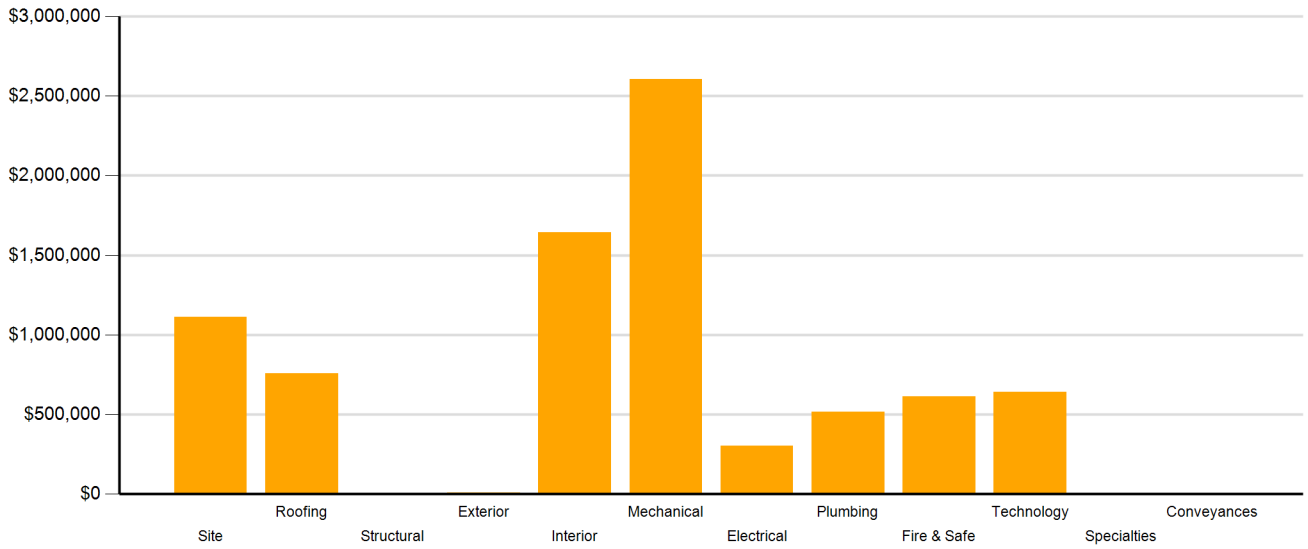


Figure 2: System Deficiencies

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	-	-	$146,029	-	-	$146,029
Barrier to Accessibility	-	-	$88,841	-	-	$88,841
Capital Renewal	$588,162	$3,395,586	$695,519	$1,322,413	$10,295	$6,011,974
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$5,774	$50,787	$145,964	$202,525
Functional Deficiency	$25,019	-	$42,037	-	-	$67,056
Hazardous Material	-	-	-	$951,587	-	$951,587
Technology	-	-	$636,301	-	-	$636,301
Traffic	-	-	$99,436	-	-	$99,436
Total	$613,181	$3,395,586	$1,713,935	$2,324,787	$156,259	$8,203,749

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

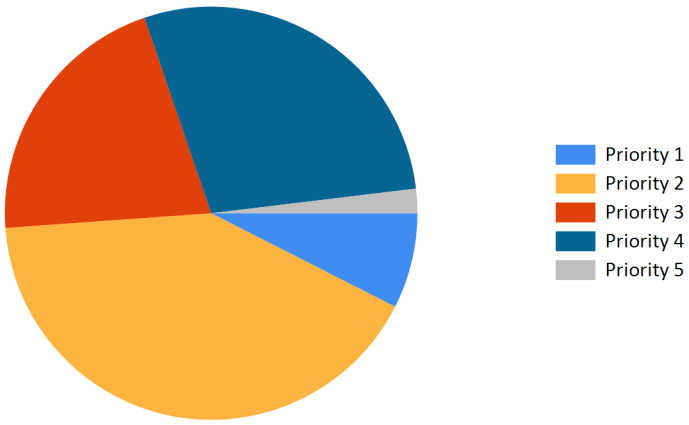


Figure 3: Current deficiencies by priority

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	$1,112,498	$0	$0	$0	$0	$0	$0	$1,112,498
Roofing	$759,335	$0	$0	$0	$0	$0	$0	$759,335
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$7,589	$0	$0	$0	$0	$0	$0	$7,589
Interior	$1,642,791	$0	$0	$84,902	$0	$0	$84,902	$1,727,693
Mechanical	$2,605,343	$0	$0	$0	$0	$0	$0	$2,605,343
Electrical	$302,881	$0	$0	$0	$0	$0	$0	$302,881
Plumbing	$518,055	$0	$0	$22,402	$0	$3,199	$25,601	$543,656
Fire and Life Safety	$613,181	$0	$0	$0	$0	$0	$0	$613,181
Technology	$642,074	$0	$0	$0	$0	$0	$0	$642,074
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$8,203,749**	**$0**	**$0**	**$107,304**	**$0**	**$3,199**	**$110,503**	**$8,314,252**

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

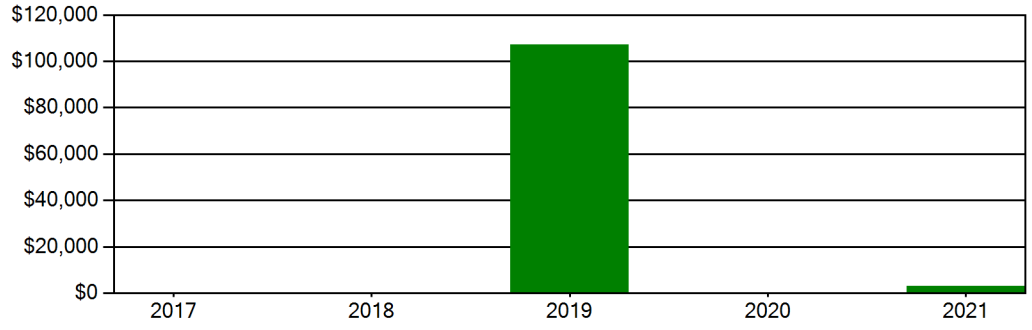
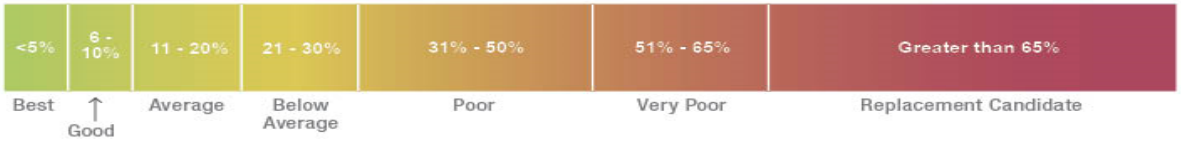


Figure 4: Life Cycle Capital Renewal Forecast

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 $9,873,500. For planning purposes, the total 5-year need at the Marieville Elementary School is $8,314,252 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Marieville Elementary School facility has a 5-year FCI of 84.21%.

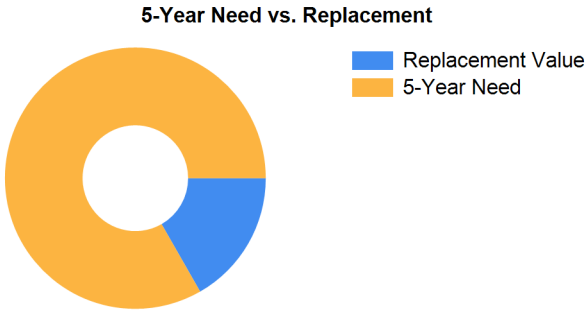


Figure 5: 5-Year FCI

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 157 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 Marieville Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $478,548.

Summary of Findings

The Marieville Elementary School comprises 28,210 square feet and was constructed in 1920. Current deficiencies at this school total $8,203,749. Five year capital renewal costs total $110,503. The total identified need for the Marieville Elementary School (current deficiencies and 5-year capital renewal costs) is $8,314,252. The 5-year FCI is 84.21%.

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
Marieville Elementary School Totals	28,210	1920	$8,203,749	$110,503	$8,314,252	84.21%

**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
Install New Playground Equipment	Barrier to Accessibility	1	SF	3	$88,841	54900
Note: Install New Playground Equipment						
Traffic Signage Is Required	Traffic	2	Ea.	3	$99,436	4398
Note: Add flashing school zone signs on Mineral Springs Avenue (beacon or LED)						
Asphalt Paving Requires Replacement	Capital Renewal	115	CAR	4	$497,441	347
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$37,288	28515
Note: Backstops Require Replacement						
Fencing Requires Replacement (8' Chain Link Fence)	Capital Renewal	1,370	LF	4	$120,415	352
Fencing Requires Replacement (Ornamental Fence)	Capital Renewal	140	LF	4	$196,634	350
Note: Remove existing stone barrier						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,644	28761
Note: Exterior Basketball Goals are Required						
PE / Recess Playfield is Missing and is Needed	Educational Adequacy	1	Ea.	5	$64,800	54901
Note: PE / Recess Playfield is Missing and is Needed						
	Sub Total for System	**8**	**items**		**$1,112,498**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Pole Lighting Requires Replacement	Capital Renewal	2	Ea.	3	$20,225	342
	Sub Total for System	**1**	**items**		**$20,225**	
	Sub Total for School and Site Level	**9**	**items**		**$1,132,724**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Built-up Roofing With Aggregate Ballast Requires Replacement	Capital Renewal	1,800	SF	2	$75,058	355
Note: Roofing has not been replaced in several decades and leaks throughout the building.						
The Modified Roof Covering Requires Replacement	Capital Renewal	16,410	SF	2	$684,277	365
Note: Roof has not been replaced in several decades and leaks throughout facility.						
	Sub Total for System	**2**	**items**		**$759,335**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Handrail Requires Replacement	Capital Renewal	40	LF	3	$7,589	372
Note: Railing on stairway from upper parking level to paved play area is rusted & worn						
	Sub Total for System	**1**	**items**		**$7,589**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	16	Ea.	3	$146,029	4702
Note: All classroom						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	23,000	SF	3	$227,780	344
Note: Ceiling tile is in need of replacement due to staining and potential mold/mildew issues						
The Carpet Flooring Requires Replacement	Capital Renewal	200	SF	3	$4,771	314
Note: Carpet in copy room is beyond its useful lifespan and should be replaced						
9x9 Asbestos Tile Present and In Active Use, Greater than 25 Percent has Significant Deterioration	Hazardous Material	24,590	SF	4	$769,030	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	120	LF	4	$2,502	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	23,000	SF	4	$299,125	394
Note: Aged, warping, & showing signs of potential leakage						
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	4	Ea.	4	$1,251	Rollup

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - linear feet)	Hazardous Material	740	LF	4	$18,514	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	1,400	SF	4	$14,595	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	8,900	SF	4	$92,780	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - each)	Hazardous Material	70	Ea.	4	$21,892	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - linear feet)	Hazardous Material	1,240	LF	4	$31,024	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	350	SF	4	$13,499	Rollup
	Sub Total for System	**13**	**items**		**$1,642,791**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Gas Piping Requires Replacement (SF Basis)	Capital Renewal	28,210	SF	2	$669,745	527
Replace Unit Vent	Capital Renewal	56	Ea.	2	$1,038,667	332
The Boiler HVAC Component Requires Replacement	Capital Renewal	1	Ea.	2	$81,531	265
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	1	Ea.	2	$198,482	290
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	28,210	SF	2	$238,439	322
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	32	Ea.	2	$181,273	333
The Large Diameter Exhausts/Hoods Require Replacement	Functional Deficiency	2	Ea.	3	$30,469	281
The Make Up Air Equipment Requires Replacement	Capital Renewal	1	Ea.	3	$17,434	247
The Small Diameter Exhausts/Hoods Require Replacement	Functional Deficiency	4	Ea.	3	$11,567	278
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	28,210	SF	4	$127,440	1911
Remove Abandoned Equipment	Capital Renewal	1	Ea.	5	$3,432	310
Note: Remove abandoned air compressor.						
Remove Abandoned Equipment	Capital Renewal	2	Ea.	5	$6,864	397
Note: 2 500 gallon fuel oil tanks are no longer in use and need to be drained and removed.						
	Sub Total for System	**12**	**items**		**$2,605,343**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Switchgear Is Needed Or Requires Replacement	Capital Renewal	1	Ea.	2	$21,141	309
The Electrical Disconnect Requires Replacement	Capital Renewal	1	Ea.	2	$2,010	307
The Lighting Fixtures Require Replacement	Capital Renewal	28,210	SF	2	$183,800	528
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$10,529	300
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$10,633	341
The Mounted Building Lighting Requires Replacement	Capital Renewal	10	Ea.	3	$16,367	346
Room Has Insufficient Electrical Outlets	Educational Adequacy	76	Ea.	5	$38,176	Rollup
	Sub Total for System	**7**	**items**		**$282,656**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Roof Drainage Piping Requires Repair	Capital Renewal	30	LF	3	$6,943	370
Note: PVC pipes providing roof drainage cause water pooling & icy conditions in cold weather						
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	28,210	SF	3	$248,885	329
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$128,036	330
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	12	Ea.	3	$17,488	337
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$11,207	268
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	13	Ea.	4	$38,759	336
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	9	Ea.	4	$31,393	340
Room lacks a drinking fountain.	Educational Adequacy	16	Ea.	5	$17,860	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	16	Ea.	5	$17,485	Rollup
	Sub Total for System	**9**	**items**		**$518,055**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Fire Escape Requires Replacement	Functional Deficiency	2	Ea.	1	$25,019	368
Note: Fire escapes do not all reach ground level and are not properly secured within classrooms						
Fire Sprinkler System Requires Replacement (SF Basis) per NFPA 13	Capital Renewal	28,210	SF	1	$588,162	321
	Sub Total for System	**2**	**items**		**$613,181**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,774	Rollup
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	48	Ea.	3	$25,019	3684
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	48	Ea.	3	$25,019	3695
Technology: Campus wireless infrastructure meets standards but does not cover all areas of campus.	Technology	5	Ea.	3	$7,297	3686
Technology: Instructional spaces do not have local sound reinforcement.	Technology	17	Ea.	3	$88,610	3699
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,838	3690
Technology: Intermediate Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$49,622	3689
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$5,212	3693
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,297	3683
Technology: Main Telecommunications Room is not dedicated and/or inadequate.	Technology	1	Ea.	3	$46,703	3679
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	48	Ea.	3	$22,517	3681
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	36	Ea.	3	$16,888	3682
Technology: Network system inadequate and/or near end of useful life	Technology	20	Ea.	3	$104,247	3687
Technology: Network system inadequate and/or near end of useful life	Technology	1	Ea.	3	$8,340	3688
Technology: Number of current, up to date, network switch ports are insufficient to support campus technology.	Technology	92	Ea.	3	$47,954	3685
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	28,210	SF	3	$52,935	3697
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$59,421	3694
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,340	3680
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$5,212	3691
Technology: Telecommunications Room fiber connectivity infrastructure is outdated and/or inadequate.	Technology	1	Ea.	3	$6,880	3692
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	21	Ea.	3	$35,027	3698
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,923	3696
	Sub Total for System	**22**	**items**		**$642,074**	
	Sub Total for Building 01 - Main Building	**68**	**items**		**$7,071,025**	
	Total for Campus	**77**	**items**		**$8,203,749**	

Marieville Elementary School - Life Cycle Summary Yrs 1-5

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)	12,695	SF	$84,902	3
Note:	Gypsum board wall panels in 1960 addition				
	Sub Total for System	**1**	**items**	**$84,902**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Refrigerated Drinking Fountain	3	Ea.	$22,402	3
Domestic Water Equipment	Water Heater - Gas - 50 gallon	1	Ea.	$3,199	5
	Sub Total for System	**2**	**items**	**$25,601**	
	Sub Total for Building 01 - Main Building	**3**	**items**	**$110,503**	
	Total for: Marieville Elementary School	**3**	**items**	**$110,503**	

Supporting Photos

Site Aerial

Hot Water Radiator

Typical Classroom In Addition

Building Entrance

Make Up Air Unit

Stone Fencing

Cracked Asphalt Paving

School Signage And Proximity To Highway

Roof Exhaust

Rusted & Worn Stairwell Railing


Restroom Sink


Mineral Spring Avenue Exterior Facade

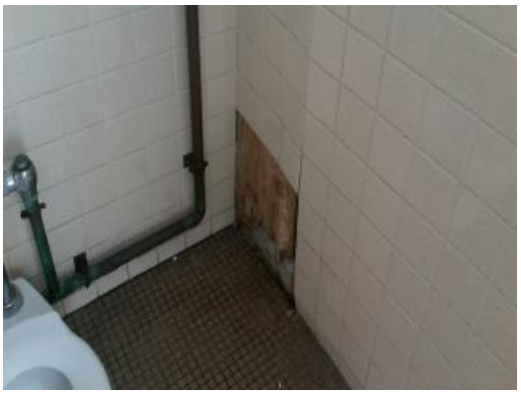

VCT Tile Damage In Faculty Restroom


Main Distribution Panel


Addition Girls Restroom


Chain Link Fence


Roof Ponding - Gym Area


Damaged Tile Wall In Boys Restroom


Small Roof Exhaust And Roof Ponding


Hot Water Boiler


Addition Boys Restroom


Ceiling Grid And Tiles

Service Disconnect


Original Building Girls Restroom


Water Fountain


Stained Ceiling Tile


Pole Mounted Light

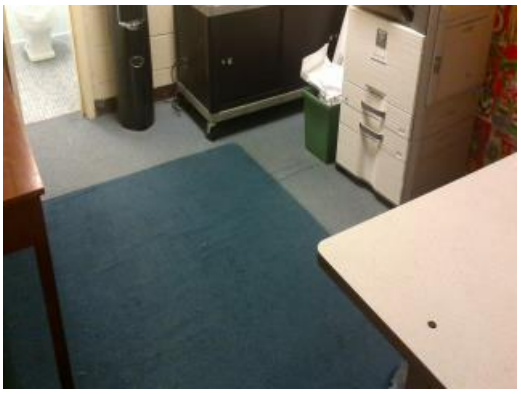

Classrooms Exterior


Steam Radiator


Building Mounted Light


Original Building Boys Restroom


Library


Carpet In Copy Room


100A Panel Board

225A Panel Board

Ponding On Roof

Gymnasium

School Elevation and Parking

Fire Escape From Second Level

Original Building Typical Classroom


Classroom Sink


Boiler

Facility Condition Assessment

North Providence - North Providence High School | *June 2017*

1828 Mineral Spring Avenue, North Providence, RI 02904

Introduction

North Providence High School, located at 1828 Mineral Spring Avenue in North Providence, Rhode Island, was built in 1935. It comprises 211,287 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.

North Providence High School serves grades 9 - 12, has 83 instructional spaces, and has an enrollment of 967. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for North Providence High School is 1,615 with a resulting utilization of 60%.

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 North Providence High School the 5-year need is $41,198,465. 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 North Providence 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 North Providence 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
	Concrete Pedestrian Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	Pre-cast Concrete Panel Exterior Wall
	Storefront / Curtain Wall
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors
02 - Building 02:	CMU Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors
03 - Building 03:	CMU Exterior Wall
	Vinyl Siding Exterior Wall
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors
04 - Building 04:	CMU Exterior Wall
	Vinyl Siding Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors

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

01 - Main Building:	Built-Up Roofing With Ballast
	Single Ply Roofing
02 - Building 02:	Composition Shingle Roofing
03 - Building 03:	Composition Shingle Roofing
04 - Building 04:	Composition Shingle Roofing

Interior

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

01 - Main Building:	Interior Demountable Partitions

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Overhead Interior Coiling Doors
	Interior Door Hardware
	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
	Vinyl Composition Tile Flooring
	Rubber Tile Flooring
	Carpet
	Athletic/Sport Flooring
02 - Building 02:	Painted Ceilings
	Vinyl/Fabric Wall Covering
	Interior Wall Painting
	Concrete Flooring
	Wood Flooring
03 - Building 03:	Wood Ceilings
	Interior Wall Painting
	Concrete Flooring
04 - Building 04:	Painted Ceilings
	Interior Wall Painting
	Wood Flooring

Mechanical

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

01 - Main Building:	2,400 MBH Copper Tube Boiler
	7,500 MBH Copper Tube Boiler
	3 kW Electric Unit Heater
	12 MBH Steam Unit Heater
	20 MBH Steam Unit Heater
	DDC Heating System Controls
	5 Ton Outside Air Cooled Condenser
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	50 HP Pump
	5 HP Pump

01 - Main Building:	25 HP Pump
	2,000 CFM Interior AHU
	15,000 CFM Outdoor AHU
	Ductwork
	15 Ton DX Gas Roof Top Unit
	Kitchen Exhaust Hoods
	4'x6' Ventilator/Relief Vent
	Wall Exhaust Fan
	Roof Exhaust Fan
	Fire Sprinkler System
03 - Building 03:	Gas Furnace
	Radiant Water Heater
	Electronic Heating System Controls

Plumbing

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

01 - Main Building:	500 Gallon Water Storage Tank
	4" Backflow Preventers
	Gas Piping System
03 - Building 03:	Gas Piping System
04 - Building 04:	10 Gallon Electric Water Heater
01 - Main Building:	Domestic Water Piping System
02 - Building 02:	Domestic Water Piping System
03 - Building 03:	Domestic Water Piping System
04 - Building 04:	Domestic Water Piping System
01 - Main Building:	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Showers
	Toilets
	Urinals
02 - Building 02:	Lavatories
03 - Building 03:	Mop/Service Sinks
	Restroom Lavatories
	Toilets
	Urinals
04 - Building 04:	Mop/Service Sinks
01 - Main Building:	Air Compressor (1 hp)
	275 Gallon Above Ground Fuel Oil Storage Tank

Electrical

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

01 - Main Building:	1200 kW Emergency Generator
	480v Switch
	Automatic Transfer Switch
	3,000 Amp Switchgear
	112.5 KVA Transformer
	15 KVA Transformer
	30 KVA Transformer
	45 KVA Transformer
	75 KVA Transformer
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Panelboard - 120/208 400A
	Panelboard - 120/240 225A
	Panelboard - 277/480 100A
	Panelboard - 277/480 225A
	Panelboard - 277/480 400A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Building Mounted Lighting Fixtures
	Canopy Mounted Lighting Fixtures
	Light Fixtures
02 - Building 02:	Panelboard - 120/208 225A
	Building Mounted Lighting Fixtures
	Light Fixtures
03 - Building 03:	Panelboard - 120/208 225A
	Building Mounted Lighting Fixtures
	Light Fixtures
04 - Building 04:	Panelboard - 120/208 225A
	Building Mounted Lighting Fixtures
	Light 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	-	-	-	$2,447,717	$963,444	$3,411,161	21.32 %
Roofing	-	$2,652,094	$1,564	-	-	$2,653,657	16.59 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$8,861	-	-	-	$8,861	0.06 %
Interior	-	-	$2,620,008	$961,380	$16,397	$3,597,786	22.49 %
Mechanical	-	$119,474	$1,195,924	$1,142,459	-	$2,457,857	15.36 %
Electrical	-	$126,561	$22,778	-	$78,360	$227,699	1.42 %
Plumbing	-	$2,006	$907,578	$509,770	$29,875	$1,449,228	9.06 %
Fire and Life Safety	$29,053	-	-	-	-	$29,053	0.18 %
Technology	-	-	$2,114,980	$7,987	-	$2,122,967	13.27 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$13,857	$10,557	$17,321	$41,735	0.26 %
Total	$29,053	$2,908,996	$6,876,688	$5,079,870	$1,105,398	$16,000,004	

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

The building systems with the most need include:

Interior	-	$3,597,786
Site	-	$3,411,161
Roofing	-	$2,653,657

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

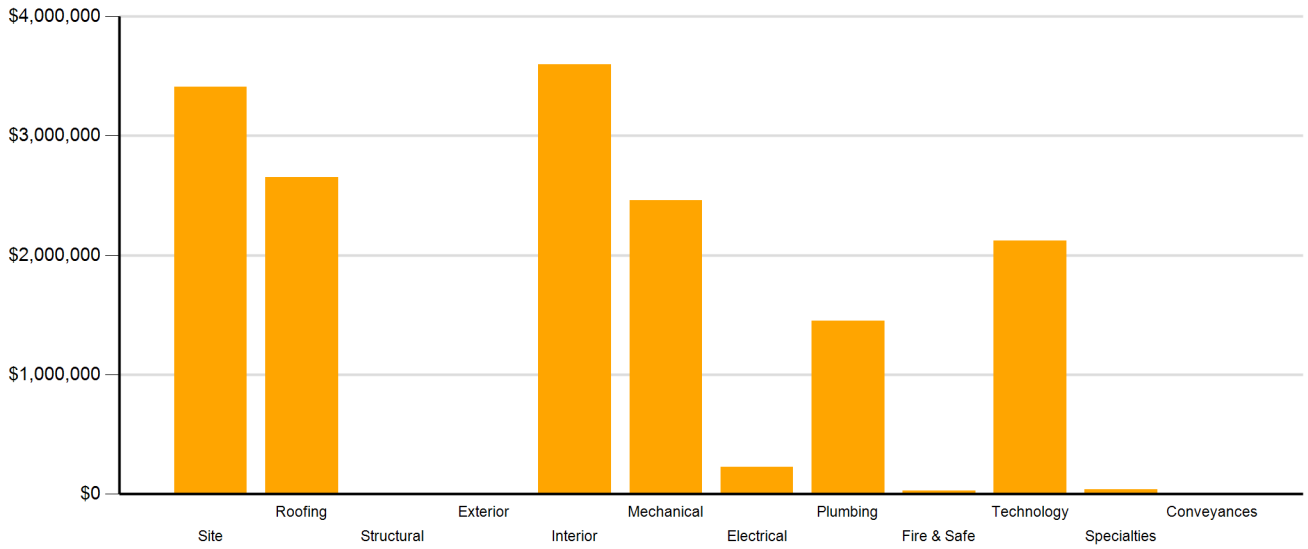


Figure 2: System Deficiencies

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	-	-	$1,174,152	-	-	$1,174,152
Barrier to Accessibility	-	-	$30,579	-	-	$30,579
Capital Renewal	$17,505	$2,908,996	$3,543,120	$4,103,528	-	$10,573,149
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$11,547	-	$54,273	$373,094	$1,105,398	$1,544,312
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$603,248	-	$603,248
Technology	-	-	$2,074,564	-	-	$2,074,564
Traffic	-	-	-	-	-	$0
Total	$29,053	$2,908,996	$6,876,688	$5,079,870	$1,105,398	$16,000,004

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

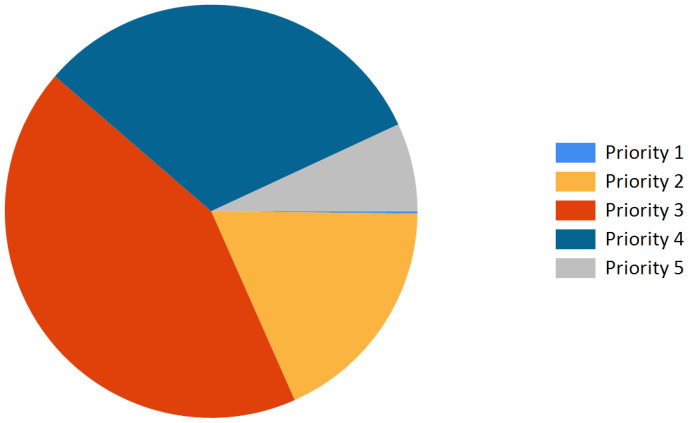


Figure 3: Current deficiencies by priority

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	$3,411,161	$0	$0	$0	$0	$820,504	$820,504	$4,231,665
Roofing	$2,653,657	$0	$0	$0	$0	$241,802	$241,802	$2,895,460
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$8,861	$0	$0	$0	$5,125,870	$0	$5,125,870	$5,134,731
Interior	$3,597,786	$0	$0	$1,160,446	$0	$2,472,000	$3,632,446	$7,230,232
Mechanical	$2,457,857	$0	$4,749,395	$10,458	$0	$953,087	$5,712,940	$8,170,797
Electrical	$227,699	$0	$721,710	$0	$1,307,543	$46,978	$2,076,231	$2,303,931
Plumbing	$1,449,228	$0	$0	$4,588,748	$1,037,266	$177,682	$5,803,696	$7,252,924
Fire and Life Safety	$29,053	$0	$621,190	$0	$0	$0	$621,190	$650,243
Technology	$2,122,967	$0	$0	$0	$0	$0	$0	$2,122,967
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$41,735	$0	$0	$0	$0	$1,163,782	$1,163,782	$1,205,517
Total	**$16,000,004**	**$0**	**$6,092,295**	**$5,759,652**	**$7,470,679**	**$5,875,835**	**$25,198,461**	**$41,198,465**

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

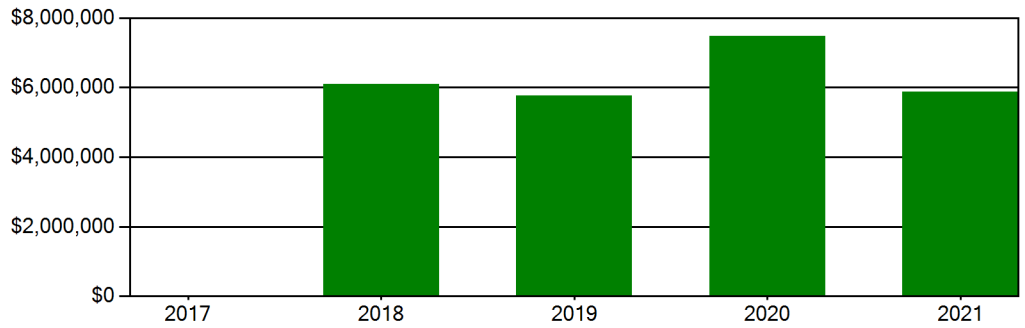
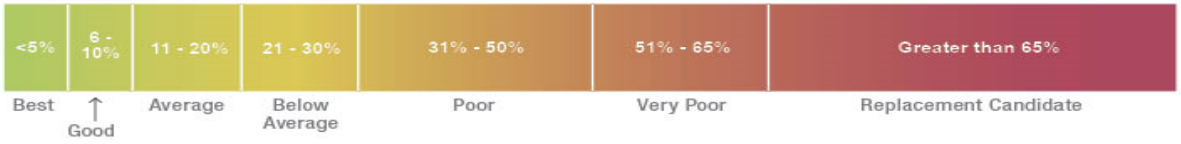


Figure 4: Life Cycle Capital Renewal Forecast

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 $76,063,320. For planning purposes, the total 5-year need at the North Providence High School is $41,198,465 (Life Cycle Years 1-5 plus the FCI deficiency cost). The North Providence High School facility has a 5-year FCI of 54.16%.

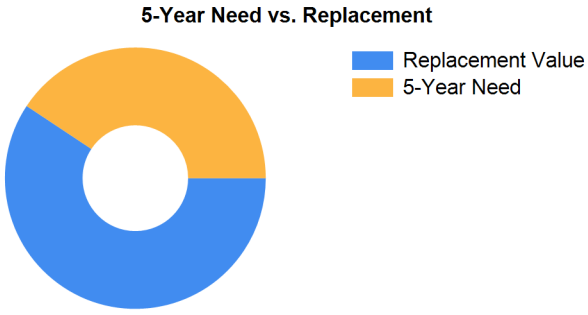


Figure 5: 5-Year FCI

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 1,142 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 North Providence High School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $0.

Summary of Findings

The North Providence High School comprises 211,287 square feet and was constructed in 1935. Current deficiencies at this school total $16,000,004. Five year capital renewal costs total $25,198,461. The total identified need for the North Providence High School (current deficiencies and 5-year capital renewal costs) is $41,198,465. The 5-year FCI is 54.16%.

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
North Providence High School Totals	211,287	1935	$16,000,004	$25,198,461	$41,198,465	54.16%

**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
Asphalt Paving Requires Replacement	Capital Renewal	135	CAR	4	$583,952	2197
Asphalt Paving Requires Replacement	Capital Renewal	348	CAR	4	$1,505,299	4332
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$37,288	28516
Note: Backstops Require Replacement						
Fencing Requires Replacement (4' Chain Link Fence)	Capital Renewal	3,800	LF	4	$321,177	2200
Note: Fencing appears to have been struck by cars or plows.						
School has insufficient # of tennis courts.	Educational Adequacy	1	Ea.	5	$212,705	29022
Note: School has insufficient # of tennis courts.						
School has insufficient football/soccer fields.	Educational Adequacy	1	Ea.	5	$124,295	28190
Note: School has insufficient football/soccer fields.						
School has insufficient softball fields.	Educational Adequacy	1	Ea.	5	$198,871	28363
Note: School has insufficient softball fields.						
School lacks a competition track.	Educational Adequacy	1	Ea.	5	$427,573	28252
Note: School lacks a competition track.						
	Sub Total for System	**8**	**items**		**$3,411,161**	
	Sub Total for School and Site Level	**8**	**items**		**$3,411,161**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Single-Ply Membrane Roof Covering Requires Replacement	Capital Renewal	188,448	SF	2	$2,652,094	2897
Skylight Requires Repair	Capital Renewal	3	Ea.	3	$1,564	2345
Note: Kalwall skylights leak during rain.						
	Sub Total for System	**2**	**items**		**$2,653,657**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Concrete Pre-Cast Panel Requires Replacement (Bldg SF)	Capital Renewal	50	SF	2	$8,861	2352
Note: Broken granite near loading dock.						
Location: Loading dock						
	Sub Total for System	**1**	**items**		**$8,861**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	73	Ea.	3	$666,258	4712
Note: All classrooms						
Interior Doors Require Replacement	Capital Renewal	1	Door	3	$5,056	2165
Note: Storage 1E door is broken at the hinge.						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	50,000	SF	3	$495,173	2346
Note: Ceiling tiles damaged by water infiltration from leaking roof.						
The Ceramic Tile Flooring Requires Replacement	Capital Renewal	1,200	SF	3	$35,335	2349
Location: Locker rooms and toilet rooms						
The Vinyl Composition Tile Requires Replacement	Capital Renewal	107,535	SF	3	$1,352,698	2347
Note: VCT is cracked and lifting at seams. Some are missing in areas due to damage from leaks.						
The Wood Flooring Requires Replacement	Capital Renewal	1,800	SF	3	$65,488	2351
Location: Gym 3						
12 x 12 Floor Tiles Are Lifting or Broken and Highly Likely Contain Asbestos	Hazardous Material	18,097	SF	4	$565,967	Rollup
Acoustic ceiling tile - large area (>10%) of broken or falling broken tiles	Hazardous Material	1,000	SF	4	$12,835	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	20	LF	4	$417	Rollup

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Interior Ceramic Walls Require Repair Or Replacement	Capital Renewal	3,500	SF	4	$85,378	3042
Note: There are melamine walls in the kitchen that need to be replaced with ceramic tile wall.						
Location: Kitchen						
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	200	SF	4	$2,085	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	1,457	SF	4	$15,189	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - each)	Hazardous Material	12	Ea.	4	$3,753	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - linear feet)	Hazardous Material	120	LF	4	$3,002	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	7,072	SF	4	$272,754	Rollup
Classroom Door Requires Vision Panel	Educational Adequacy	1	Ea.	5	$2,309	Rollup
Room lacks appropriate sound control.	Educational Adequacy	400	SF	5	$14,088	Rollup
	Sub Total for System	**17**	**items**		**$3,597,786**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Electric Unit Heater Requires Replacement	Capital Renewal	3	Ea.	2	$4,156	2153
Package Roof Top Unit Requires Replacement	Capital Renewal	1	Ea.	2	$56,589	2158
Steam/HW Unit Heater Requires Replacement	Capital Renewal	1	Ea.	2	$3,088	2152
The Air Handler HVAC Component Requires Replacement	Capital Renewal	1	Ea.	2	$47,301	2157
The 4 X 6 Exhausts/Ventilators Require Replacement	Capital Renewal	33	Ea.	3	$688,030	2898
Unit Ventilators Are Excessively Noisy	Acoustics	73	Ea.	3	$507,893	4713
Note: All classrooms						
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	1	Ea.	4	$2,936	2159
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	209,387	SF	4	$945,915	2899
Lab lacks an appropriate fume hood.	Educational Adequacy	2	Ea.	4	$44,507	Rollup
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	1	Ea.	4	$8,365	2155
Note: Pump is original for the domestic hot water system.						
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	2	Ea.	4	$20,899	2156
The Exhaust Hood Requires Replacement	Capital Renewal	21	Ea.	4	$119,836	2161
	Sub Total for System	**12**	**items**		**$2,449,517**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Switchgear Is Needed Or Requires Replacement	Capital Renewal	1	Ea.	2	$101,464	2162
Room Has Insufficient Electrical Outlets	Educational Adequacy	156	Ea.	5	$78,360	Rollup
	Sub Total for System	**2**	**items**		**$179,824**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Emergency Eyewash Requires Replacement	Capital Renewal	8	Ea.	3	$41,699	2112
Note: Eyewashes leak and have calcium buildup; replace eyewash to make sure it works when needed.						
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	80,000	SF	3	$705,806	2089
Note: Original building has all original 1935 piping.						
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$128,036	2086
Note: Older plumbing from 1938.						
Location: Older section of the building						
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	50	Ea.	4	$149,073	2896
Note: Classroom lavatories are very old and leak.						
Location: Chemistry Labs						
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	15	Ea.	4	$121,344	2151
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	15	Ea.	4	$52,322	2113
Note: Restroom lavatories leak and drip constantly.						

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	50	Ea.	4	$174,405	2114
Note: Sinks are cracked and leaking.						
Room lacks a drinking fountain.	Educational Adequacy	12	Ea.	5	$13,395	Rollup
Room lacks a private shower area.	Educational Adequacy	1	Ea.	5	$10,360	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	4	Ea.	5	$6,120	Rollup
	Sub Total for System	**10**	**items**		**$1,402,559**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Replace Kitchen Exhaust Hood	Capital Renewal	1	Ea.	1	$17,505	2160
Room lacks shut-off valves for utilities. (International Fuel Gas Code, Section 409.6)	Educational Adequacy	1	Ea.	1	$11,547	Rollup
	Sub Total for System	**2**	**items**		**$29,053**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	7	Ea.	3	$40,416	Rollup
Technology: Auditorium AV/Multimedia system is inadequate.	Technology	1	Room	3	$364,865	3804
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	504	Ea.	3	$262,702	3802
Technology: Instructional spaces do not have local sound reinforcement.	Technology	60	Ea.	3	$312,741	3810
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,838	3793
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,838	3796
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,838	3799
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$41,282	3798
Technology: Intermediate Telecommunications Room needs M/E improvements.	Technology	1	Ea.	3	$26,687	3792
Technology: Intermediate Telecommunications Room needs M/E improvements.	Technology	1	Ea.	3	$26,687	3795
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,297	3791
Technology: Main Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$23,768	3790
Technology: Network cabling infrastructure is outdated (Cat 5 or less) and/or does not meet standards.	Technology	89	Ea.	3	$41,751	3801
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	162	Ea.	3	$75,996	3803
Technology: Network system inadequate and/or near end of useful life	Technology	50	Ea.	3	$260,618	3809
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	209,387	SF	3	$392,903	3808
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$59,421	3807
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$5,212	3794
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$5,212	3797
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$5,212	3800

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	82	Ea.	3	$136,772	3806
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,923	3805
Sound and Video Recording Equipment is Required	Educational Adequacy	1	Ea.	4	$7,987	Rollup
	Sub Total for System	**23**	**items**		**$2,122,967**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	3	Ea.	3	$13,857	Rollup
Backdrop is Required	Educational Adequacy	1	Ea.	4	$1,443	Rollup
Welding Bays Are Required	Educational Adequacy	1	Ea.	4	$5,485	Rollup
Work Tables Are Required	Educational Adequacy	1	Ea.	4	$3,629	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	2	Ea.	5	$17,321	Rollup
	Sub Total for System	**5**	**items**		**$41,735**	
	Sub Total for Building 01 - Main Building	**74**	**items**		**$12,485,959**	

Building: 02 - Building 02

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Lighting Fixtures Require Replacement	Capital Renewal	200	SF	2	$1,303	2166
Note: Older T12 fixtures.						
Electrical Wiring Requires Replacement	Capital Renewal	100	LF	3	$7,297	2168
Note: Original wiring from the early 80s.						
The Mounted Building Lighting Requires Replacement	Capital Renewal	2	Ea.	3	$3,273	2167
	Sub Total for System	**3**	**items**		**$11,874**	
	Sub Total for Building 02 - Building 02	**3**	**items**		**$11,874**	

Building: 03 - Building 03

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Gas Furnace HVAC Component Requires Replacement	Capital Renewal	1	Ea.	2	$8,340	4387
	Sub Total for System	**1**	**items**		**$8,340**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Lighting Fixtures Require Replacement	Capital Renewal	1,200	SF	2	$7,819	2184
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$6,359	3044
The Mounted Building Lighting Requires Replacement	Capital Renewal	2	Ea.	3	$3,273	2182
	Sub Total for System	**3**	**items**		**$17,451**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Restroom Is Not ADA Compliant	Barrier to Accessibility	100	SF	3	$30,579	2358
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	1	Ea.	3	$1,457	2187
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	2	Ea.	4	$5,650	2183
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	2	Ea.	4	$6,976	2185
Note: Restroom lavatories are old and leaking.						
	Sub Total for System	**4**	**items**		**$44,663**	
	Sub Total for Building 03 - Building 03	**8**	**items**		**$70,454**	

Building: 04 - Building 04

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Lighting Fixtures Require Replacement	Capital Renewal	500	SF	2	$3,258	2174
Note: Original lighting.						
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$6,359	2172
Note: Original panelboard.						
Electrical Wiring Requires Replacement	Capital Renewal	100	LF	3	$7,297	2171
Note: Original wiring.						
The Mounted Building Lighting Requires Replacement	Capital Renewal	1	Ea.	3	$1,637	2175
	Sub Total for System	**4**	**items**		**$18,551**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Electric Water Heater Requires Replacement	Capital Renewal	1	Ea.	2	$2,006	2176
	Sub Total for System	**1**	**items**		**$2,006**	
	Sub Total for Building 04 - Building 04	**5**	**items**		**$20,556**	
	Total for Campus	**98**	**items**		**$16,000,004**	

North Providence 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
Playfield Areas	HS Athletic Components		1	Ea.	$458,453	5
Pedestrian Pavement	Sidewalks - Concrete		17,500	SF	$362,051	5
		Sub Total for System	**2**	**items**	**$820,504**	
		Sub Total for Building -	**2**	**items**	**$820,504**	

Building: 01 - Main Building

Roofing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Low-Slope Roofing	Built-Up Roofing (BUR) w/ballast		6,282	SF	$241,802	5
		Sub Total for System	**1**	**items**	**$241,802**	

Exterior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Exterior Window Wall	Storefront / Curtain Wall (Bldg SF)		62,816	SF	$5,125,870	4
		Sub Total for System	**1**	**items**	**$5,125,870**	

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Carpeting	Carpet		52,347	SF	$1,152,747	3
Suspended Plaster and	Painted ceilings		20,939	SF	$88,656	5
Wall Painting and Coating	Painting/Staining (Bldg SF)		143,071	SF	$956,837	5
Flooring Treatment	Concrete Floor - Finished		4,835	SF	$63,720	5
Athletic Flooring	Athletic/Sport Flooring		300	SF	$10,393	5
Interior Demountable Partitions	Demountable Interior Partitions (Bldg SF)		1,125	SF	$28,580	5
Note:	3 @ 25' x 9'					
Resilient Flooring	Rubber Tile Flooring		500	SF	$9,454	5
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles		138,448	SF	$1,265,645	5
		Sub Total for System	**8**	**items**	**$3,576,031**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Facility Hydronic Distribution	2-Pipe Water System (Hot)		209,387	SF	$1,633,659	2
HVAC Air Distribution	Ductwork (Bldg.SF)		209,387	SF	$3,115,736	2
HVAC Air Distribution	AHU 15,000 CFM Outdoor		4	Ea.	$813,896	5
HVAC Air Distribution	AHU 2,000 CFM Interior		3	Ea.	$130,987	5
		Sub Total for System	**4**	**items**	**$5,694,279**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Packaged Generator Assemblies	Emergency Generator (1200 KW)		1	Ea.	$721,710	2
Wiring Devices	Electrical Disconnect		26	Ea.	$48,237	4
Lighting Fixtures	Light Fixtures (Bldg SF)		209,387	SF	$1,259,306	4
Transfer Switches	Automatic Transfer Switch (Amps)		1,200	Amps	$43,383	5
Transfer Switches	480v Switch (Amps)		150	Amps	$3,595	5
		Sub Total for System	**5**	**items**	**$2,076,231**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Gas Piping System (BldgSF)		209,387	SF	$4,588,748	3
Plumbing Fixtures	Urinals		19	Ea.	$25,560	4
Plumbing Fixtures	Toilets		79	Ea.	$228,060	4
Plumbing Fixtures	Showers		101	Ea.	$777,522	4
Compressed-Air Systems	Air Compressor (1 hp)		1	Ea.	$6,124	4
Plumbing Fixtures	Mop/Service Sinks		18	Ea.	$46,940	5
Plumbing Fixtures	Restroom Lavatories		26	Ea.	$83,715	5
Domestic Water Equipment	Backflow Preventers - 4 in. (Ea.)		2	Ea.	$18,714	5
Plumbing Fixtures	Classroom Lavatories		7	Ea.	$19,265	5
		Sub Total for System	**9**	**items**	**$5,794,648**	

Fire and Life Safety

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Fire Detection and Alarm	Fire Alarm		209,387	SF	$621,190	2
		Sub Total for System	**1**	**items**	**$621,190**	

Specialties

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Casework	Fixed Cabinetry		50	Room	$566,206	5
Casework	Lockers		1,200	Ea.	$597,576	5
		Sub Total for System	**2**	**items**	**$1,163,781**	
		Sub Total for Building 01 - Main Building	**31**	**items**	**$24,293,833**	

Building: 02 - Building 02

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Coverings	Vinyl/Fabric Wall Covering		100	SF	$722	3
Wall Painting and Coating	Painting/Staining (Bldg SF)		100	SF	$669	3
Suspended Plaster and	Painted ceilings		200	SF	$847	3
		Sub Total for System	**3**	**items**	**$2,237**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Lavatories		2	Ea.	$6,440	5
		Sub Total for System	**1**	**items**	**$6,440**	
		Sub Total for Building 02 - Building 02	**4**	**items**	**$8,677**	

Building: 03 - Building 03

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)		1,200	SF	$8,025	5
Flooring Treatment	Concrete Floor - Finished		1,200	SF	$15,815	5
Specialty Suspended Ceilings	Ceiling - Wood		1,200	SF	$8,083	5
		Sub Total for System	**3**	**items**	**$31,923**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Decentralized Heating Equipment	Radiant Heater - Radiator Water		2	Ea.	$10,458	3
Heating System Supplementary Components	Controls - Electronic (Bldg.SF)		1,200	SF	$8,204	5
		Sub Total for System	**2**	**items**	**$18,662**	
		Sub Total for Building 03 - Building 03	**5**	**items**	**$50,586**	

Building: 04 - Building 04

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Suspended Plaster and	Painted ceilings		500	SF	$2,117	3
Wall Painting and Coating	Painting/Staining (Bldg SF)		500	SF	$3,344	3
Wood Flooring	Wood Flooring - All Types		500	SF	$16,792	5
		Sub Total for System	**3**	**items**	**$22,253**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Mop/Service Sinks		1	Ea.	$2,608	5
		Sub Total for System	**1**	**items**	**$2,608**	
		Sub Total for Building 04 - Building 04	**4**	**items**	**$24,861**	
		Total for: North Providence High School	**46**	**items**	**$25,198,460**	

Supporting Photos

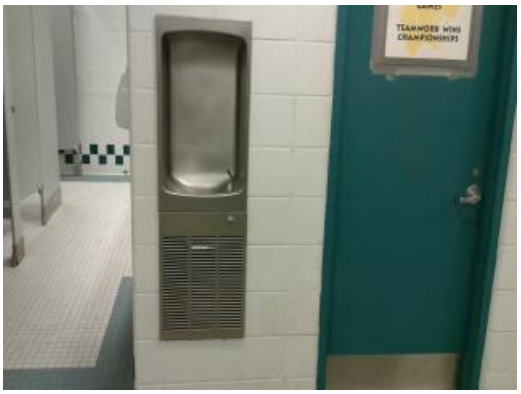
Building Signage

Marquee

Site Aerial

Science Lab

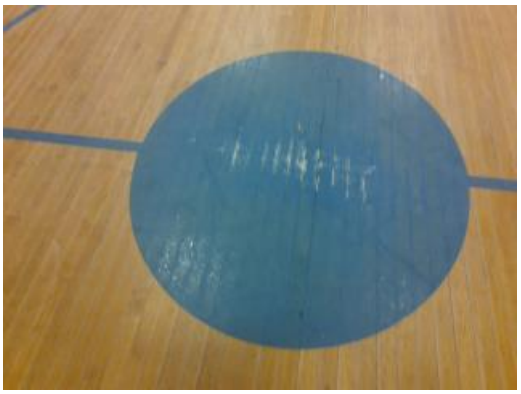
Typical Light Fixtures



Typical Drinking Fountain

Restroom Fixtures

Electric Unit Heater



Wood Flooring In Gym

Corroded Lavatory


Unit Heater


Roof Top Unit


HVAC Circulating Pump


Air Handler


Eyewash Station


Mounted Building Light

Typical Restroom Lavatory

Water Heater

Typical Light Fixture

Custodial Sink

Original Panelboard

Typical Fencing


Mounted Building Light


Transfer Switch


Cracked Asphalt Pavement

Gymnasium 3


Rusted Fencing


Wood Shop


Pole Lighting


Library


Typical Classroom


South Elevation

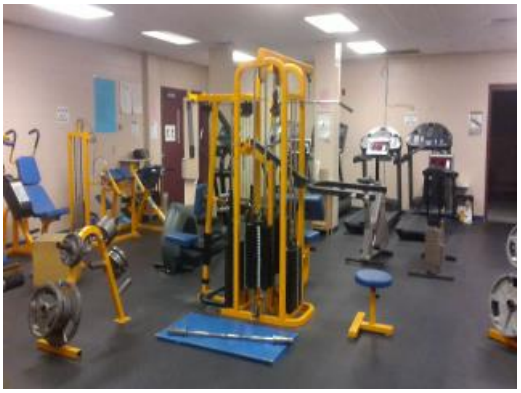

Art Room


Building 3


Cafeteria


Urinals


Drinking Fountains


Fitness Room


Building 4


Music Room


Exterior Finishes


Front Entry


Panelboard


Boiler

Roof Top Unit


Showers


Cracked VCT


Elevation


Gymnasium 1


Broken Granite Near Loading Dock


Typical Toilet


Worn Wood Flooring


Auditorium


Separating Vinyl Tile Floor

Panelboard


Stained Ceiling Tiles


Gymnasium 2


Chipped And Missing VCT


Cracked Ceramic Tile Floor


Typical Restroom Finishes

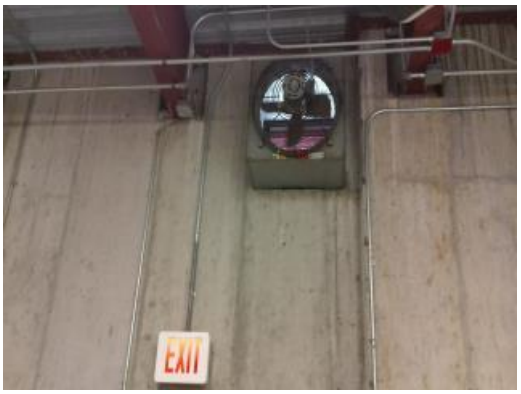

Stained Ceiling Tiles


Computer Lab


Library


Building 2


Kitchen Exhaust Hood



Exhaust Fan


Switchgear


Exhaust Hood


Science Classroom


Broken Wood Interior Door

Exterior Brick

Air Compressor

Facility Condition Assessment

North Providence - Stephen Olney School | *June 2017*

1378 Douglas Avenue, North Providence, RI 02904

Introduction

Stephen Olney School, located at 1378 Douglas Avenue in North Providence, Rhode Island, was built in 1952. It comprises 28,831 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.

Stephen Olney School serves grades KG - 5, has 19 instructional spaces, and has an enrollment of 293. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Stephen Olney School is 350 with a resulting utilization of 84%.

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 Stephen Olney School the 5-year need is $6,218,342. 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 Stephen Olney 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 Stephen Olney School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Concrete Pedestrian Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors

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

01 - Main Building:	Composition Shingle Roofing
	EPDM Roofing

Interior

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

01 - Main Building:	Steel Interior Doors
	Wood Interior Doors
	Interior Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Non-Painted Plaster/Gypsum Board Ceiling
	Interior Wall Painting
	Concrete Flooring
	Quarry Tile Flooring
	Wood Flooring
	Vinyl Composition Tile Flooring
	Carpet
	Metal Ceiling Panel

Mechanical

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

01 - Main Building:	1,275 MBH Cast Iron Steam Boiler
	Radiant Steam Heater
	Radiant Water Heater
	2-Pipe Steam Hydronic Distribution System

01 - Main Building:	1 HP or Smaller Pump
	Small Roof Exhaust Fan
	Wall Exhaust Fan
	Fire Sprinkler System

Plumbing

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

01 - Main Building:	Gas Piping System
	50 Gallon Gas Water Heater
	Domestic Water Piping System
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Showers
	Toilets
	Urinals

Electrical

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

01 - Main Building:	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Electrical Disconnect
	Light 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	-	-	$399,266	$381,045	$72,444	$852,755	14.36 %
Roofing	-	$384,150	-	-	-	$384,150	6.47 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$133,697	$9,486	-	-	$143,183	2.41 %
Interior	-	-	$724,263	$632,221	-	$1,356,485	22.84 %
Mechanical	-	$1,858,207	$61,820	$11,301	-	$1,931,327	32.52 %
Electrical	-	$223,691	$40,450	-	$36,166	$300,308	5.06 %
Plumbing	-	-	$285,260	$97,909	$7,470	$390,639	6.58 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$565,536	-	-	$565,536	9.52 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$13,857	-	-	$13,857	0.23 %
Total	$0	$2,599,744	$2,099,938	$1,122,476	$116,080	$5,938,239	

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

The building systems with the most need include:

Mechanical	-	$1,931,327
Interior	-	$1,356,485
Site	-	$852,755

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

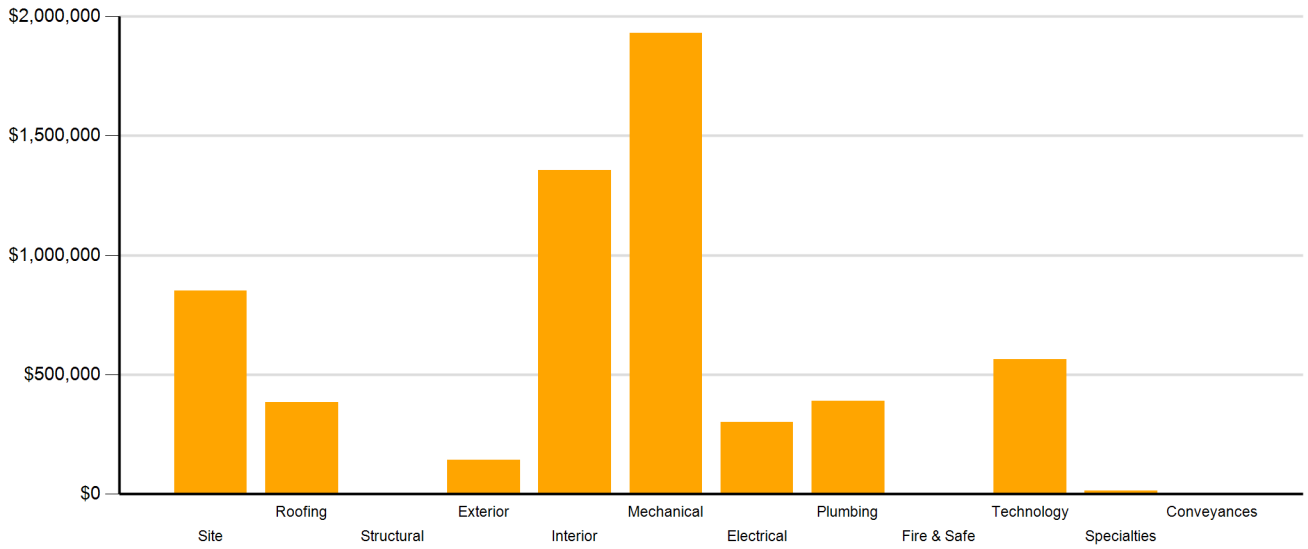


Figure 2: System Deficiencies

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	-	-	$146,029	-	-	$146,029
Barrier to Accessibility	-	-	$248,443	-	-	$248,443
Capital Renewal	-	$2,599,744	$831,446	$806,644	-	$4,237,834
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$13,857	$134,172	$116,080	$264,109
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$181,661	-	$181,661
Technology	-	-	$565,536	-	-	$565,536
Traffic	-	-	$294,628	-	-	$294,628
Total	$0	$2,599,744	$2,099,938	$1,122,476	$116,080	$5,938,239

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

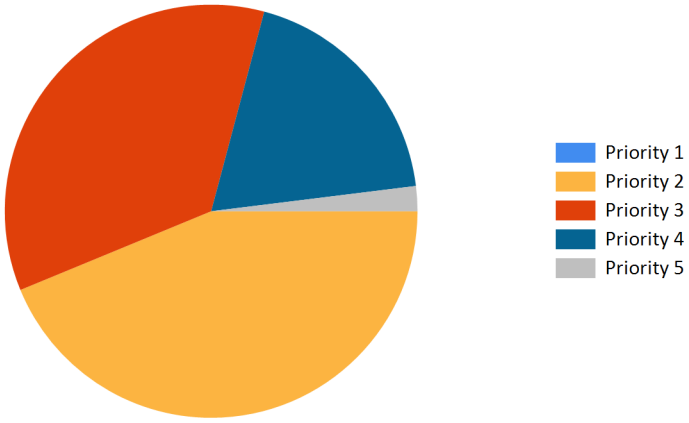


Figure 3: Current deficiencies by priority

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	$852,755	$0	$0	$0	$0	$0	$0	$852,755
Roofing	$384,150	$0	$0	$0	$0	$0	$0	$384,150
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$143,183	$0	$0	$0	$0	$0	$0	$143,183
Interior	$1,356,485	$0	$17,617	$192,817	$69,669	$0	$280,103	$1,636,588
Mechanical	$1,931,327	$0	$0	$0	$0	$0	$0	$1,931,327
Electrical	$300,308	$0	$0	$0	$0	$0	$0	$300,308
Plumbing	$390,639	$0	$0	$0	$0	$0	$0	$390,639
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$565,536	$0	$0	$0	$0	$0	$0	$565,536
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$13,857	$0	$0	$0	$0	$0	$0	$13,857
Total	**$5,938,239**	**$0**	**$17,617**	**$192,817**	**$69,669**	**$0**	**$280,103**	**$6,218,342**

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

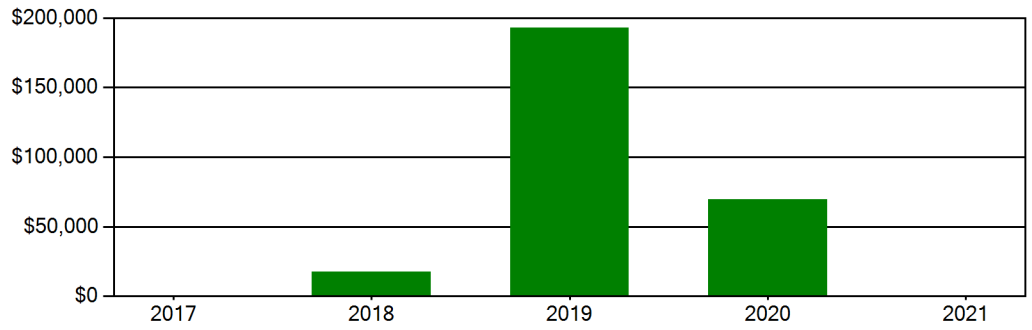
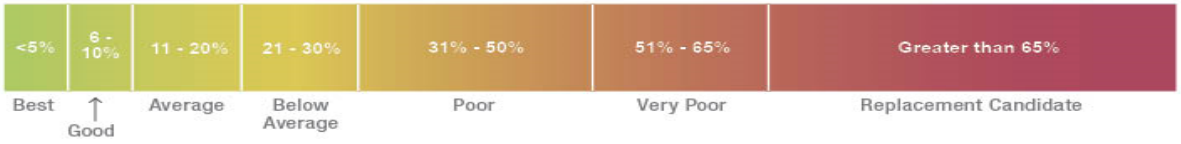


Figure 4: Life Cycle Capital Renewal Forecast

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 $10,090,850. For planning purposes, the total 5-year need at the Stephen Olney School is $6,218,342 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Stephen Olney School facility has a 5-year FCI of 61.62%.

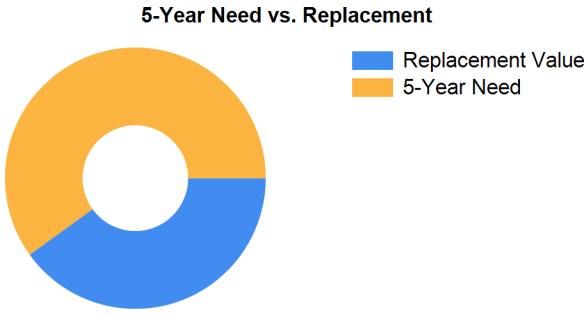


Figure 5: 5-Year FCI

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 160 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 Stephen Olney School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $423,360.

Summary of Findings

The Stephen Olney School comprises 28,831 square feet and was constructed in 1952. Current deficiencies at this school total $5,938,239. Five year capital renewal costs total $280,103. The total identified need for the Stephen Olney School (current deficiencies and 5-year capital renewal costs) is $6,218,342. The 5-year FCI is 61.62%.

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
Stephen Olney School Totals	28,831	1952	$5,938,239	$280,103	$6,218,342	61.62%

**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
Concrete Walks Require Replacement	Capital Renewal	263	SF	3	$7,028	364
Note: Damaged and cracked pavement						
Install New Bus Drop Or Parent Drop Area	Traffic	1	Ea.	3	$198,871	4402
Note: Add parent drop off/pick up area in back lot						
Install New Playground Equipment	Barrier to Accessibility	1	SF	3	$88,841	54902
Note: Install New Playground Equipment						
Retaining Wall Requires Repair	Capital Renewal	100	SF	3	$8,769	384
Sidewalk Requires Replacement	Traffic	3,210	SF	3	$95,756	4400
Note: Patch sidewalk along Douglas Avenue adjacent to school property to reduce cracks and holes (535' long x 6' wide)						
Asphalt Paving Requires Replacement	Capital Renewal	62	CAR	4	$268,186	591
Note: New asphalt is needed						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$37,288	28517
Note: Backstops Require Replacement						
Exterior Concrete Stairs Require Repair And Repainting	Capital Renewal	800	SF	4	$75,571	377
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$7,644	28762
Note: Exterior Basketball Goals are Required						
PE / Recess Playfield is Missing and is Needed	Educational Adequacy	1	Ea.	5	$64,800	54903
Note: PE / Recess Playfield is Missing and is Needed						
	Sub Total for System	**10**	**items**		**$852,755**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Pole Lighting Requires Replacement	Capital Renewal	4	Ea.	3	$40,450	408
Note: Pole lighting does not illuminate much of the parking lot, lights aimed at street.						
	Sub Total for System	**1**	**items**		**$40,450**	
	Sub Total for School and Site Level	**11**	**items**		**$893,205**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	25,000	SF	2	$346,621	353
Shingle Roof Requires Replacement	Capital Renewal	1,200	SF	2	$37,529	351
	Sub Total for System	**2**	**items**		**$384,150**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	19	Door	2	$133,697	360
Handrail Requires Replacement	Capital Renewal	50	LF	3	$9,486	379
	Sub Total for System	**2**	**items**		**$143,183**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	16	Ea.	3	$146,029	4736
Note: All classroom						
Existing Door Hardware Is Not ADA Compliant	Barrier to Accessibility	50	Door	3	$156,371	367
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	16,133	SF	3	$159,773	349
The Existing Toilet Stall Does Not Meet Minimum ADA Requirements	Barrier to Accessibility	1	Ea.	3	$3,232	371
The Vinyl Composition Tile Requires Replacement	Capital Renewal	20,000	SF	3	$251,583	375
The Wood Flooring Requires Replacement	Capital Renewal	200	SF	3	$7,276	580
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	280	LF	4	$5,838	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	16,133	SF	4	$209,817	4501

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. AND NOT in children-accessible area (measurement unit - square feet)	Hazardous Material	200	SF	4	$2,085	Rollup
Paint (probable pre-1978 in base layer(s)) - damaged area < 9 sq. ft. OR overall worn AND in children-accessible area (measurement unit - linear feet)	Hazardous Material	600	LF	4	$15,012	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	3,000	SF	4	$31,274	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas (> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - square feet)	Hazardous Material	8,830	SF	4	$92,050	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - each)	Hazardous Material	10	Ea.	4	$3,127	Rollup
Paint (probable pre-1978 in base layer(s)) -large areas(> 10 sq. ft.)of peeling/damage & area in active use-adults only (measurement unit - linear feet)	Hazardous Material	1,290	LF	4	$32,275	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	2,512	SF	4	$96,883	Rollup
The Gypsum Board Ceilings Require Replacement	Capital Renewal	11,500	SF	4	$143,861	366
	Sub Total for System	**16**	**items**		**$1,356,485**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Gas Piping Requires Replacement (SF Basis)	Capital Renewal	28,831	SF	2	$684,489	1366
The Boiler HVAC Component Requires Replacement	Capital Renewal	3	Ea.	2	$244,592	374
Note: 480, 670, 876 MBH boilers.						
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	28,831	SF	2	$243,688	1365
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	119	Ea.	2	$674,109	400
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	2	Ea.	2	$11,330	401
Testing And Balancing Required	Capital Renewal	28,831	SF	3	$58,928	389
Note: Uneven heating throughout the building. Some rooms were very warm while others were cool.						
The Small Diameter Exhausts/Hoods Require Replacement	Capital Renewal	1	Ea.	3	$2,892	402
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	1	Ea.	4	$2,936	385
Note: Failed unit.						
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	1	Ea.	4	$8,365	378
	Sub Total for System	**9**	**items**		**$1,931,327**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Electrical Disconnect Requires Replacement	Capital Renewal	3	Ea.	2	$6,030	390
The Lighting Fixtures Require Replacement	Capital Renewal	28,831	SF	2	$187,847	393
Note: Ballasts not functioning, dead bulbs, covers have cracks or holes.						
The Panelboard Requires Replacement	Capital Renewal	4	Ea.	2	$17,097	395
Note: Panels ranging from 60-125 amps						
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$12,718	396
Note: 200 amp						
Room Has Insufficient Electrical Outlets	Educational Adequacy	72	Ea.	5	$36,166	Rollup
	Sub Total for System	**5**	**items**		**$259,857**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Gas Water Heater Requires Replacement	Capital Renewal	2	Ea.	3	$6,930	381
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	28,831	SF	3	$254,364	376
The Showers Plumbing Fixtures Require Replacement	Capital Renewal	2	Ea.	3	$16,680	358
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	5	Ea.	3	$7,287	359
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	2	Ea.	4	$22,413	356
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	18	Ea.	4	$53,666	354
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	2	Ea.	4	$5,650	1912
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	2	Ea.	4	$16,179	357
Room lacks a drinking fountain.	Educational Adequacy	3	Ea.	5	$3,349	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	4	Ea.	5	$4,121	Rollup
	Sub Total for System	**10**	**items**		**$390,639**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Campus network switching electronics are antiquated and/or do not meet standards.	Technology	104	Ea.	3	$54,208	3766
Technology: Classroom AV/Multimedia systems are in need of improvements.	Technology	1	Ea.	3	$10,425	3768
Technology: Instructional spaces do not have local sound reinforcement.	Technology	14	Ea.	3	$72,973	3776
Technology: Intermediate Telecommunications Room grounding system is inadequate or non-existent.	Technology	1	Ea.	3	$5,838	3765
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$41,282	3763
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$5,212	3764
Technology: Main Telecommunications Room ground system is inadequate or non-existent.	Technology	1	Ea.	3	$7,297	3762
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$46,703	3760
Technology: Network cabling infrastructure is partially outdated and/or needs expansion.	Technology	28	Ea.	3	$13,135	3769
Technology: Network system inadequate and/or near end of useful life	Technology	2	Ea.	3	$16,680	3774
Technology: Network system inadequate and/or near end of useful life	Technology	25	Ea.	3	$130,309	3775
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	28,831	SF	3	$54,100	3773
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$59,421	3767
Technology: Telecommunications Room (large size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$8,340	3761
Technology: Telephone handsets are inadequate and sparsely deployed throughout the campus.	Technology	19	Ea.	3	$31,691	3772
Technology: Telephone system is inadequate and/or non-existent.	Technology	1	Ea.	3	$7,923	3771
	Sub Total for System	**16**	**items**		**$565,536**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	3	Ea.	3	$13,857	Rollup
	Sub Total for System	**1**	**items**		**$13,857**	
	Sub Total for Building 01 - Main Building	**61**	**items**		**$5,045,034**	
	Total for Campus	**72**	**items**		**$5,938,239**	

Stephen Olney School - Life Cycle Summary Yrs 1-5

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Carpeting	Carpet	800	SF	$17,617	2
Wall Painting and Coating	Painting/Staining (Bldg SF)	28,831	SF	$192,817	3
Resilient Flooring	Vinyl Composition Tile Flooring	6,000	SF	$69,669	4
	Sub Total for System	**3**	**items**	**$280,103**	
	Sub Total for Building 01 - Main Building	**3**	**items**	**$280,103**	
	Total for: Stephen Olney School	**3**	**items**	**$280,103**	

Supporting Photos

Site Aerial

Exterior Finishes

Damaged VCT

Typical Classroom


Gymnasium/Cafeteria


Boiler

Water Heater


Typical Interior Lighting


Aged Electrical Panel


Cracked Ceiling


Weathered Roof


Deteriorated Asphalt Pavement


Boiler


Typical Interior Lighting


Exterior


Ponding On Roof


Front Of School


Emergency Lighting


Drinking Fountain


Restroom Fixtures And Finishes


Cracked And Worn Parking Lot Asphalt


Restroom Lavatories


Library


Radiant Heater


Cracked Concrete Exterior Steps


Urinals

Exterior Metal Doors


Stained Ceiling


Electrical Panel


Broken Acoustical Ceiling Tile


Cracked Walkway Pavement


Damaged Exterior Steps


Typical Showers


Rear Elevation