Lincoln

LEA Summary

Lincoln totals 525,737 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-March 2016. This report provides LEA summary findings for the statewide assessment program.

School Type by Count

School Type	SqFt
Elementary School	175,881
Middle School	137,533
High School	212,323
Total:	**525,737**

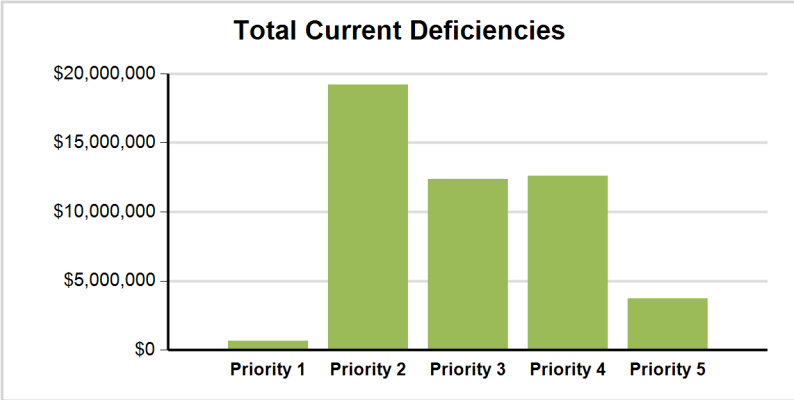
Demographics

Enrollment is projected to decrease by 2.8% over the next 10 years in Lincoln. The total LEA enrollment at 6 school(s) is 2,991 students with a total capacity of 3,700 as reported by the LEA. Utilization is calculated by dividing enrollment by capacity, resulting in 80.8% utilization at Lincoln.

80.8 % Utilization

Educational Program Space Analysis

In Lincoln there are 260 instructional spaces; of these spaces 26.9% meet or exceed the space size standards. Of the total current deficiencies identified, $3,875,191 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.



Five Year Need Summary

The current deficiencies total $48,555,464, with 39.5% categorized as Priority 2 and another 25.9% as Priority 4. The building systems with the highest current deficiency costs are Mechanical and Interior.

The projected life cycle need in Years 1 through 5 is $12,257,485. It is anticipated that the majority of the need will occur in Year 5. School(s) with the greatest need are represented in the adjacent table and make up 78.1% of the combined 5-Year need at Lincoln.

School(s) with Greatest Need	Combined 5-Year Need
Lincoln Senior High School	$35,189,215
Northern Lincoln Elementary School	$6,781,612
Lincoln Central Elementary School	$5,525,348

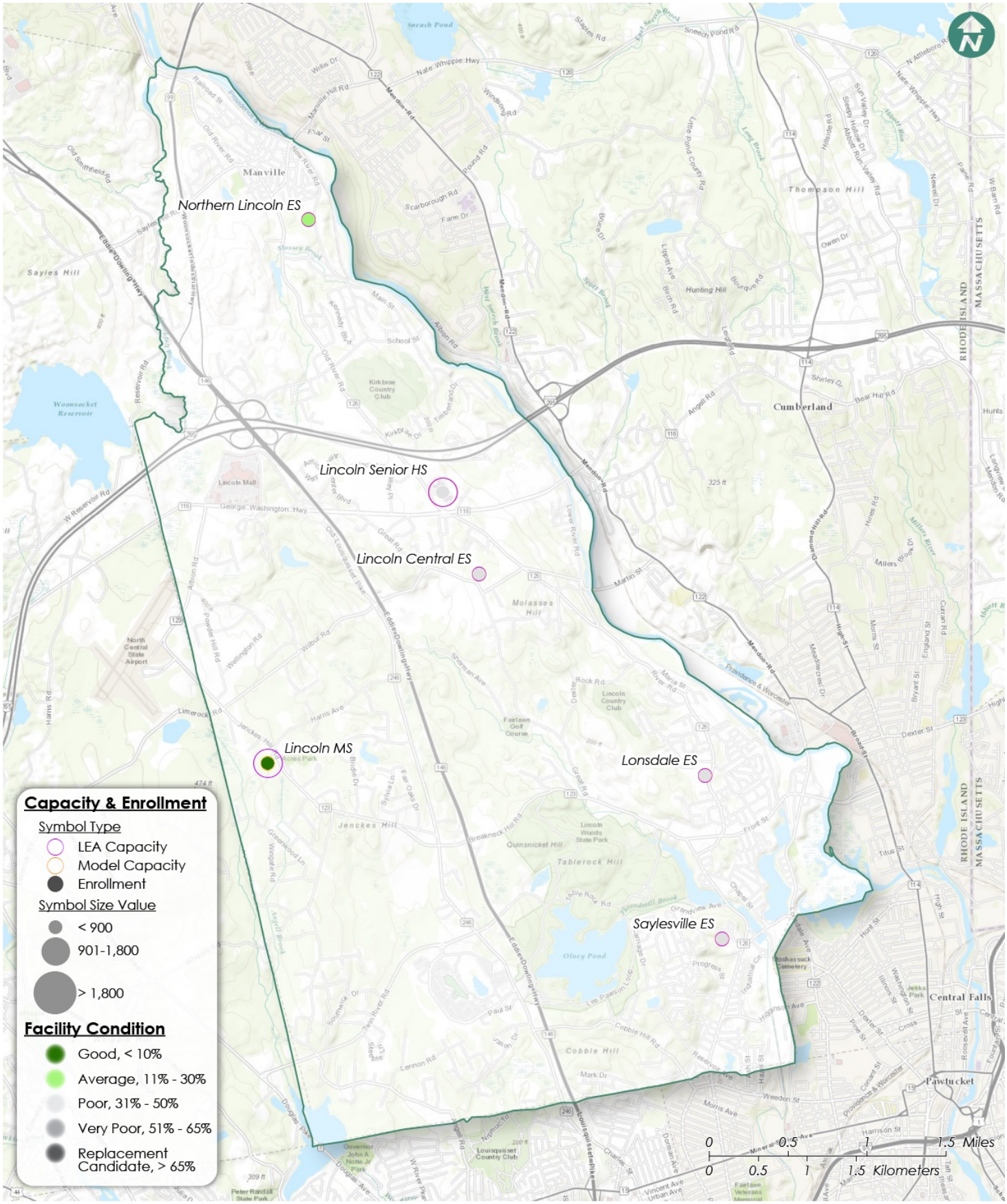
Five Year Facility Condition Index (FCI)

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 $60,812,949 with a district replacement value of $183,553,318. The resulting 5-Year FCI is 33.1%.

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
525,737	1972	$48,555,464	$12,257,485	$60,812,949	33.1%

Lincoln



Facility Condition Assessment

Lincoln - Lincoln Central Elementary School | *June 2017*

1081 Great Road, Lincoln, RI 02865

Introduction

Lincoln Central Elementary School, located at 1081 Great Road in Lincoln, Rhode Island, was built in 1964. It comprises 34,378 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.

Lincoln Central Elementary School serves grades KG - 5, has 23 instructional spaces, and has an enrollment of 332. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Lincoln Central Elementary School is 370 with a resulting utilization of 90%.

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 Lincoln Central Elementary School the 5-year need is $5,525,348. 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 Lincoln Central 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 Lincoln Central Elementary 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:	
	Canopy Roofing

Interior

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

01 - Main Building:	Wood Interior Doors
	Interior Door Hardware
	Exposed Metal Structure Ceiling
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Ceramic Tile Wall
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile 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
	Radiant Water Heater
	10 kW Electric Unit Heater
	DDC Heating System Controls
	Window Units

01 - Main Building:	Make-up Air Unit
	1 HP or Smaller Pump
	2-Pipe Hot Water Hydronic Distribution System
	Roof Exhaust Fan

Plumbing

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

01 - Main Building:	Gas Piping System
	75 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:	500 KVA Transformer
	400 Amp Distribution Panel
	Panelboard - 120/208 100A
	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	-	-	$75,544	$346,338	$5,807	$427,689	9.55 %
Roofing	-	$695,502	-	$6,641	-	$702,143	15.68 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$277,176	-	-	-	$277,176	6.19 %
Interior	-	-	$888,714	$113,471	-	$1,002,185	22.38 %
Mechanical	-	$1,303,418	-	$22,885	-	$1,326,303	29.61 %
Electrical	-	$5,499	-	-	$41,686	$47,185	1.05 %
Plumbing	-	-	$5,845	$67,984	$29,923	$103,751	2.32 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$583,995	-	-	$583,995	13.04 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	-	$8,556	$8,556	0.19 %
Total	$0	$2,281,595	$1,554,097	$557,318	$85,972	$4,478,982	

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

The building systems with the most need include:

Mechanical	-	$1,326,303
Interior	-	$1,002,185
Roofing	-	$702,143

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

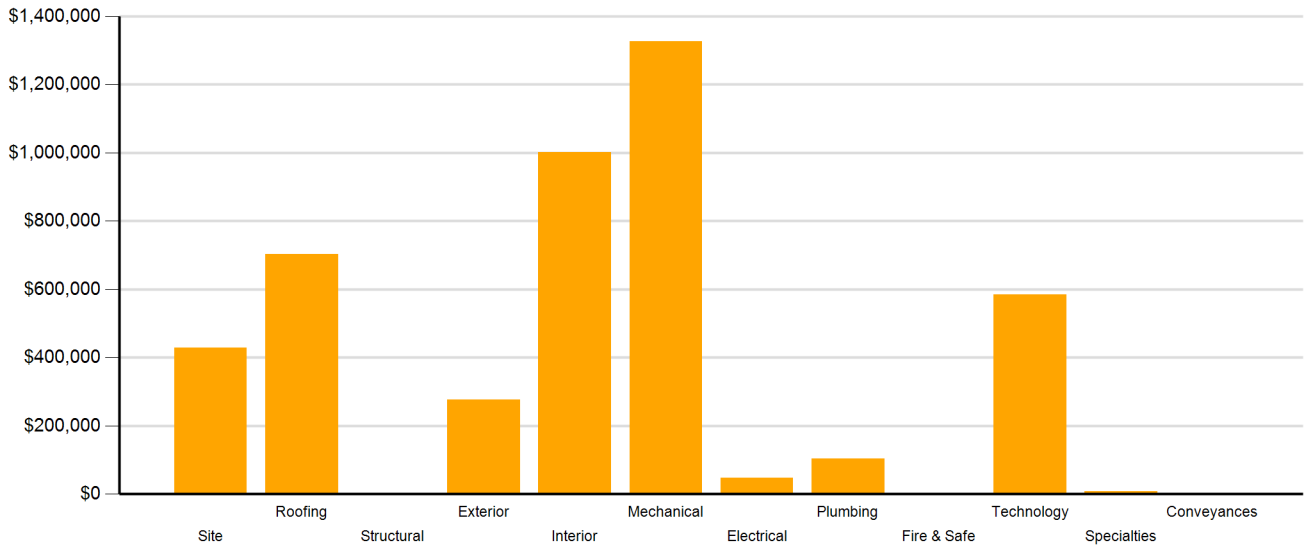


Figure 2: System Deficiencies

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	-	-	$174,790	$23,487	-	$198,277
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$2,281,595	$719,768	$414,949	-	$3,416,312
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	-	$43,531	$85,972	$129,503
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$75,352	-	$75,352
Technology	-	-	$583,995	-	-	$583,995
Traffic	-	-	$75,544	-	-	$75,544
Total	$0	$2,281,595	$1,554,097	$557,318	$85,972	$4,478,982

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

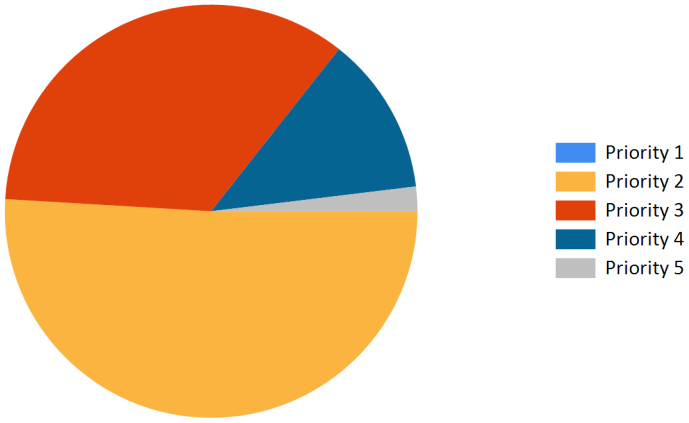


Figure 3: Current deficiencies by priority

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	$427,689	$0	$0	$0	$0	$0	$0	$427,689
Roofing	$702,143	$0	$0	$0	$0	$77,006	$77,006	$779,149
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$277,176	$0	$0	$0	$0	$0	$0	$277,176
Interior	$1,002,185	$0	$0	$0	$0	$508,766	$508,766	$1,510,951
Mechanical	$1,326,303	$0	$0	$307,602	$0	$36,429	$344,031	$1,670,334
Electrical	$47,185	$0	$0	$57,802	$51,338	$0	$109,140	$156,325
Plumbing	$103,751	$0	$0	$0	$0	$5,845	$5,845	$109,596
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$583,995	$0	$0	$0	$0	$0	$0	$583,995
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$8,556	$0	$0	$0	$0	$0	$0	$8,556
Total	**$4,478,982**	**$0**	**$0**	**$365,404**	**$51,338**	**$628,046**	**$1,044,788**	**$5,523,770**

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

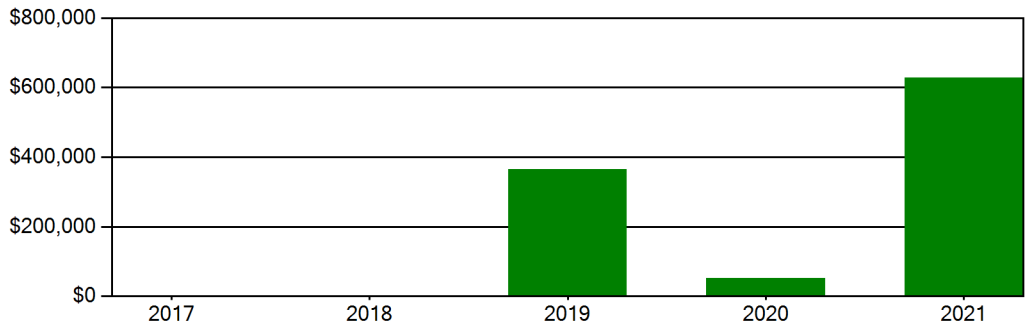
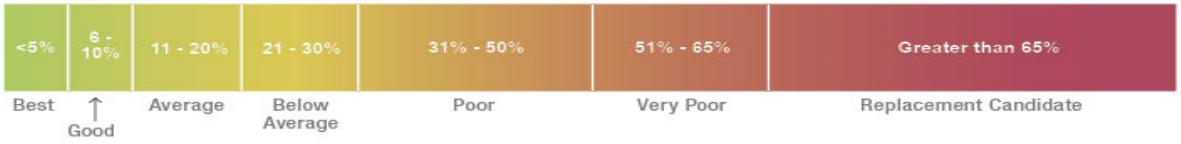


Figure 4: Life Cycle Capital Renewal Forecast

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 $12,032,300. For planning purposes, the total 5-year need at the Lincoln Central Elementary School is $5,525,348 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Lincoln Central Elementary School facility has a 5-year FCI of 45.91%.

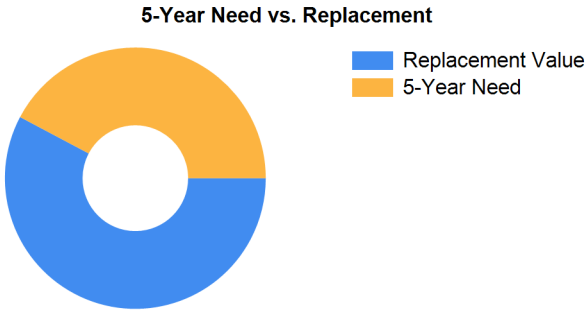


Figure 5: 5-Year FCI

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 191 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 Lincoln Central Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $0.

Summary of Findings

The Lincoln Central Elementary School comprises 34,378 square feet and was constructed in 1964. Current deficiencies at this school total $4,480,560. Five year capital renewal costs total $1,044,788. The total identified need for the Lincoln Central Elementary School (current deficiencies and 5-year capital renewal costs) is $5,525,348. The 5-year FCI is 45.91%.

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
Lincoln Central Elementary School Totals	34,378	1964	$4,480,560	$1,044,788	$5,525,348	45.91%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Traffic Signage Is Required	Traffic	2	Ea.	3	$75,544	4453
Note: Add flashing beacon to school zone sign						
Asphalt Paving Requires Replacement	Capital Renewal	87	CAR	4	$285,903	1047
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28491
Note: Backstops Require Replacement						
Fencing Requires Replacement (4' Chain Link Fence)	Capital Renewal	200	LF	4	$12,842	1048
Note: 6' chain link						
Fencing Requires Replacement (4' Chain Link Fence)	Capital Renewal	300	LF	4	$19,264	1049
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$5,807	28751
Note: Exterior Basketball Goals are Required						
	Sub Total for System	**6**	**items**		**$427,689**	
	Sub Total for School and Site Level	**6**	**items**		**$427,689**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Plastic Type Roof (PVC, TPO, etc) Requires Replacement	Capital Renewal	34,378	SF	2	$695,502	53520
Note: Roof report indicates roof in need of replacement						
Canopies Require Painting	Capital Renewal	550	SF	4	$6,641	1051
Note: Beams supporting canopy roof need to be repainted.						
	Sub Total for System	**2**	**items**		**$702,143**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Aluminum Window Requires Replacement	Capital Renewal	576	SF	2	$97,473	53538
Note: Windows are inefficient and are not functioning properly. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Aluminum Window Requires Replacement	Capital Renewal	1,000	SF	2	$169,224	53539
Note: Windows are inefficient and are not functioning properly. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Aluminum Window Requires Replacement	Capital Renewal	24	SF	2	$4,061	53540
Note: Windows are inefficient and are not functioning properly. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Metal Exterior Door Requires Replacement	Capital Renewal	1	Door	2	$6,417	53546
Note: Lincoln Public Schools Capital Improvement Plan identified doors in need of replacement due to poor condition and generally not functioning properly.						
	Sub Total for System	**4**	**items**		**$277,176**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	21	Ea.	3	$174,790	4696
Note: All classroom						
Interior Doors Require Replacement	Capital Renewal	50	Door	3	$230,544	1046
Note: Doors are worn due to age.						
The Carpet Flooring Requires Replacement	Capital Renewal	22,218	SF	3	$483,379	1045
Note: Carpet is old and worn with different types throughout the school.						
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	2,000	SF	4	$57,042	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	18	LF	4	$342	Rollup
Light Deterioration or Damage of 9x9 Asbestos Floor Tile is Present	Hazardous Material	600	SF	4	$17,113	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	3	Ea.	4	$856	Rollup
Room Is Excessively Reverberant	Acoustics	2,700	SF	4	$23,487	4697
Note: Gym						
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	384	SF	4	$14,632	Rollup
	Sub Total for System	**9**	**items**		**$1,002,185**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Electric Unit Heater Requires Replacement	Capital Renewal	3	Ea.	2	$7,427	1061
Gas Piping Requires Replacement (SF Basis)	Capital Renewal	34,378	SF	2	$744,330	1869
Note: Lincoln Public School FM indicated this is a repair he would not make.						
The Boiler HVAC Component Requires Replacement	Capital Renewal	2	Ea.	2	$148,706	1821
Note: 1,680 MBH						
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	78	Ea.	2	$402,955	1060
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	3	Ea.	4	$22,885	1059
	Sub Total for System	**5**	**items**		**$1,326,303**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Electrical Disconnect Requires Replacement	Capital Renewal	3	Ea.	2	$5,499	1822
Note: Pump and exhaust disconnects						
Room Has Insufficient Electrical Outlets	Educational Adequacy	84	Ea.	5	$41,686	Rollup
	Sub Total for System	**2**	**items**		**$47,185**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Gas Water Heater Requires Replacement	Capital Renewal	1	Ea.	3	$5,845	1057
Floor Drains Are Required	Educational Adequacy	1	Ea.	4	$570	Rollup
Non-Refrigerated Drinking Fountain Requires Replacement	Capital Renewal	1	Ea.	4	$10,220	1055
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	11	Ea.	4	$29,909	1870
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	2	Ea.	4	$5,153	1056
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	3	Ea.	4	$22,132	1054
Room lacks a drinking fountain.	Educational Adequacy	12	Ea.	5	$13,234	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	13	Ea.	5	$16,689	Rollup
	Sub Total for System	**8**	**items**		**$103,751**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Classroom AV/Multimedia systems are in need of improvements.	Technology	18	Ea.	3	$171,125	3489
Technology: Instructional spaces do not have local sound reinforcement.	Technology	19	Ea.	3	$90,316	3490
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$42,591	3486
Technology: Network system inadequate and/or near end of useful life	Technology	4	Ea.	3	$30,422	3494
Technology: Network system inadequate and/or near end of useful life	Technology	15	Ea.	3	$71,302	3495
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	34,378	SF	3	$58,830	3492
Technology: Special Space AV/Multimedia system is inadequate.	Technology	2	Ea.	3	$108,379	3493
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	3487
Technology: Telecommunications Room fiber connectivity infrastructure is outdated and/or inadequate.	Technology	1	Ea.	3	$6,275	3488
	Sub Total for System	**9**	**items**		**$583,995**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks an appropriate refrigerator.	Educational Adequacy	1	Ea.	5	$8,556	Rollup
	Sub Total for System	**1**	**items**		**$8,556**	
	Sub Total for Building 01 - Main Building	**40**	**items**		**$4,051,293**	
	Total for Campus	**46**	**items**		**$4,478,982**	

Lincoln Central Elementary School - Life Cycle Summary Yrs 1-5

Building: 01 - Main Building

Roofing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Canopy Roofing	Canopies		1,350	SF	$77,006	5
		Sub Total for System	**1**	**items**	**$77,006**	

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles		31,218	SF	$281,949	5
Wall Painting and Coating	Painting/Staining (Bldg SF)		34,328	SF	$226,817	5
		Sub Total for System	**2**	**items**	**$508,766**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Decentralized Cooling	Window Units		8	Ea.	$26,711	3
Air Distribution	Make-up Air Unit		1	Ea.	$15,899	3
Facility Hydronic Distribution	2-Pipe Water System (Hot)		34,378	SF	$264,992	3
Exhaust Air	Roof Exhaust Fan		7	Ea.	$36,429	5
		Sub Total for System	**4**	**items**	**$344,031**	

Electrical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Power Distribution	Panelboard - 120/208 100A		4	Ea.	$19,394	3
Power Distribution	Panelboard - 120/240 225A		4	Ea.	$38,408	3
Power Distribution	Distribution Panels (400 Amps)		2	Ea.	$51,338	4
		Sub Total for System	**3**	**items**	**$109,140**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 75 Gallons		1	Ea.	$5,845	5
		Sub Total for System	**1**	**items**	**$5,845**	
		Sub Total for Building 01 - Main Building	**11**	**items**	**$1,044,789**	
		Total for: Lincoln Central Elementary School	**11**	**items**	**$1,044,789**	

Supporting Photos

Site Aerial

Drop-Off Canopy

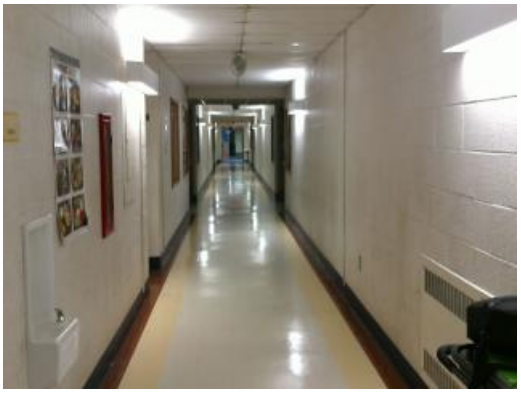
Damaged Fencing

Exterior Brick

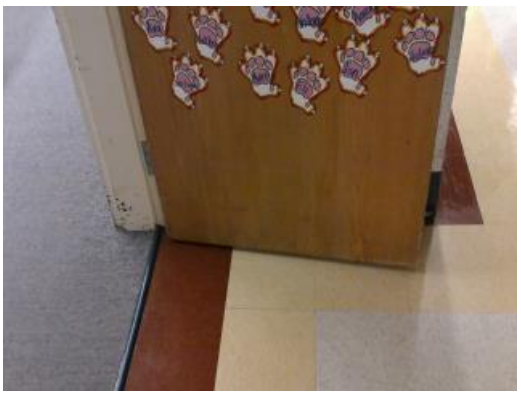

Typical Restroom Finishes


Chipped Paint On Canopy Beams


Library


Hallway Finishes


Worn Carpet


Aged Interior Wood Door

Typical Classroom

Non-Refrigerated Drinking Fountain

Marquee

Refrigerated Drinking Fountain

Damaged Asphalt In Parking Lot

Aged Unit Heater


Playground Equipment


Gym/Cafeteria Interior Finishes


Cracked Asphalt Paving


Canopy Beams Rusted


Damaged Fencing

Building Signage

Worn Pumps

Water Heaters

Hand Sinks

Facility Condition Assessment

Lincoln - Lincoln Middle School | *June 2017*

152 Jenckes Hill Road, Lincoln, RI 02865

Introduction

Lincoln Middle School, located at 152 Jenckes Hill Road in Lincoln, Rhode Island, was built in 2006. It comprises 137,533 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.

Lincoln Middle School serves grades 6 - 8, has 64 instructional spaces, and has an enrollment of 760. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Lincoln Middle School is 1,000 with a resulting utilization of 76%.

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 Lincoln Middle School the 5-year need is $5,496,335. 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 Lincoln 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 Lincoln Middle School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Building Envelope

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

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

Interior

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

Mechanical

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

Plumbing

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

Electrical

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

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	-	-	-	$28,329	$2,751,982	$2,780,310	82.54 %
Roofing	-	-	-	-	-	$0	0.00 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	-	-	-	-	$0	0.00 %
Interior	-	-	-	-	$6,912	$6,912	0.21 %
Mechanical	-	-	-	$21,838	-	$21,838	0.65 %
Electrical	$12,625	-	-	-	$100,556	$113,181	3.36 %
Plumbing	-	-	-	-	$37,007	$37,007	1.10 %
Fire and Life Safety	$186,742	-	-	-	-	$186,742	5.54 %
Technology	-	-	$16,997	-	-	$16,997	0.50 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$13,598	$93,410	$98,584	$205,592	6.10 %
Total	$199,367	$0	$30,595	$143,576	$2,995,041	$3,368,580	

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

The building systems with the most need include:

Site	-	$2,780,310
Specialties	-	$205,592
Fire and Life Safety	-	$186,742

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

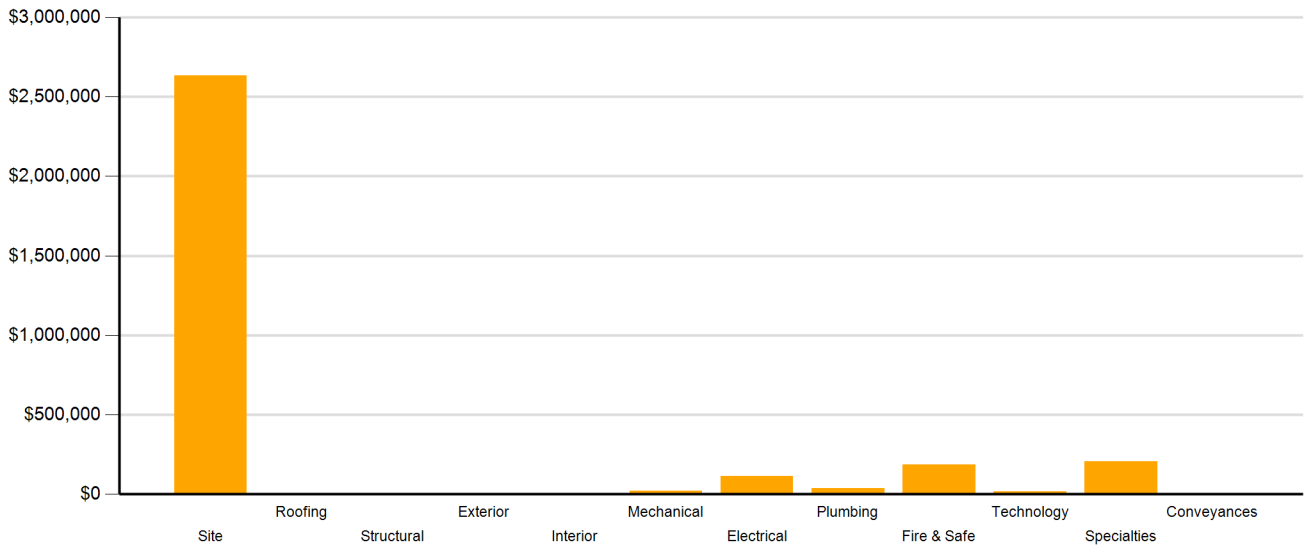


Figure 2: System Deficiencies

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	-	-	-	-	-	$0
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	$84,758	-	-	-	$2,421,337	$2,506,095
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$114,609	-	$30,595	$143,576	$573,705	$862,485
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	-	-	$0
Technology	-	-	-	-	-	$0
Traffic	-	-	-	-	-	$0
Total	$199,367	$0	$30,595	$143,576	$2,995,041	$3,368,580

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

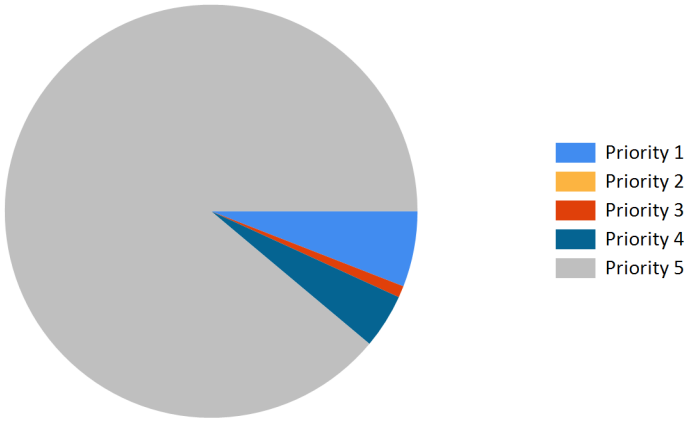


Figure 3: Current deficiencies by priority

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	$2,780,310	$453,858	$453,858	$453,858	$453,858	$453,858	$2,269,290	$5,049,601
Roofing	$0	$0	$0	$0	$0	$0	$0	$0
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$0	$0	$0	$0	$0	$0	$0	$0
Interior	$6,912	$0	$0	$0	$0	$0	$0	$6,912
Mechanical	$21,838	$0	$0	$0	$0	$0	$0	$21,838
Electrical	$113,181	$0	$0	$0	$0	$0	$0	$113,181
Plumbing	$37,007	$0	$0	$0	$0	$0	$0	$37,007
Fire and Life Safety	$186,742	$0	$0	$0	$0	$0	$0	$186,742
Technology	$16,997	$0	$0	$0	$0	$0	$0	$16,997
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$205,592	$0	$0	$0	$0	$0	$0	$205,592
Total	**$3,368,580**	**$453,858**	**$453,858**	**$453,858**	**$453,858**	**$453,858**	**$2,269,290**	**$5,637,870**

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

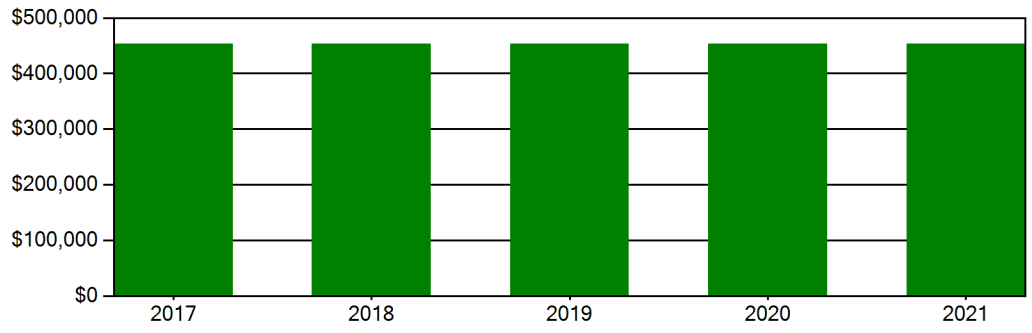
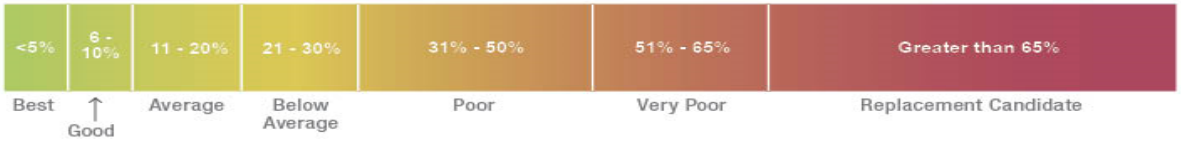


Figure 4: Life Cycle Capital Renewal Forecast

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 $45,385,888. For planning purposes, the total 5-year need at the Lincoln Middle School is $5,496,335 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Lincoln Middle School facility has a 5-year FCI of 12.42%.

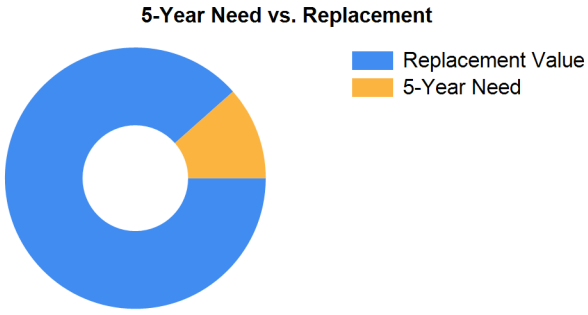


Figure 5: 5-Year FCI

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 756 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 Lincoln Middle School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $1,146,539.

Summary of Findings

The Lincoln Middle School comprises 137,533 square feet and was constructed in 2006. Current deficiencies at this school total $3,227,045. Five year capital renewal costs total $2,269,290. The total identified need for the Lincoln Middle School (current deficiencies and 5-year capital renewal costs) is $5,496,335. The 5-year FCI is 12.42%.

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
Lincoln Middle School Totals	137,533	2006	$3,227,045	$2,269,290	$5,496,335	12.42%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28495
Note: Backstops Require Replacement						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$5,807	28754
Note: Exterior Basketball Goals are Required						
Maintenance allowance. Facility Condition Assessment not performed.	Capital Renewal	1	LS	5	$2,421,337	53581
Note: Annual maintenance allowance. Condition assessment not performed.						
School lacks a competition track.	Educational Adequacy	1	Ea.	5	$324,837	28245
Note: School lacks a competition track.						
	Sub Total for System	**4**	**items**		**$2,780,310**	
	Sub Total for School and Site Level	**4**	**items**		**$2,780,310**	

Building: 01 - Main Building

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks appropriate sound control.	Educational Adequacy	200	SF	5	$6,912	Rollup
	Sub Total for System	**1**	**items**		**$6,912**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Lab lacks an appropriate fume hood.	Educational Adequacy	1	Ea.	4	$21,838	Rollup
	Sub Total for System	**1**	**items**		**$21,838**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room last power shut-off valves for utilities	Educational Adequacy	9	Ea.	1	$12,625	Rollup
Room Has Insufficient Electrical Outlets	Educational Adequacy	204	Ea.	5	$100,556	Rollup
	Sub Total for System	**2**	**items**		**$113,181**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks a drinking fountain.	Educational Adequacy	5	Ea.	5	$5,477	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	21	Ea.	5	$31,530	Rollup
	Sub Total for System	**2**	**items**		**$37,007**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Emergency Lighting System Requires Replacement	Capital Renewal	101,575	SF	1	$84,758	53545
Note: Fire Marshal requires immediate replacement of non-functioning emergency lights per Lincoln Public Schools 5 year capital plan.						
Room lacks shut-off valves for utilities. (International Fuel Gas Code, Section 409.6)	Educational Adequacy	9	Ea.	1	$101,984	Rollup
	Sub Total for System	**2**	**items**		**$186,742**	

Technology

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

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	3	Ea.	3	$13,598	Rollup

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Separate Student Kitchen Stations Are Required	Educational Adequacy	1	Ea.	4	$3,702	Rollup
Walk In Cooler/Freezer Is Required	Educational Adequacy	1	Ea.	4	$89,708	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	10	Ea.	5	$84,987	Rollup
The room lacks a washer and/or dryer.	Educational Adequacy	1	Ea.	5	$13,598	Rollup
	Sub Total for System	**5**	**items**		**$205,592**	
	Sub Total for Building 01 - Main Building	**14**	**items**		**$588,269**	
	Total for Campus	**18**	**items**		**$3,368,580**	

Buildings with no reported deficiencies

02 - Building-02

Lincoln 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
Facility Maintenance	MS Annual Maintenance Allowance - 1% Replacement Value (CCI 106.7)	137,533	SF	$453,858	1
Facility Maintenance	MS Annual Maintenance Allowance - 1% Replacement Value (CCI 106.7)	137,533	SF	$453,858	2
Facility Maintenance	MS Annual Maintenance Allowance - 1% Replacement Value (CCI 106.7)	137,533	SF	$453,858	3
Facility Maintenance	MS Annual Maintenance Allowance - 1% Replacement Value (CCI 106.7)	137,533	SF	$453,858	4
Facility Maintenance	MS Annual Maintenance Allowance - 1% Replacement Value (CCI 106.7)	137,533	SF	$453,858	5
	Sub Total for System	**5**	**items**	**$2,269,292**	
	Sub Total for Building -	**5**	**items**	**$2,269,292**	
	Total for: Lincoln Middle School	**5**	**items**	**$2,269,292**	

Supporting Photos

Site Aerial

Front Elevation

Facility Condition Assessment

Lincoln - Lincoln Senior High School | *June 2017*

135 Old River Road, Lincoln, RI 02865

Introduction

Lincoln Senior High School, located at 135 Old River Road in Lincoln, Rhode Island, was built in 1964. It comprises 212,323 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.

Lincoln Senior High School serves grades 9 - 12, has 90 instructional spaces, and has an enrollment of 886. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Lincoln Senior High School is 1,200 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 Lincoln Senior High School the 5-year need is $35,189,215. 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 Lincoln Senior 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 Lincoln Senior High School campus, identified by discipline and building.

Site

The site level systems for this campus include:

Site	Asphalt Parking Lot Pavement
	Asphalt Roadway Pavement
	Asphalt Pedestrian Pavement

Building Envelope

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

01 - Main Building:	Brick Exterior Wall
	CMU Exterior Wall
	Pre-cast Concrete Panel Exterior Wall
	Wood Exterior Windows
	Aluminum Exterior Windows
	Storefront / Curtain Wall
	Storefront Entrance Doors
	Steel Exterior Entrance Doors
	Overhead Exterior Utility Doors
02 - Building 02:	Clear Polycarbonate Exterior Wall
	Storefront Entrance Doors
03 - Building 03:	Vinyl Siding Exterior Wall
	Wood Exterior Doors
04 - Storage Shed:	Vinyl Siding Exterior Wall
	Wood Exterior Doors
05 - Stadium Press Box:	Metal Panel Exterior Wall
	Aluminum Exterior Windows
	Steel Exterior Entrance Doors
06 - Metal Storage:	Metal Panel Exterior Wall
	Overhead Exterior Utility Doors

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

01 - Main Building:	Single Ply Membrane Ballasted Roofing
	Canopy Roofing
02 - Building 02:	Clear Polycarbonate Roofing
03 - Building 03:	Composition Shingle Roofing
04 - Storage Shed:	Composition Shingle Roofing
05 - Stadium Press Box:	Metal Low-Slope Roofing
06 - Metal Storage:	Metal Low-Slope Roofing

Interior

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

01 - Main Building:	Foldable Interior Partition
	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
	Wood Wall Paneling
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile Flooring
	Wood Flooring
	Vinyl Composition Tile Flooring
	Rubber Tile Flooring
	Terrazzo Flooring
	Carpet
	Athletic/Sport Flooring
03 - Building 03:	Door Hardware
	Interior Wall Painting
	Wood Flooring
04 - Storage Shed:	Door Hardware
	Interior Wall Painting
	Wood Flooring
05 - Stadium Press Box:	Painted Ceilings
	Vinyl/Fabric Wall Covering
	Vinyl Composition Tile Flooring
06 - Metal Storage:	Exposed Metal Structure Ceiling
	Interior Wall Painting
	Wood Flooring

Mechanical

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

01 - Main Building:	3,060 MBH Cast Iron Steam Boiler
	4,488 MBH Cast Iron Water Boiler
	240 GPM Steam to Water Heat Exchanger
	Radiant Steam Heater
	Radiant Water Heater

01 - Main Building:	12 MBH Steam Unit Heater
	Pneumatic Heating System Controls
	Window Units
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	5 HP Pump
	10 HP Pump
	2,000 CFM Interior AHU
	2,000 CFM Outdoor AHU
	Kitchen Exhaust Hoods
	4'x6' Ventilator/Relief Vent
	Wall Exhaust Fan
	Roof Exhaust Fan
02 - Building 02:	20 MBH Gas Unit Heater
	Wall Exhaust Fan

Plumbing

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

01 - Main Building:	100 Gallon Water Storage Tank
	500 Gallon Water Storage Tank
	Gas Piping System
	52 Gallon Electric Water Heater
	9.4 GPM Instant Water Heater
	Domestic Water Piping System
	Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Showers
	Toilets
	Urinals
	Air Compressor (5 hp)

Electrical

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

01 - Main Building:	1200 kW Emergency Generator
	208/120v Switch
	1,600 Amp Switchgear
	1,500 KVA Transformer
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A

01 - Main Building:	Panelboard - 120/208 400A
	Panelboard - 120/240 100A
	Panelboard - 120/240 225A
	Panelboard - 120/240 400A
	Panelboard - 400+ Amps
	Electrical Disconnect
	Building Mounted Lighting Fixtures
	Light Fixtures
02 - Building 02:	Light Fixtures
05 - Stadium Press Box:	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	-	-	$83,022	$1,017,487	$94,430	$1,194,939	3.80 %
Roofing	-	$6,411,881	$18,253	-	-	$6,430,134	20.47 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$2,550,964	-	-	$2,183	$2,553,146	8.13 %
Interior	-	-	$2,918,510	$5,598,190	$19,451	$8,536,151	27.17 %
Mechanical	-	$4,385,361	$497,770	$2,303,892	-	$7,187,023	22.88 %
Electrical	-	$534,723	$13,400	-	$146,894	$695,018	2.21 %
Plumbing	-	-	$2,551,170	$500,500	$49,514	$3,101,185	9.87 %
Fire and Life Safety	$91,267	-	-	-	-	$91,267	0.29 %
Technology	-	-	$1,516,172	-	-	$1,516,172	4.83 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$4,563	$20,192	$87,274	$112,029	0.36 %
Total	$91,267	$13,882,929	$7,602,861	$9,440,262	$399,746	$31,417,064	

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

The building systems with the most need include:

Interior	-	$8,536,151
Mechanical	-	$7,187,023
Roofing	-	$6,430,134

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

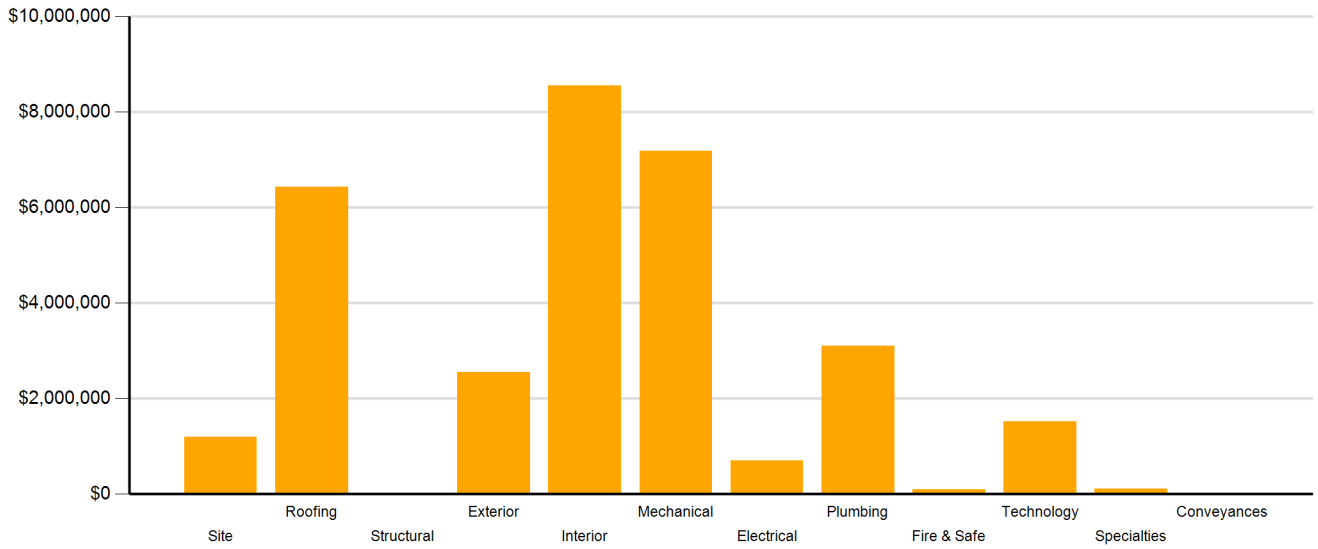


Figure 2: System Deficiencies

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	-	-	-	-	-	$0
Barrier to Accessibility	-	-	$315,127	-	-	$315,127
Capital Renewal	-	$13,882,929	$5,729,604	$5,477,746	$2,183	$25,092,462
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	$91,267	-	$15,972	$1,466,878	$397,563	$1,971,680
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$2,495,639	-	$2,495,639
Technology	-	-	$1,504,763	-	-	$1,504,763
Traffic	-	-	$37,394	-	-	$37,394
Total	$91,267	$13,882,929	$7,602,861	$9,440,262	$399,746	$31,417,064

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

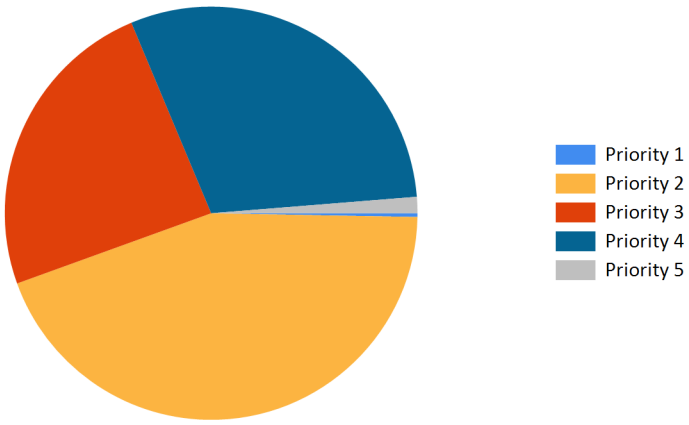


Figure 3: Current deficiencies by priority

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	$1,194,939	$0	$0	$0	$585,608	$0	$585,608	$1,780,547
Roofing	$6,430,134	$0	$0	$0	$0	$0	$0	$6,430,134
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$2,553,146	$0	$0	$0	$0	$0	$0	$2,553,147
Interior	$8,536,151	$0	$0	$792	$1,796,708	$1,018,492	$2,815,992	$11,352,140
Mechanical	$7,187,023	$0	$0	$0	$0	$0	$0	$7,187,023
Electrical	$695,018	$0	$0	$0	$0	$0	$0	$695,018
Plumbing	$3,101,185	$0	$0	$103,284	$0	$41,865	$145,149	$3,246,334
Fire and Life Safety	$91,267	$0	$0	$0	$0	$0	$0	$91,267
Technology	$1,516,172	$0	$0	$0	$0	$0	$0	$1,516,172
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$112,029	$0	$0	$0	$201,380	$0	$201,380	$313,409
Total	**$31,417,064**	**$0**	**$0**	**$104,076**	**$2,583,696**	**$1,060,357**	**$3,748,129**	**$35,165,193**

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

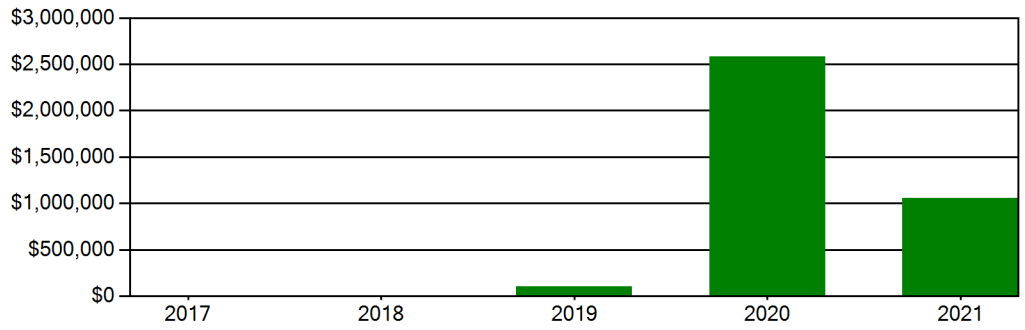
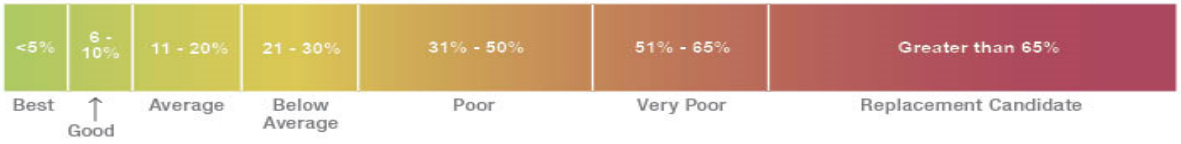


Figure 4: Life Cycle Capital Renewal Forecast

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 $76,609,080. For planning purposes, the total 5-year need at the Lincoln Senior High School is $35,189,215 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Lincoln Senior High School facility has a 5-year FCI of 45.90%.

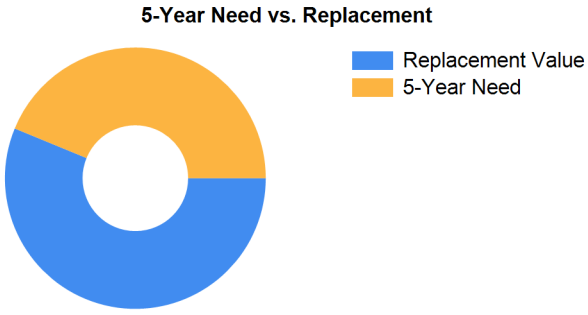


Figure 5: 5-Year FCI

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 1,150 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 Lincoln Senior High School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $862,747.

Summary of Findings

The Lincoln Senior High School comprises 212,323 square feet and was constructed in 1964. Current deficiencies at this school total $31,441,086. Five year capital renewal costs total $3,748,129. The total identified need for the Lincoln Senior High School (current deficiencies and 5-year capital renewal costs) is $35,189,215. The 5-year FCI is 45.90%.

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
Lincoln Senior High School Totals	212,323	1964	$31,441,086	$3,748,129	$35,189,215	45.90%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Install New Paving	Traffic	1,800	SF	3	$37,394	4471
Note: Construct pavement to create loop for proposed parent pick up/drop off						
Parking Or Roadway Curbs Require Replacement	Capital Renewal	339	LF	3	$25,609	2020
Parking Or Roadway Curbs Require Replacement	Capital Renewal	265	LF	3	$20,019	2021
Asphalt Paving Requires Replacement	Capital Renewal	301	CAR	4	$989,159	2019
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28492
Note: Backstops Require Replacement						
School has insufficient football/soccer fields.	Educational Adequacy	1	Ea.	5	$94,430	28189
Note: School has insufficient football/soccer fields.						
	Sub Total for System	**6**	**items**		**$1,194,939**	
	Sub Total for School and Site Level	**6**	**items**		**$1,194,939**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Single-Ply Membrane Roof Covering Requires Replacement	Capital Renewal	168,610	SF	2	$6,411,881	2028
Note: Excessive ponding, edge flashing failing, drainage problems, ballast is missing in several areas.						
Awning Or Canopy Metal Roofing System Requires Replacement	Capital Renewal	320	SF	3	$18,253	2026
Note: Canopies are rotting.						
Location: East entrances						
	Sub Total for System	**2**	**items**		**$6,430,134**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Aluminum Window Requires Replacement	Capital Renewal	8,854	SF	2	$1,498,310	2040
Note: Single pane glass, air infiltrates, leaking.						
The Metal Exterior Door Requires Replacement	Capital Renewal	25	Door	2	$160,430	2045
Note: Doors are rotting and allow water into the building.						
The Wood Window Requires Replacement	Capital Renewal	4,673	SF	2	$892,224	2039
Note: Single pane glass in rotting wood frame.						
The Exterior Soffit Requires Repair	Capital Renewal	100	SF	5	$2,183	2044
	Sub Total for System	**4**	**items**		**$2,553,146**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Interior Doors Require Replacement	Capital Renewal	296	Door	3	$1,364,821	1965
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	147,534	SF	3	$1,332,471	1986
The Carpet Flooring Requires Replacement	Capital Renewal	4,215	SF	3	$91,702	1968
Note: Carpet is worn, torn and buckling.						
Location: Main office, guidance and teachers lounge, auditorium, library, Rooms 1&2 in north wing						
The Ceramic Tile Flooring Requires Replacement	Capital Renewal	4,823	SF	3	$129,516	1976
9x9 Asbestos Tile Present and In Active Use, Greater than 25 Percent has Significant Deterioration	Hazardous Material	51,139	SF	4	$1,458,531	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	35,000	LF	4	$665,488	Rollup
Ceiling Grid Requires Replacement	Capital Renewal	147,534	SF	4	$1,749,827	1991
Interior Ceramic Walls Require Repair Or Replacement	Capital Renewal	500	SF	4	$11,123	2043
Location: Classroom entrances						
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	232	Ea.	4	$66,169	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	3,400	LF	4	$77,577	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	14,570	SF	4	$138,517	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	2	Ea.	4	$570	Rollup

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	2,900	SF	4	$27,570	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	13	Ea.	4	$3,708	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	2,008	LF	4	$45,816	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	1,230	SF	4	$11,694	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	35,209	SF	4	$1,341,601	Rollup
Classroom Door Requires Vision Panel	Educational Adequacy	7	Ea.	5	$15,972	Rollup
Room lacks appropriate sound control.	Educational Adequacy	100	SF	5	$3,480	Rollup
	Sub Total for System	**19**	**items**		**$8,536,151**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Steam Heat Exchanger Requires Replacement	Capital Renewal	1	Ea.	2	$45,519	1950
Steam/HW Unit Heater Requires Replacement	Capital Renewal	90	Ea.	2	$214,934	1974
Steam/HW Unit Heater Requires Replacement	Capital Renewal	56	Ea.	2	$133,736	1975
The Air Handler HVAC Component Requires Replacement	Capital Renewal	8	Ea.	2	$345,095	1981
The Boiler HVAC Component Requires Replacement	Capital Renewal	2	Ea.	2	$340,684	1963
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	1	Ea.	2	$265,630	1964
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	2	Ea.	2	$531,261	1966
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	210,763	SF	2	$1,624,601	1972
Note: Currently an additional old steam system also serves a portion of the school. Both systems require replacement; system should be consolidated to one heating system upon replacement.						
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	78	Ea.	2	$402,955	1970
The Steam/Hot Water Radiant Heater Requires Replacement	Capital Renewal	75	Ea.	2	$387,457	1971
The Window AC Unit Component Requires Replacement	Capital Renewal	28	Ea.	2	$93,488	1977
Large HVAC Circulating Pump Requires Replacement	Capital Renewal	4	Ea.	3	$60,449	1978
The 4 X 6 Exhausts/Ventilators Require Replacement	Capital Renewal	23	Ea.	3	$437,321	2431
1200 KW Emergency Generator	Capital Renewal	1	Ea.	4	$713,023	1983
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	5	Ea.	4	$13,388	1982
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	210,763	SF	4	$1,423,641	2429
Lab lacks an appropriate fume hood.	Educational Adequacy	4	Ea.	4	$87,943	Rollup
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	2	Ea.	4	$19,060	1980
The Exhaust Hood Requires Replacement	Capital Renewal	9	Ea.	4	$46,837	2430
	Sub Total for System	**19**	**items**		**$7,187,023**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Switchgear Is Needed Or Requires Replacement	Capital Renewal	2	Ea.	2	$164,204	2432
The Electrical Disconnect Requires Replacement	Capital Renewal	28	Ea.	2	$51,322	1984
The Panelboard Requires Replacement	Capital Renewal	19	Ea.	2	$92,123	2433
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$35,575	2434
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$11,437	2435
The Panelboard Requires Replacement	Capital Renewal	3	Ea.	2	$28,806	2436
The Panelboard Requires Replacement	Capital Renewal	3	Ea.	2	$17,398	2437
The Panelboard Requires Replacement	Capital Renewal	22	Ea.	2	$127,584	2438
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$6,275	2439
Transfer Switch Requires Replacement	Capital Renewal	400	Amps	3	$13,400	4499
Room Has Insufficient Electrical Outlets	Educational Adequacy	296	Ea.	5	$146,894	Rollup
	Sub Total for System	**11**	**items**		**$695,018**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Instant Water Heater Requires Replacement	Capital Renewal	2	Ea.	3	$13,310	1953

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	210,000	SF	3	$1,689,636	2428
The Restroom Is Not ADA Compliant	Barrier to Accessibility	1,130	SF	3	$315,127	53544
Note: ADA compliant bathrooms and concession stand - there are currently no ADA compliant restrooms associated with the athletic fields. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Sanitary Sewer Piping Requires Replacement	Capital Renewal	750	LF	3	$116,765	1961
The Showers Plumbing Fixtures Require Replacement	Capital Renewal	39	Ea.	3	$296,617	1958
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	38	Ea.	3	$50,505	1957
Water Storage Tank Requires Replacement	Capital Renewal	2	Ea.	3	$69,211	1951
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	14	Ea.	4	$36,069	1959
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	57	Ea.	4	$181,319	1955
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	89	Ea.	4	$283,112	1990
Room lacks a drinking fountain.	Educational Adequacy	14	Ea.	5	$15,439	Rollup
Room lacks a private shower area.	Educational Adequacy	2	Ea.	5	$20,470	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	9	Ea.	5	$13,604	Rollup
	Sub Total for System	**13**	**items**		**$3,101,185**	

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	8	Ea.	1	$91,267	Rollup
	Sub Total for System	**1**	**items**		**$91,267**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	2	Ea.	3	$11,408	Rollup
Technology: Auditorium AV/Multimedia system is inadequate.	Technology	1	Room	3	$332,744	3527
Technology: Instructional spaces do not have local sound reinforcement.	Technology	73	Ea.	3	$347,004	3530
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$37,648	3514
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$37,648	3516
Technology: Intermediate Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$37,648	3521
Technology: Intermediate Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$16,732	3519
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	3515
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	3518
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	3520
Technology: Intermediate Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$4,753	3523
Technology: Main Telecommunications Room needs minor improvements.	Technology	1	Ea.	3	$21,676	3512
Technology: Network system inadequate and/or near end of useful life	Technology	10	Ea.	3	$76,056	3528
Technology: Network system inadequate and/or near end of useful life	Technology	66	Ea.	3	$313,730	3529
Technology: Special Space AV/Multimedia system is inadequate.	Technology	1	Ea.	3	$54,190	3525
Technology: Special Space AV/Multimedia systems are in need of minor improvements.	Technology	3	Room	3	$190,139	3526

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	3517
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	3522
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,753	3524
Technology: Telecommunications Room fiber connectivity infrastructure is outdated and/or inadequate.	Technology	1	Ea.	3	$6,275	3513
	Sub Total for System	**20**	**items**		**$1,516,172**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	1	Ea.	3	$4,563	Rollup
Replace Cabinetry In Classes/Labs	Capital Renewal	1	Room	4	$11,188	1989
Location: Art room						
Welding Bays Are Required	Educational Adequacy	1	Ea.	4	$5,419	Rollup
Work Tables Are Required	Educational Adequacy	1	Ea.	4	$3,585	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	7	Ea.	5	$59,894	Rollup
The room lacks a washer and/or dryer.	Educational Adequacy	2	Ea.	5	$27,380	Rollup
	Sub Total for System	**6**	**items**		**$112,029**	
	Sub Total for Building 01 - Main Building	**95**	**items**		**$30,222,125**	
	Total for Campus	**101**	**items**		**$31,417,064**	

Buildings with no reported deficiencies

02 - Building 02

03 - Building 03

04 - Storage Shed

05 - Stadium Press Box

06 - Metal Storage

Lincoln Senior 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
Roadway Pavement	Asphalt		177	CAR	$585,608	4
		Sub Total for System	**1**	**items**	**$585,608**	
		Sub Total for Building -	**1**	**items**	**$585,608**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Suspended Plaster and	Painted ceilings		63,229	SF	$264,491	4
Wall Paneling	Wood Panel wall		4,215	SF	$38,469	4
Wall Painting and Coating	Painting/Staining (Bldg SF)		122,243	SF	$807,702	4
Flooring Treatment	Concrete Floor - Finished		52,691	SF	$686,046	4
Interior Coiling Doors	Overhead		1	Door	$36,792	5
Note:	North gym					
Resilient Flooring	Vinyl Composition Tile Flooring		79,534	SF	$912,394	5
Interior Operable Partitions	Foldable partition (Bldg SF)		600	SF Wall	$69,306	5
		Sub Total for System	**7**	**items**	**$2,815,199**	

Plumbing

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Plumbing Fixtures	Refrigerated Drinking Fountain		14	Ea.	$103,284	3
Domestic Water Equipment	Water Heater - Electric - 52 gallon		2	Ea.	$6,510	5
Compressed-Air Systems	Air Compressor (5 hp)		3	Ea.	$35,355	5
		Sub Total for System	**3**	**items**	**$145,149**	

Specialties

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Casework	Fixed Cabinetry		18	Room	$201,380	4
		Sub Total for System	**1**	**items**	**$201,380**	
		Sub Total for Building 01 - Main Building	**11**	**items**	**$3,161,728**	

Building: 03 - Building 03

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)		60	SF	$396	3
		Sub Total for System	**1**	**items**	**$396**	
		Sub Total for Building 03 - Building 03	**1**	**items**	**$396**	

Building: 04 - Storage Shed

Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Wall Painting and Coating	Painting/Staining (Bldg SF)		60	SF	$396	3
		Sub Total for System	**1**	**items**	**$396**	
		Sub Total for Building 04 - Storage Shed	**1**	**items**	**$396**	
		Total for: Lincoln Senior High School	**14**	**items**	**$3,748,129**	

Supporting Photos

Site Aerial

Music Room

Auxiliary Gym

Roof


Heat Exchanger


Storage Tank


Circulating Pumps


Damaged Ceramic Tile Flooring


Broken Ceiling Tile


Worn And Lifting VCT Flooring

Ballasted Roof

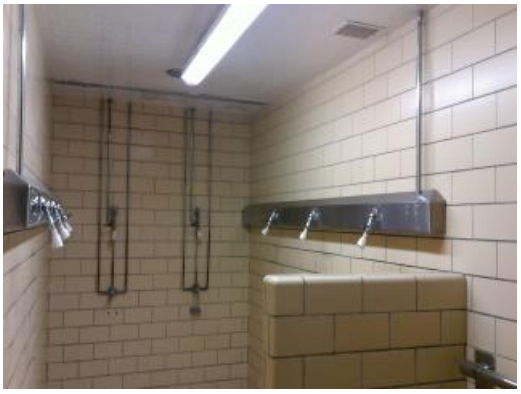
Library

East Parking

Broken Curb

Typical Restroom Lavatories

Roof Ponding


Typical Showers


Typical Urinals


Restroom Fixtures And Finishes


Science Room


Gymnasium


Cafeteria


Auditorium


Showers


Classroom


Classroom


Elevation

Facility Condition Assessment

Lincoln - Lonsdale Elementary School | *June 2017*

270 River Road, Lincoln, RI 02865

Introduction

Lonsdale Elementary School, located at 270 River Road in Lincoln, Rhode Island, was built in 1958. It comprises 31,085 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.

Lonsdale Elementary School serves grades KG - 5, has 21 instructional spaces, and has an enrollment of 266. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Lonsdale Elementary School is 330 with a resulting utilization of 81%.

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 Lonsdale Elementary School the 5-year need is $3,884,629. 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.

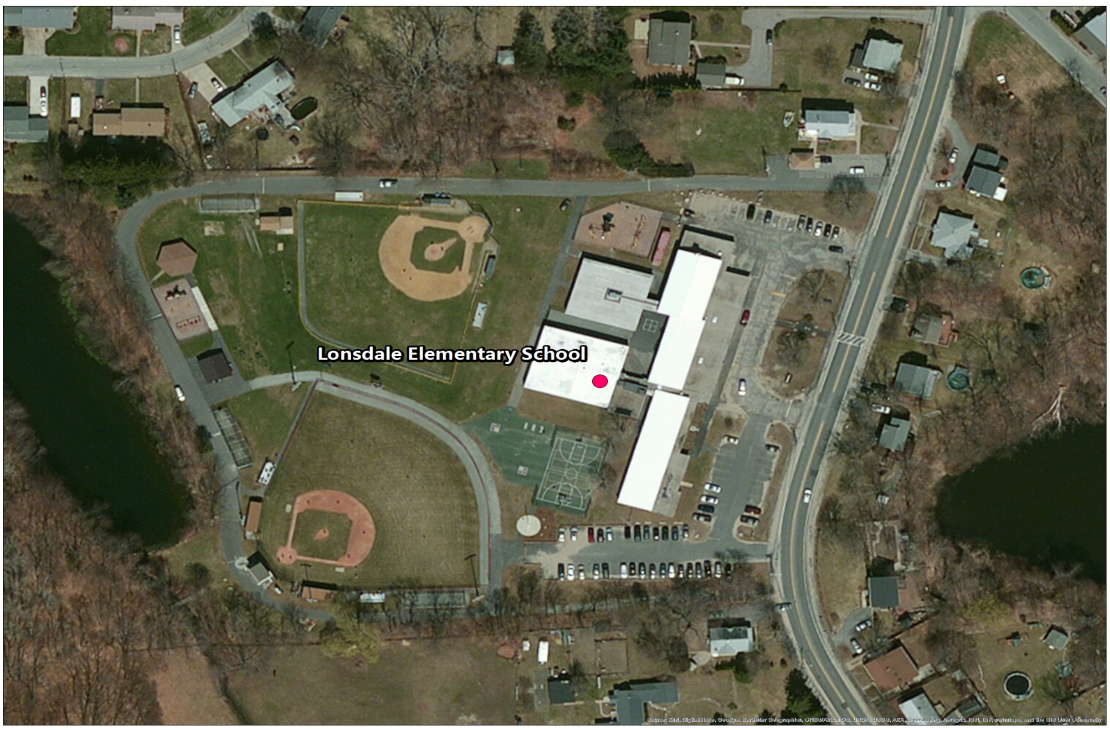


Figure 1: Aerial view of Lonsdale Elementary School

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 Lonsdale Elementary 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:	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
	Adhered Acoustical Ceiling Tiles
	Painted Ceilings
	Interior Wall Painting
	Ceramic Tile Flooring
	Vinyl Composition Tile Flooring
	Carpet

Mechanical

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

01 - Main Building:	1,200 MBH Copper Tube Boiler
	1,600 MBH Copper Tube Boiler
	Finned Wall Radiator
	Steam/Hot Water Heating Unit Vent
	Electronic Heating System Controls
	Window Units

01 - Main Building:	4,000 CFM Energy Recovery Unit
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	5 HP Pump
	Ductwork
	Large Roof Exhaust Fan

Plumbing

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

01 - Main Building:	2" Backflow Preventers
	Gas Piping System
	100 Gallon Gas Water Heater
	40 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Mop/Service Sinks
	Non-Refrigerated Drinking Fountain
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Toilets
	Urinals
	Sump Pump

Electrical

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

01 - Main Building:	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	Panelboard - 120/208 400A
	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	-	-	$268,074	$488,403	$64,020	$820,497	31.67 %
Roofing	-	-	-	-	-	$0	0.00 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$12,834	-	-	-	$12,834	0.50 %
Interior	-	-	$158,144	$305,075	-	$463,219	17.88 %
Mechanical	-	$266,924	$120,554	-	-	$387,478	14.96 %
Electrical	-	$5,799	$6,845	-	$37,716	$50,360	1.94 %
Plumbing	-	-	$250,106	$9,543	$13,372	$273,022	10.54 %
Fire and Life Safety	-	-	-	-	-	$0	0.00 %
Technology	-	-	$546,511	-	-	$546,511	21.10 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$36,507	-	-	$36,507	1.41 %
Total	$0	$285,558	$1,386,741	$803,021	$115,108	$2,590,429	

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

The building systems with the most need include:

Site	-	$820,497
Technology	-	$546,511
Interior	-	$463,219

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

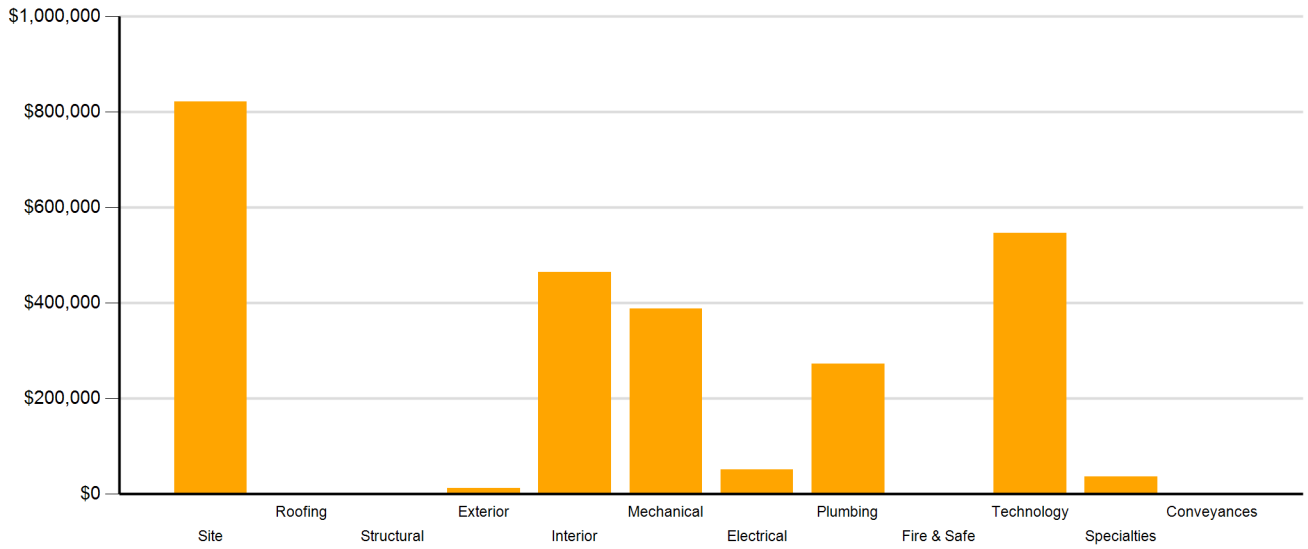


Figure 2: System Deficiencies

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	-	-	$278,698	-	-	$278,698
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	-	$285,558	$258,594	$499,611	-	$1,043,763
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	$42,211	$174,496	$115,108	$331,815
Functional Deficiency	-	-	$6,845	-	-	$6,845
Hazardous Material	-	-	-	$128,915	-	$128,915
Technology	-	-	$540,807	-	-	$540,807
Traffic	-	-	$259,587	-	-	$259,587
Total	$0	$285,558	$1,386,741	$803,021	$115,108	$2,590,429

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

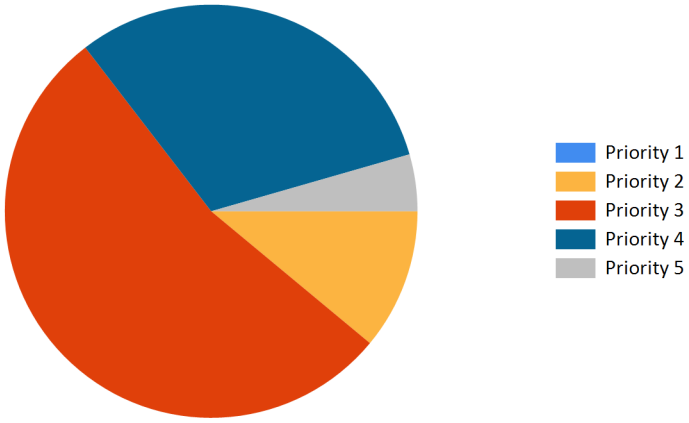


Figure 3: Current deficiencies by priority

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	$820,497	$0	$0	$0	$0	$0	$0	$820,497
Roofing	$0	$0	$0	$0	$0	$0	$0	$0
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$12,834	$0	$0	$0	$96,258	$389,215	$485,473	$498,307
Interior	$463,219	$0	$4,752	$656,367	$86,568	$0	$747,687	$1,210,906
Mechanical	$387,478	$0	$0	$33,388	$0	$0	$33,388	$420,866
Electrical	$50,360	$0	$0	$4,136	$0	$0	$4,136	$54,496
Plumbing	$273,022	$0	$5,322	$0	$0	$14,152	$19,474	$292,496
Fire and Life Safety	$0	$0	$0	$0	$0	$0	$0	$0
Technology	$546,511	$0	$0	$0	$0	$0	$0	$546,511
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$36,507	$0	$0	$0	$0	$0	$0	$36,507
Total	**$2,590,429**	**$0**	**$10,074**	**$693,891**	**$182,826**	**$403,367**	**$1,290,158**	**$3,880,587**

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

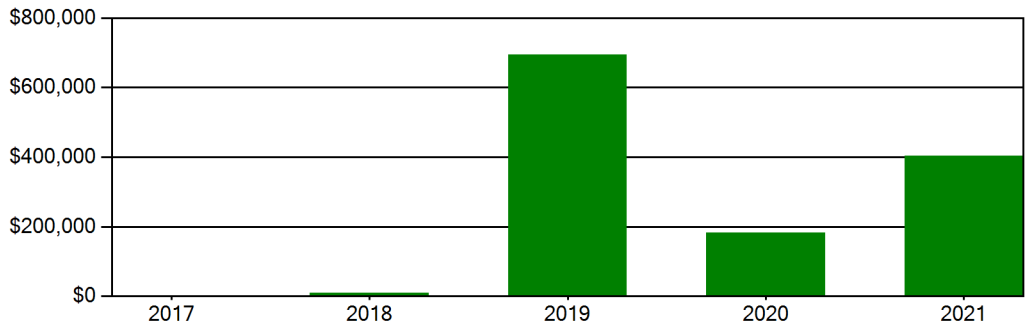
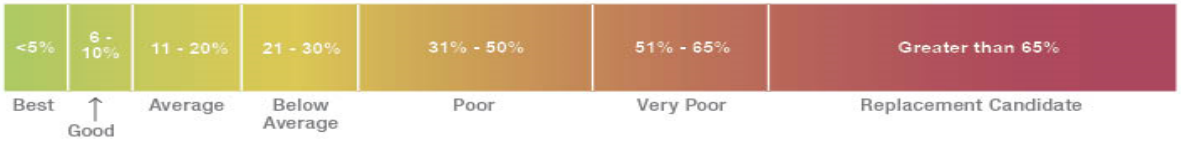


Figure 4: Life Cycle Capital Renewal Forecast

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 $10,879,750. For planning purposes, the total 5-year need at the Lonsdale Elementary School is $3,884,629 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Lonsdale Elementary School facility has a 5-year FCI of 35.67%.

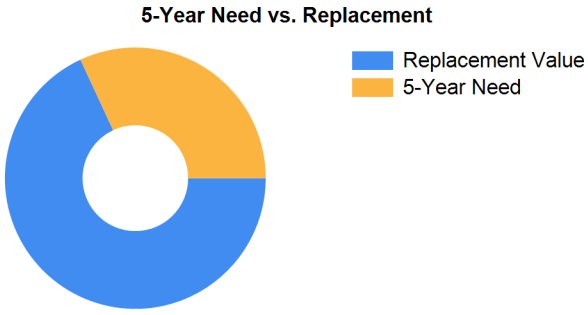


Figure 5: 5-Year FCI

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 173 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 Lonsdale Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $355,320.

Summary of Findings

The Lonsdale Elementary School comprises 31,085 square feet and was constructed in 1958. Current deficiencies at this school total $2,594,471. Five year capital renewal costs total $1,290,158. The total identified need for the Lonsdale Elementary School (current deficiencies and 5-year capital renewal costs) is $3,884,629. The 5-year FCI is 35.67%.

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
Lonsdale Elementary School Totals	31,085	1958	$2,594,471	$1,290,158	$3,884,629	35.67%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Asphalt Walks Require Replacement	Capital Renewal	1,000	SF	3	$8,488	1437
Note: Asphalt pedestrian areas are cracked and should be replaced.						
Install New Paving	Traffic	8,750	SF	3	$181,777	4422
Note: Add parking spaces by fields to alleviate staff parking issues						
Traffic Signage Is Required	Traffic	1	Ea.	3	$2,266	4423
Note: Add sign to mark teacher parking only area- possible towing signs as well						
Traffic Signage Is Required	Traffic	2	Ea.	3	$75,544	4424
Note: Add signs for school zone area						
Asphalt Paving Requires Replacement	Capital Renewal	70	CAR	4	$230,037	1436
Note: Parking lot paving has significant cracking and should be replaced.						
Asphalt Paving Requires Replacement	Capital Renewal	70	CAR	4	$230,037	1742
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28490
Note: Backstops Require Replacement						
PE / Recess Playfield is Missing and is Needed	Educational Adequacy	1	Ea.	5	$64,020	54897
Note: PE / Recess Playfield is Missing and is Needed						
	Sub Total for System	**8**	**items**		**$820,497**	
	Sub Total for School and Site Level	**8**	**items**		**$820,497**	

Building: 01 - Main Building

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	2	Door	2	$12,834	53547
Note: Lincoln Public Schools Capital Improvement Plan identified doors in need of replacement due to poor condition and generally not functioning properly.						
	Sub Total for System	**1**	**items**		**$12,834**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Classroom Entry Doors Provide Insufficient Sound Isolation	Acoustics	19	Ea.	3	$158,144	4698
Note: All classroom						
Adhered Acoustical Ceiling Tile Requires Replacement	Capital Renewal	2,766	SF	4	$29,994	1383
Asbestos 9x9 Tile is Present. Limited Areas of Lifting or Broken Tiles Exist	Hazardous Material	3,600	SF	4	$102,675	Rollup
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	120	LF	4	$2,282	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	4	Ea.	4	$1,141	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	2,400	SF	4	$22,817	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	3,836	SF	4	$146,167	Rollup
	Sub Total for System	**7**	**items**		**$463,219**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	31,085	SF	2	$209,970	53541
Note: There is currently no centralized control over the HVAC system or individual components. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	34	Ea.	2	$56,954	466
Note: Fin tube convectors in the classrooms, corridors, and offices should be considered for replacement. Lincoln Public Schools FM indicated he would repalce with a different system						
Unit Ventilators Are Excessively Noisy	Acoustics	19	Ea.	3	$120,554	4699
Note: All classrooms						
	Sub Total for System	**3**	**items**		**$387,478**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$5,799	504

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Electrical Receptacles Are Inadequate And More are Needed	Functional Deficiency	12	Ea.	3	$6,845	505
Note: Classroom and office electrical capacity is not adequate for current load requirements.						
Room Has Insufficient Electrical Outlets	Educational Adequacy	76	Ea.	5	$37,716	Rollup
	Sub Total for System	**3**	**items**		**$50,360**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Plumbing / Domestic Water Piping System Is Beyond Its Useful Life	Capital Renewal	31,085	SF	3	$250,106	465
Note: Domestic piping is original and should be replaced.						
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	3	Ea.	4	$9,543	502
Note: Single use restroom lavatories are aged and should be considered for replacement.						
Location: Office, nurse, and staff (corridor)						
Room lacks a drinking fountain.	Educational Adequacy	2	Ea.	5	$2,206	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	10	Ea.	5	$11,167	Rollup
	Sub Total for System	**4**	**items**		**$273,022**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room lacks Interactive White Board	Educational Adequacy	1	Ea.	3	$5,704	Rollup
Technology: Classroom AV/Multimedia systems are in need of improvements.	Technology	18	Ea.	3	$171,125	3479
Technology: Instructional spaces do not have local sound reinforcement.	Technology	18	Ea.	3	$85,563	3480
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$42,591	3477
Technology: Main Telecommunications Room UPS does not meet standards, is inadequate, or non-existent.	Technology	1	Ea.	3	$9,032	3478
Technology: Network system inadequate and/or near end of useful life	Technology	4	Ea.	3	$30,422	3484
Technology: Network system inadequate and/or near end of useful life	Technology	15	Ea.	3	$71,302	3485
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	13,085	SF	3	$22,392	3482
Technology: Special Space AV/Multimedia system is inadequate.	Technology	2	Ea.	3	$108,379	3483
	Sub Total for System	**9**	**items**		**$546,511**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	8	Ea.	3	$36,507	Rollup
	Sub Total for System	**1**	**items**		**$36,507**	
	Sub Total for Building 01 - Main Building	**28**	**items**		**$1,769,932**	
	Total for Campus	**36**	**items**		**$2,590,429**	

Lonsdale Elementary School - Life Cycle Summary Yrs 1-5

Building: 01 - Main Building

Exterior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Exterior Entrance Doors	Steel - Insulated and Painted	15	Door	$96,258	4
Exterior Operating Windows	Aluminum - Windows per SF	2,300	SF	$389,215	5
Note:	10 @ 10'x10'; 12 @ 10'x10'; 15 @ 2'x4'; 2 @ 4'x4'; 23 @ 4'x10';2 @ 2'x10';3 @ 1'x10';1 @ 2'x3';1 @ 4'x8'				
	Sub Total for System	**2**	**items**	**$485,473**	

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Suspended Plaster and	Painted ceilings	1,136	SF	$4,752	2
Acoustical Suspended Ceilings	Ceilings - Acoustical Grid System	21,586	SF	$256,021	3
Wall Painting and Coating	Painting/Staining (Bldg SF)	31,085	SF	$205,389	3
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles	21,586	SF	$194,957	3
Carpeting	Carpet	3,979	SF	$86,568	4
	Sub Total for System	**5**	**items**	**$747,687**	

Mechanical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Decentralized Cooling	Window Units	10	Ea.	$33,388	3
	Sub Total for System	**1**	**items**	**$33,388**	

Electrical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Canopy Mounted Fixtures (Ea.)	3	Ea.	$4,136	3
	Sub Total for System	**1**	**items**	**$4,136**	

Plumbing

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Domestic Water Equipment	Water Heater - Gas - 100 Gallon	1	Ea.	$5,322	2
Building Support Plumbing System Supplementary Components	Sump Pump	1	Ea.	$1,449	5
Domestic Water Equipment	Water Heater - Gas - 40 gallon	1	Ea.	$3,160	5
Plumbing Fixtures	Restroom Lavatories	3	Ea.	$9,543	5
Note:	Bradley half bathsinks				
	Sub Total for System	**4**	**items**	**$19,474**	
	Sub Total for Building 01 - Main Building	**13**	**items**	**$1,290,158**	
	Total for: Lonsdale Elementary School	**13**	**items**	**$1,290,158**	

Supporting Photos

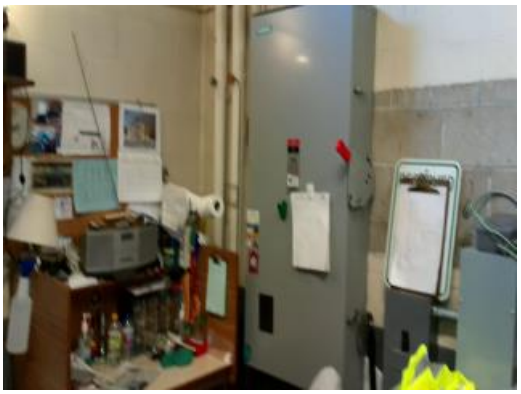
Site Aerial


Restroom Finishes


Pre-K Restroom Finishes And Fixtures


Gymnasium And Cafeteria Interior Finishes


Bell Controller


Electrical Disconnect


VFD


Aged Electrical Panel


Pendant Mounted Lights


Fire Alarm Panel

Exterior Storefront Door


Building Plaque


Gym Ceiling


Corridor Finishes


Elevation


Typical Classroom

Cafeteria

Unit Heater

Marquee

Water Heater

Parking Lot South

Boiler


Library


Pumps


Skylight

Building Signage

Facility Condition Assessment

Lincoln - Northern Lincoln Elementary School | *June 2017*

315 New River Road, Manville, RI 02838

Introduction

Northern Lincoln Elementary School, located at 315 New River Road in Manville, Rhode Island, was built in 1971. It comprises 74,312 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.

Northern Lincoln Elementary School serves grades PK - 5, has 39 instructional spaces, and has an enrollment of 495. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Northern Lincoln Elementary School is 475 with a resulting utilization of 104%.

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 Northern Lincoln Elementary School the 5-year need is $6,781,612. 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 Northern Lincoln 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 Northern Lincoln Elementary 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
	E.I.F.S. Exterior Wall
	Vinyl Siding 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:	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
	Adhered Acoustical Ceiling Tiles
	Painted Ceilings
	Wood Wall Paneling
	CMU Wall
	Interior Wall Painting
	Concrete Flooring
	Ceramic Tile Flooring
	Vinyl Composition Tile Flooring
	Carpet

Mechanical

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

01 - Main Building:	3,264 MBH Cast Iron Water Boiler
	Steam/Hot Water Heating Unit Vent
	Fin Tube Water Radiant Heater
	DDC Heating System Controls
	Pneumatic Heating System Controls
	Window Units
	Make-up Air Unit
	5 HP Pump
	2-Pipe Hot Water Hydronic Distribution System
	2,000 CFM Interior AHU
	Kitchen Exhaust Hoods
	Roof Exhaust Fan
	Large Roof Exhaust Fan

Plumbing

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

01 - Main Building:	4" Backflow Preventers
	Gas Piping System
	100 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	Lavatories
	Mop/Service Sinks
	Refrigerated Drinking Fountain
	Restroom Lavatories
	Toilets
	Urinals
	Air Compressor (2 hp)

Electrical

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

01 - Main Building:	800 Amp Switchgear
	600 Amp Distribution Panel
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	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	-	-	$105,379	$899,970	$5,807	$1,011,157	19.69 %
Roofing	-	-	-	-	-	$0	0.00 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$178,472	-	$519	-	$178,991	3.49 %
Interior	-	-	$136,986	$110,663	$79,404	$327,052	6.37 %
Mechanical	$129,411	$1,886,006	$223,766	$150,968	-	$2,390,151	46.55 %
Electrical	-	$89,595	$2,965	-	$76,896	$169,456	3.30 %
Plumbing	-	$18,365	$17,162	$174,902	$39,284	$249,713	4.86 %
Fire and Life Safety	$216,342	-	-	-	-	$216,342	4.21 %
Technology	-	-	$561,442	-	-	$561,442	10.94 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	$4,533	-	$25,496	$30,029	0.58 %
Total	$345,752	$2,172,437	$1,052,231	$1,337,023	$226,887	$5,134,331	

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

The building systems with the most need include:

Mechanical	-	$2,390,151
Site	-	$1,011,157
Technology	-	$561,442

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

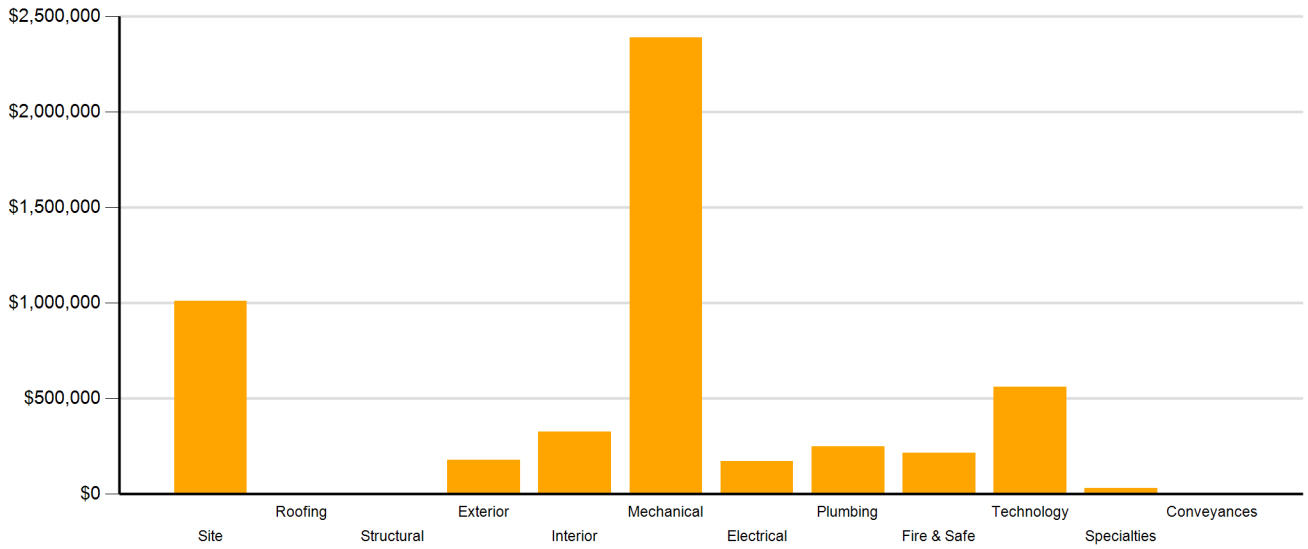


Figure 2: System Deficiencies

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	-	-	$207,973	-	-	$207,973
Barrier to Accessibility	-	-	-	-	-	$0
Capital Renewal	$129,411	$2,172,437	$176,300	$1,236,713	$73,681	$3,788,542
Code Compliance	$216,342	-	-	-	-	$216,342
Educational Adequacy	-	-	$4,533	$76,136	$153,206	$233,875
Functional Deficiency	-	-	-	-	-	$0
Hazardous Material	-	-	-	$24,174	-	$24,174
Technology	-	-	$561,442	-	-	$561,442
Traffic	-	-	$101,984	-	-	$101,984
Total	$345,752	$2,172,437	$1,052,231	$1,337,023	$226,887	$5,134,331

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

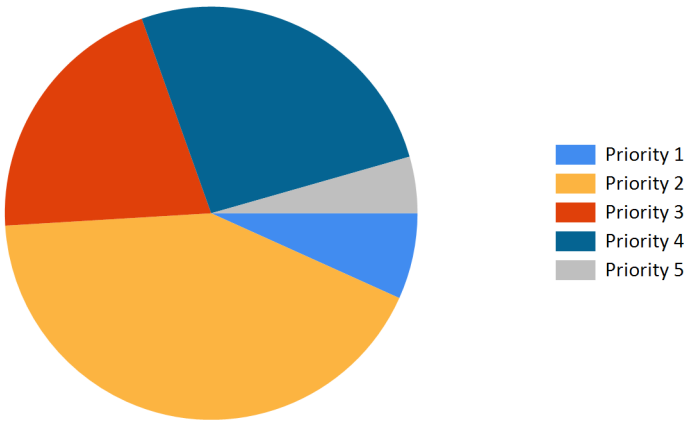


Figure 3: Current deficiencies by priority

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	$1,011,157	$0	$0	$51,053	$0	$0	$51,053	$1,062,210
Roofing	$0	$0	$0	$0	$0	$0	$0	$0
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$178,991	$0	$0	$0	$0	$0	$0	$178,991
Interior	$327,052	$0	$315,161	$0	$578,254	$148,363	$1,041,778	$1,368,830
Mechanical	$2,390,151	$0	$0	$0	$0	$307,343	$307,343	$2,697,494
Electrical	$169,456	$0	$0	$0	$0	$244,258	$244,258	$413,714
Plumbing	$249,713	$0	$0	$0	$0	$0	$0	$249,713
Fire and Life Safety	$216,342	$0	$0	$0	$0	$0	$0	$216,342
Technology	$561,442	$0	$0	$0	$0	$0	$0	$561,442
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$30,029	$0	$0	$0	$0	$0	$0	$30,029
Total	**$5,134,331**	**$0**	**$315,161**	**$51,053**	**$578,254**	**$699,964**	**$1,644,432**	**$6,778,763**

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

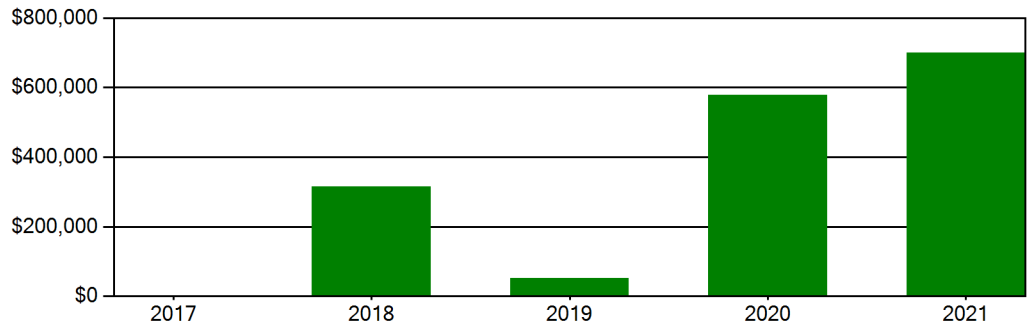
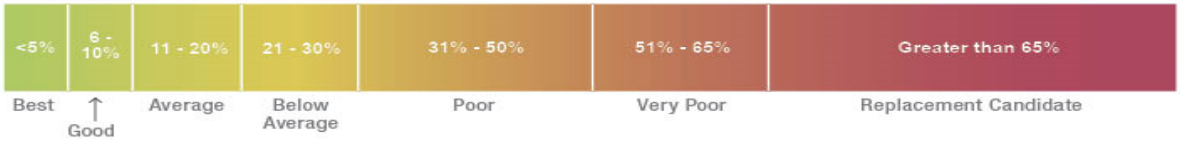


Figure 4: Life Cycle Capital Renewal Forecast

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 $26,009,200. For planning purposes, the total 5-year need at the Northern Lincoln Elementary School is $6,781,612 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Northern Lincoln Elementary School facility has a 5-year FCI of 26.06%.

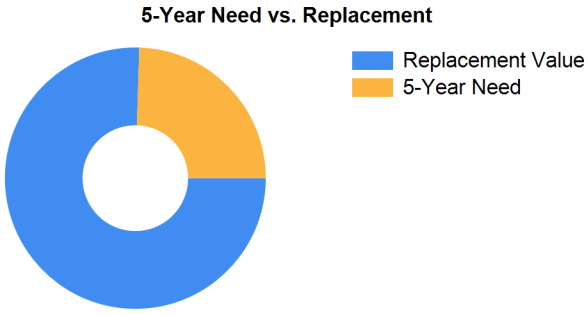


Figure 5: 5-Year FCI

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 456 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 Northern Lincoln Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $321,300.

Summary of Findings

The Northern Lincoln Elementary School comprises 74,312 square feet and was constructed in 1971. Current deficiencies at this school total $5,137,180. Five year capital renewal costs total $1,644,432. The total identified need for the Northern Lincoln Elementary School (current deficiencies and 5-year capital renewal costs) is $6,781,612. The 5-year FCI is 26.06%.

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
Northern Lincoln Elementary School Totals	74,312	1971	$5,137,180	$1,644,432	$6,781,612	26.06%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Asphalt Walks Require Replacement	Capital Renewal	400	SF	3	$3,395	1892
New Sidewalk Is Required	Traffic	4,500	SF	3	$101,984	4460
Note: Add sidewalks along North River Road adjacent to school						
Asphalt Paving Requires Replacement	Capital Renewal	175	CAR	4	$575,092	1610
Note: Pavement cracking and splitting.						
Asphalt Paving Requires Replacement	Capital Renewal	75	CAR	4	$246,468	1611
Note: Cracking asphalt.						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28493
Note: Backstops Require Replacement						
Fencing Requires Replacement (8' Chain Link Fence)	Capital Renewal	750	LF	4	$50,081	1571
Note: Fence rusted, patched repairs.						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$5,807	28752
Note: Exterior Basketball Goals are Required						
	Sub Total for System	**7**	**items**		**$1,011,157**	
	Sub Total for School and Site Level	**7**	**items**		**$1,011,157**	

Building: 01 - Main Building

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	28	Door	2	$178,472	1612
Note: Lincoln Public Schools Capital Improvement Plan identified doors in need of replacement due to poor condition and generally not functioning properly.						
Handrail Requires Repainting	Capital Renewal	50	LF	4	$519	1617
Note: Exterior handrails show chipped paint and other signs of wear.						
	Sub Total for System	**2**	**items**		**$178,991**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	8,000	SF	3	$71,766	1614
Note: Approximately 25% of the tiles in the 1997 addition should be replaced due to water damage.						
The Acoustical Ceiling Tiles Require Replacement	Capital Renewal	6,000	SF	3	$53,825	1616
Note: Approximately 30% of the tiles in the original facility require replacement due to staining, cracks, and general wear and tear.						
The Vinyl Composition Tile Requires Replacement	Capital Renewal	1,000	SF	3	$11,394	1618
Note: Some VCT on the ground level in the 1997 addition requires replacement, due to chips, cracks, and other wear and tear.						
Adhered Acoustical Ceiling Tile Requires Replacement	Capital Renewal	3,750	SF	4	$40,391	1615
Note: The adhered acoustic tiles in the gym are yellowed and aged.						
Caulking - significant areas of broken pieces &/or deteriorating caulk	Hazardous Material	185	LF	4	$3,494	Rollup
Light Deterioration or Damage of 9x9 Asbestos Floor Tile is Present	Hazardous Material	40	SF	4	$1,133	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	53	Ea.	4	$15,014	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	480	SF	4	$4,533	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	1,218	SF	4	$46,098	Rollup
Classroom Door Requires Vision Panel	Educational Adequacy	1	Ea.	5	$2,266	Rollup
Interior Walls Require Repainting (Bldg SF)	Capital Renewal	11,227	SF	5	$73,681	Rollup
Room lacks appropriate sound control.	Educational Adequacy	100	SF	5	$3,456	Rollup
	Sub Total for System	**12**	**items**		**$327,052**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Air Handler HVAC Component Requires Replacement	Capital Renewal	3	Ea.	1	$129,411	53543
Note: HVAC system upgrades - there is an immediate need to air condition interior rooms which can reach extreme temperatures. Included in Lincoln Public Schools 5 year capital improvement plan.						
Existing Controls Are Inadequate And Should Be Replaced With DDC Controls	Capital Renewal	37,156	SF	2	$249,288	1889
Replace Unit Vent	Capital Renewal	48	Ea.	2	$806,443	1580
Note: Units are old and have clogged coils.						
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	1	Ea.	2	$179,790	1592
Note: Cast iron is corroded.						
The Cast Iron Water Boiler Requires Replacement	Capital Renewal	1	Ea.	2	$179,790	53542
Note: Boilers and pumps are approaching the end of their serviceable life and require replacement. Included in Lincoln Public Schools 5 year capital improvement plan.						
The Mechanical / HVAC Piping / System Is Beyond Its Useful Life	Capital Renewal	37,156	SF	2	$284,477	1602
Note: Corrosion at connections.						
The Radiant Heat HVAC Component Requires Replacement	Capital Renewal	22	Ea.	2	$166,321	1582
Note: Fins are clogged and connections corroded.						
The Window AC Unit Component Requires Replacement	Capital Renewal	6	Ea.	2	$19,898	1598
Note: Units are corroding and the condenser coils are folded.						
The Make Up Air Equipment Requires Replacement	Capital Renewal	1	Ea.	3	$15,792	1594
Note: Unit mounted above ceiling and is hard to maintain.						
Unit Ventilators Are Excessively Noisy	Acoustics	33	Ea.	3	$207,973	4716
Note: All classrooms						
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	3	Ea.	4	$7,979	1597
Note: Units are rusted and cages are clogged.						
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	2	Ea.	4	$18,931	1599
Note: Leaking						
The Exhaust Hood Requires Replacement	Capital Renewal	24	Ea.	4	$124,058	1595
Note: Units rusted and damaged.						
	Sub Total for System	**13**	**items**		**$2,390,151**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Distribution Panel Requires Replacement	Capital Renewal	2	Ea.	2	$57,866	1570
Note: Original equipment. No cycling.						
The Panelboard Requires Replacement	Capital Renewal	1	Ea.	2	$5,760	1569
Note: Overloaded						
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$11,520	1590
Note: Rusting						
The Panelboard Requires Replacement	Capital Renewal	3	Ea.	2	$14,448	1591
Note: Rusting						
The Mounted Building Lighting Requires Replacement	Capital Renewal	2	Ea.	3	$2,965	1885
Room Has Insufficient Electrical Outlets	Educational Adequacy	156	Ea.	5	$76,896	Rollup
	Sub Total for System	**6**	**items**		**$169,456**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Backflow Preventer Requires Replacement	Capital Renewal	2	Ea.	2	$18,365	1593
Note: Units rusted and corroded.						
The Urinal Plumbing Fixtures Require Replacement	Capital Renewal	13	Ea.	3	$17,162	1586
Note: Porcelain is stained and aged.						
Floor Drains Are Required	Educational Adequacy	3	Ea.	4	$1,709	Rollup
The Classroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	17	Ea.	4	$45,912	1583
Note: Sinks stained and rusting.						
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	5	Ea.	4	$12,795	1587
Note: Sinks corroded, stained, and rusting. Plastic sinks becoming brittle.						
The Refrigerated Water Cooler Requires Replacement	Capital Renewal	7	Ea.	4	$51,294	1588
Note: Compressors not functioning.						

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Restroom Lavatories Plumbing Fixtures Require Replacement	Capital Renewal	20	Ea.	4	$63,192	1585
Note: Stained						
Room lacks a drinking fountain.	Educational Adequacy	16	Ea.	5	$17,526	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	19	Ea.	5	$21,758	Rollup
	Sub Total for System	**9**	**items**		**$249,713**	

Fire and Life Safety

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Fire Alarm Is Missing Or Inadequate (NFPA 72 and NFPA 101, Section 9.6)	Code Compliance	74,312	SF	1	$216,342	1606
Note: System replaced in approximately1998. Though system may be functioning properly now it is beyond its typical useful life of 15yrs and should be considered for replacement.						
	Sub Total for System	**1**	**items**		**$216,342**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Instructional spaces do not have local sound reinforcement.	Technology	31	Ea.	3	$146,366	3506
Technology: Main Telecommunications Room is not dedicated. Room requires partial walls and/or major improvements.	Technology	1	Ea.	3	$42,304	3504
Technology: Network system inadequate and/or near end of useful life	Technology	4	Ea.	3	$30,217	3510
Technology: Network system inadequate and/or near end of useful life	Technology	22	Ea.	3	$103,872	3511
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	74,312	SF	3	$126,310	3508
Technology: Special Space AV/Multimedia system is inadequate.	Technology	2	Ea.	3	$107,650	3509
Technology: Telecommunications Room (small size room) needs dedicated cooling system improvements.	Technology	1	Ea.	3	$4,721	3505
	Sub Total for System	**7**	**items**		**$561,442**	

Specialties

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Room has insufficient writing area.	Educational Adequacy	1	Ea.	3	$4,533	Rollup
Room lacks an appropriate refrigerator.	Educational Adequacy	3	Ea.	5	$25,496	Rollup
	Sub Total for System	**2**	**items**		**$30,029**	
	Sub Total for Building 01 - Main Building	**52**	**items**		**$4,123,174**	
	Total for Campus	**59**	**items**		**$5,134,331**	

Northern Lincoln 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
Fences and Gates	Fencing - Chain Link (4 Ft)	100	LF	$6,465	3
Note:	Vinyl coated chain link				
Playfield Areas	ES Playgrounds	1	Ea.	$44,588	3
	Sub Total for System	**2**	**items**	**$51,052**	
	Sub Total for Building -	**2**	**items**	**$51,052**	

Building: 01 - Main Building

Interior

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Suspended Plaster and	Painted ceilings	15,000	SF	$62,746	2
Carpeting	Carpet	11,602	SF	$252,415	2
Resilient Flooring	Vinyl Composition Tile Flooring	17,402	SF	$199,631	4
Carpeting	Carpet	17,403	SF	$378,623	4
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles	16,225	SF	$146,538	5
Wall Paneling	Wood Panel wall	200	SF	$1,825	5
	Sub Total for System	**6**	**items**	**$1,041,779**	

Mechanical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Exhaust Air	Kitchen Exhaust Hoods	1	Ea.	$15,964	5
Exhaust Air	Roof Exhaust Fan	13	Ea.	$67,654	5
Heating System Supplementary Components	Controls - DDC (Bldg.SF)	37,156	SF	$223,725	5
	Sub Total for System	**3**	**items**	**$307,343**	

Electrical

Uniformat Description	LC Type Description	Qty	UoM	Repair Cost	Remaining Life
Lighting Fixtures	Light Fixtures (Bldg SF)	37,156	SF	$220,776	5
Electrical Service	Switchgear - Main Dist Panel (800 Amps)	1	Ea.	$23,482	5
	Sub Total for System	**2**	**items**	**$244,258**	
	Sub Total for Building 01 - Main Building	**11**	**items**	**$1,593,380**	
	Total for: Northern Lincoln Elementary School	**13**	**items**	**$1,644,432**	

Supporting Photos

Site Aerial

Aged Distribution Panel

Typical Restroom Finishes

Damaged Roadway Asphalt

Exterior Finishes

Addition Connector

Marquee

Typical Classroom

Gymnasium/Kitchen Serving Area

Elevation


Addition Building Finishes


Parking Lot Cracking


Gymnasium

Dedication Plaque


Urinals


Addition Classroom


Chain Link Fencing


Library


Corroded Boiler

Pneumatic System


Original 100A Panel

Fire Alarm Panel


Exterior Entrance Doors Chipped And Worn


VCT Repaired With Electrical Tape


Backflow Preventers


Ceiling Mounted Unit Heater


Chipped Interior Wall


Restroom Lavatory


Leaking Circulating Pumps


Roof Exhaust


Unit Heater


Aged Drinking Fountain


Stained And Rusting Classroom Lavatory


Elevator Hydraulics


Corroded Janitor Sink


AHU At Addition


Rusted Exhaust

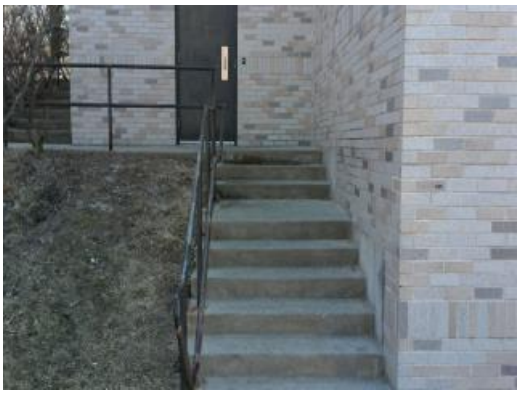

1971 Panelboard


Stained Ceiling Tile


Radiant Heaters


Stained Mop Sink


Elevator Disconnect


Worn Handrail At Play Area


Bradley Lavatory


Damaged Window Unit


Boiler For Addition

Weathered Exhaust Fan

Facility Condition Assessment

Lincoln - Saylesville Elementary School | *June 2017*

50 Woodland Street, Lincoln, RI 02865

Introduction

Saylesville Elementary School, located at 50 Woodland Street in Lincoln, Rhode Island, was built in 1971. It comprises 36,106 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.

Saylesville Elementary School serves grades KG - 5, has 23 instructional spaces, and has an enrollment of 252. Instructional spaces are defined as rooms in which a student receives education. The LEA reported capacity for Saylesville Elementary School is 325 with a resulting utilization of 78%.

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 Saylesville Elementary School the 5-year need is $3,935,809. 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.

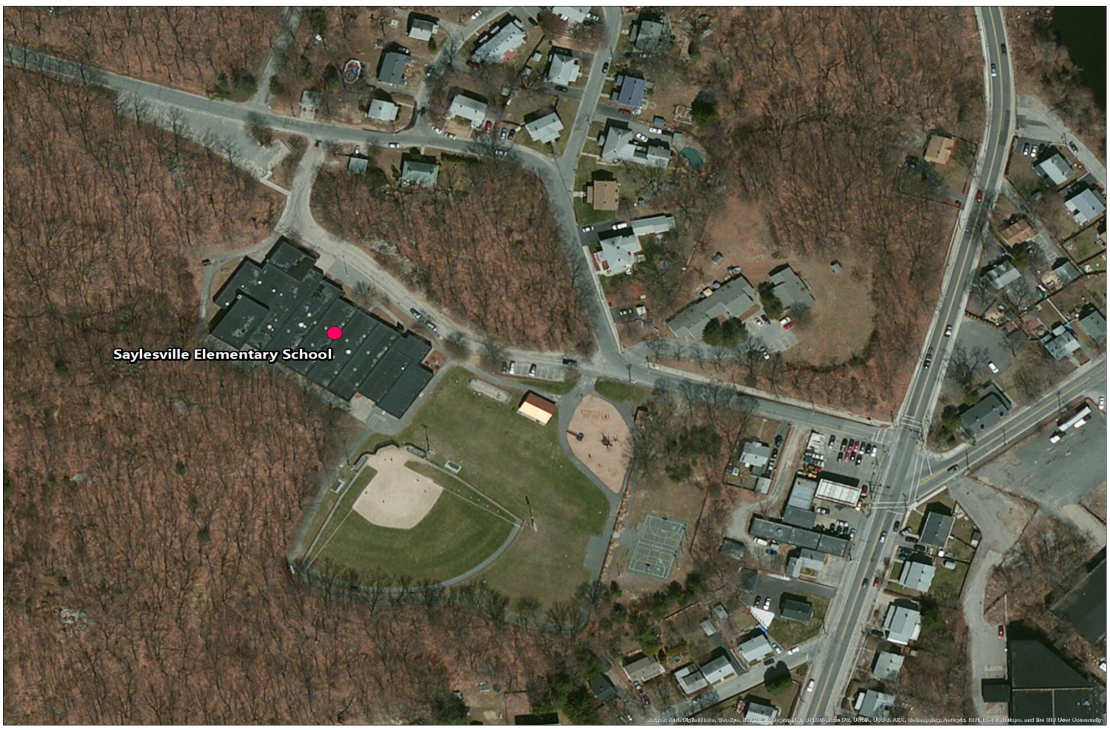


Figure 1: Aerial view of Saylesville Elementary School

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 Saylesville Elementary 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
	Storefront Entrance Doors
	Overhead Exterior Utility 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
	Wood Interior Doors
	Overhead Interior Coiling Doors
	Interior Door Hardware
	Suspended Acoustical Grid System
	Suspended Acoustical Ceiling Tile
	Adhered Acoustical Ceiling Tiles
	Acoustical Wall Paneling
	Wood Wall Paneling
	Interior Wall Painting
	Ceramic Tile Flooring
	Vinyl Composition Tile Flooring
	Rubber Flooring
	Carpet

Mechanical

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

01 - Main Building:	4,800 MBH Copper Tube Boiler

01 - Main Building:	Finned Wall Radiator
	Steam/Hot Water Heating Unit Vent
	DDC Heating System Controls
	1 Ton Ductless Split System
	2-Pipe Hot Water Hydronic Distribution System
	1 HP or Smaller Pump
	2,000 CFM Interior AHU
	Large Roof Exhaust Fan
	Small Roof Exhaust Fan
	Wall Exhaust Fan
	Kitchen Exhaust Hoods

Plumbing

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

01 - Main Building:	Gas Piping System
	75 Gallon Gas Water Heater
	Domestic Water Piping System
	Classroom Lavatories
	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:	400 Amp Distribution Panel
	Panelboard - 120/208 100A
	Panelboard - 120/208 225A
	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	-	-	$83,215	$28,329	$5,807	$117,351	7.02 %
Roofing	-	$453,460	-	-	-	$453,460	27.13 %
Structural	-	-	-	-	-	$0	0.00 %
Exterior	-	$19,122	-	-	-	$19,122	1.14 %
Interior	-	-	$3,933	$247,287	$3,456	$254,676	15.24 %
Mechanical	-	$73,209	$73,536	$10,237	-	$156,982	9.39 %
Electrical	-	$11,520	$19,689	-	$33,519	$64,728	3.87 %
Plumbing	-	-	-	$2,559	$17,873	$20,432	1.22 %
Fire and Life Safety	$16,457	-	-	-	-	$16,457	0.98 %
Technology	-	-	$568,268	-	-	$568,268	34.00 %
Conveyances	-	-	-	-	-	$0	0.00 %
Specialties	-	-	-	-	-	$0	0.00 %
Total	$16,457	$557,311	$748,641	$288,411	$60,656	$1,671,475	

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

The building systems with the most need include:

Technology	-	$568,268
Roofing	-	$453,460
Interior	-	$254,676

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

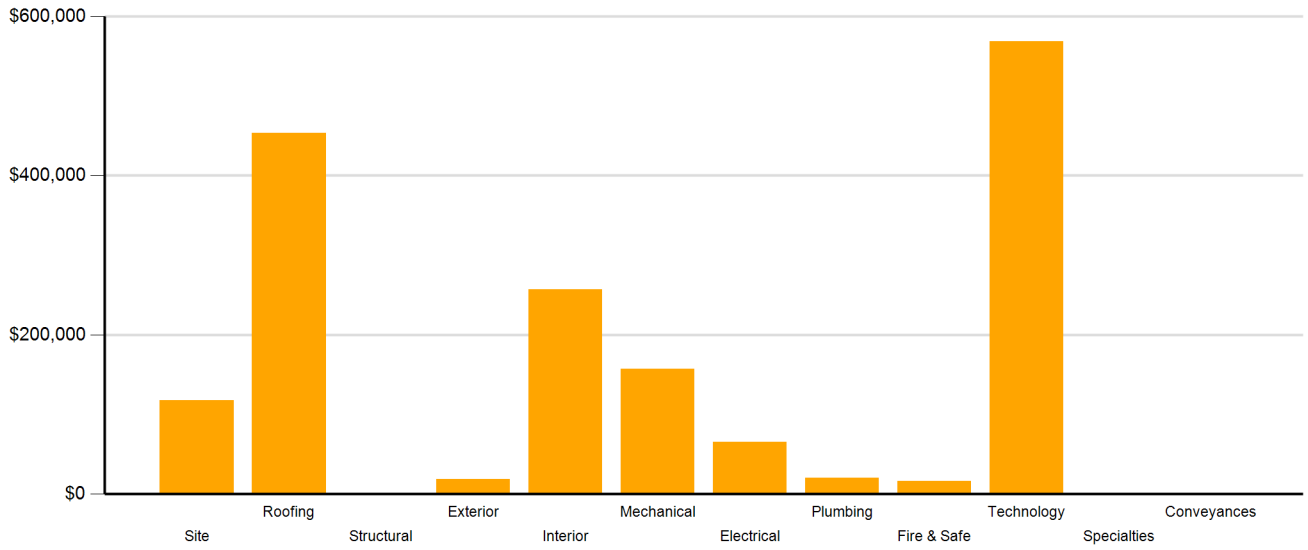


Figure 2: System Deficiencies

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	-	-	-	-	-	$0
Barrier to Accessibility	-	-	$6,161	-	-	$6,161
Capital Renewal	$16,457	$557,311	$77,469	$14,184	-	$665,421
Code Compliance	-	-	-	-	-	$0
Educational Adequacy	-	-	-	$238,533	$60,656	$299,189
Functional Deficiency	-	-	$19,689	-	-	$19,689
Hazardous Material	-	-	-	$35,694	-	$35,694
Technology	-	-	$568,268	-	-	$568,268
Traffic	-	-	$77,054	-	-	$77,054
Total	$16,457	$557,311	$748,641	$288,411	$60,656	$1,671,475

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

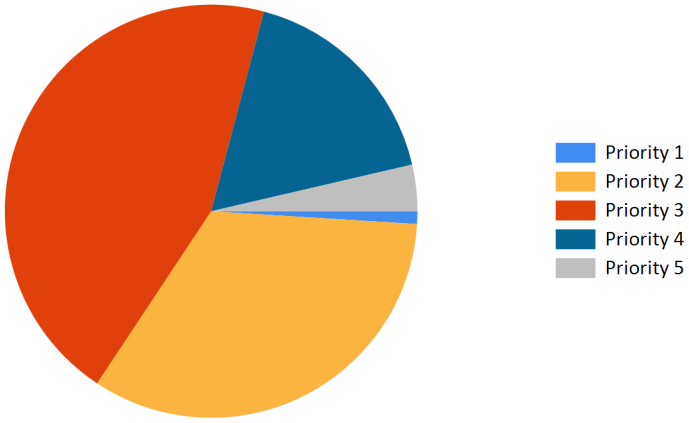


Figure 3: Current deficiencies by priority

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	$117,351	$0	$0	$274,039	$0	$0	$274,039	$391,390
Roofing	$453,460	$0	$0	$0	$0	$0	$0	$453,460
Structural	$0	$0	$0	$0	$0	$0	$0	$0
Exterior	$19,122	$0	$0	$0	$0	$0	$0	$19,122
Interior	$254,676	$0	$844,913	$0	$0	$863,424	$1,708,337	$1,963,013
Mechanical	$156,982	$0	$0	$0	$0	$278,312	$278,312	$435,294
Electrical	$64,728	$0	$0	$0	$0	$0	$0	$64,728
Plumbing	$20,432	$0	$0	$0	$0	$0	$0	$20,432
Fire and Life Safety	$16,457	$0	$0	$0	$0	$0	$0	$16,457
Technology	$568,268	$0	$0	$0	$0	$0	$0	$568,268
Conveyances	$0	$0	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$1,671,475**	**$0**	**$844,913**	**$274,039**	**$0**	**$1,141,736**	**$2,260,688**	**$3,932,163**

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

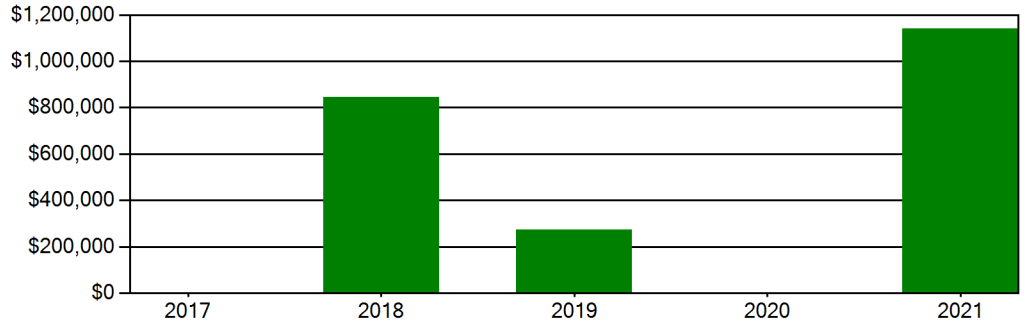
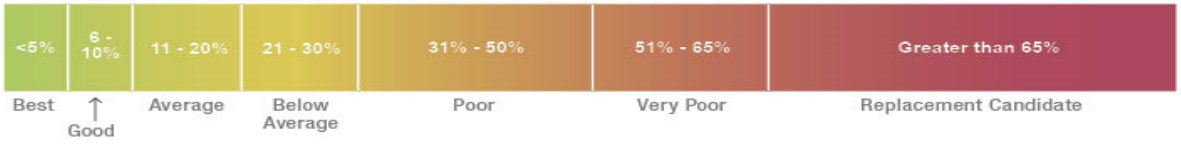


Figure 4: Life Cycle Capital Renewal Forecast

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 $12,637,100. For planning purposes, the total 5-year need at the Saylesville Elementary School is $3,935,809 (Life Cycle Years 1-5 plus the FCI deficiency cost). The Saylesville Elementary School facility has a 5-year FCI of 31.12%.

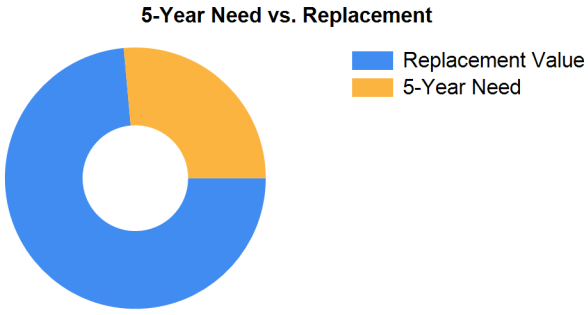


Figure 5: 5-Year FCI

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 201 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 Saylesville Elementary School cafeteria and/or library/media center to the size prescribed by the SCRs is estimated to be $204,120.

Summary of Findings

The Saylesville Elementary School comprises 36,106 square feet and was constructed in 1971. Current deficiencies at this school total $1,675,121. Five year capital renewal costs total $2,260,688. The total identified need for the Saylesville Elementary School (current deficiencies and 5-year capital renewal costs) is $3,935,809. The 5-year FCI is 31.12%.

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
Saylesville Elementary School Totals	36,106	1971	$1,675,121	$2,260,688	$3,935,809	31.12%

**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.

LEA Feedback

As part of the assessment process, LEAs were given several opportunities to provide feedback on the data. Jacobs performed a thorough review of the comments provided relating to the Facilities Condition Assessment. Based on information provided, some adjustments were made to improve or refine the dataset. In other situations, enough information was not provided, item was out of scope, or evidence provided by assessment team did not align with the feedback and no adjustment was made. Finally, deficiency priorities, costs, and educational space/technology standards are consistent throughout the state.

Site Level Deficiencies

Site

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Pavement Markings: Words/Symbols Are Required	Traffic	4	Ea.	3	$1,511	4421
Note: Add pavement markings to parent drop off/pick up area to control flow of traffic (lines and arrows)						
The Curb Ramp Does Not Meet Minimum ADA Compliance Requirements	Barrier to Accessibility	2	Ea.	3	$6,161	543
Traffic Signage Is Required	Traffic	2	Ea.	3	$75,544	4419
Note: Add school zone signage on Woodland Street						
Backstops Require Replacement	Educational Adequacy	1	Ea.	4	$28,329	28494
Note: Backstops Require Replacement						
Exterior Basketball Goals are Required	Educational Adequacy	1	Ea.	5	$5,807	28753
Note: Exterior Basketball Goals are Required						
	Sub Total for System	**5**	**items**		**$117,351**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Pole Lighting Is Missing And Needed	Functional Deficiency	1	Ea.	3	$19,689	480
	Sub Total for System	**1**	**items**		**$19,689**	
	Sub Total for School and Site Level	**6**	**items**		**$137,040**	

Building: 01 - Main Building

Roofing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
EPDM Roofing Requires Replacement (Bldg SF)	Capital Renewal	36,106	SF	2	$453,460	53519
Note: Roofing report indicates need for full replacement						
	Sub Total for System	**1**	**items**		**$453,460**	

Exterior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Metal Exterior Door Requires Replacement	Capital Renewal	3	Door	2	$19,122	540
Note: Metal door is corroded.						
Location: Exterior door to gym						
	Sub Total for System	**1**	**items**		**$19,122**	

Interior

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Carpet Flooring Requires Replacement	Capital Renewal	182	SF	3	$3,933	541
Location: Conference Room						
Demountable Partition	Capital Renewal	50	SF	4	$1,388	542
Light Deterioration or Damage of 9x9 Asbestos Floor Tile is Present	Hazardous Material	1,000	SF	4	$28,329	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	26	Ea.	4	$7,366	Rollup
Room Lighting Is Inadequate Or In Poor Condition.	Educational Adequacy	5,554	SF	4	$210,204	Rollup
Room lacks appropriate sound control.	Educational Adequacy	100	SF	5	$3,456	Rollup
	Sub Total for System	**6**	**items**		**$254,676**	

Mechanical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Fin Tube Water Radiant Heater Requires Replacement	Capital Renewal	44	Ea.	2	$73,209	441
The Large Diameter Exhausts/Hoods Require Replacement	Capital Renewal	4	Ea.	3	$55,200	433
The Small Diameter Exhausts/Hoods Require Replacement	Capital Renewal	7	Ea.	3	$18,336	1918
Exhaust Fan Ventilation Requires Replacement	Capital Renewal	1	Ea.	4	$2,660	434
Small HVAC Circulating Pump Requires Replacement	Capital Renewal	1	Ea.	4	$7,577	537
	Sub Total for System	**5**	**items**		**$156,982**	

Electrical

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Panelboard Requires Replacement	Capital Renewal	2	Ea.	2	$11,520	473
Location: Hallway 1						
Room Has Insufficient Electrical Outlets	Educational Adequacy	68	Ea.	5	$33,519	Rollup
	Sub Total for System	**2**	**items**		**$45,039**	

Plumbing

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
The Custodial Mop Or Service Sink Requires Replacement	Capital Renewal	1	Ea.	4	$2,559	429
Room lacks a drinking fountain.	Educational Adequacy	8	Ea.	5	$8,763	Rollup
The Class Room Lavatories Plumbing Fixtures Are Missing And Should Be Installed	Educational Adequacy	8	Ea.	5	$9,110	Rollup
	Sub Total for System	**3**	**items**		**$20,432**	

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	400	SF	1	$600	422
Location: Boiler Room						
Replace Kitchen Exhaust Hood	Capital Renewal	1	Ea.	1	$15,857	464
	Sub Total for System	**2**	**items**		**$16,457**	

Technology

Deficiency	Category	Qty	UoM	Priority	Repair Cost	ID
Technology: Classroom AV/Multimedia systems are in need of improvements.	Technology	19	Ea.	3	$179,416	3497
Technology: Instructional spaces do not have local sound reinforcement.	Technology	19	Ea.	3	$89,708	3498
Technology: Main Telecommunications Room needs M/E improvements.	Technology	1	Ea.	3	$29,084	3496
Technology: Network system inadequate and/or near end of useful life	Technology	4	Ea.	3	$30,217	3502
Technology: Network system inadequate and/or near end of useful life	Technology	15	Ea.	3	$70,822	3503
Technology: PA/Bell/Clock system is inadequate and/or near end of useful life.	Technology	36,106	SF	3	$61,370	3500
Technology: Special Space AV/Multimedia system is inadequate.	Technology	2	Ea.	3	$107,650	3501
	Sub Total for System	**7**	**items**		**$568,268**	
	Sub Total for Building 01 - Main Building	**27**	**items**		**$1,534,436**	
	Total for Campus	**33**	**items**		**$1,671,475**	

Saylesville 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
Roadway Pavement	Asphalt		27	CAR	$89,330	3
Pedestrian Pavement	Sidewalks - Asphalt		10,000	SF	$85,453	3
Parking Lot Pavement	Asphalt		30	CAR	$99,256	3
		Sub Total for System	**3**	**items**	**$274,039**	
		Sub Total for Building -	**3**	**items**	**$274,039**	

Building: 01 - Main Building

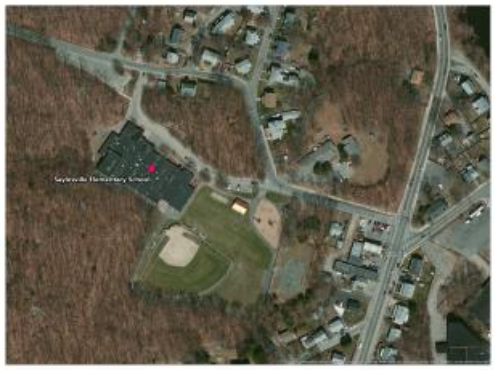
Interior

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Interior Swinging Doors	Wood		49	Door	$225,933	2
Carpeting	Carpet		20,808	SF	$452,703	2
Interior Door Supplementary Components	Door Hardware		53	Door	$166,277	2
Acoustical Suspended Ceilings	Ceilings - Acoustical Tiles		31,585	SF	$285,264	5
Wall Painting and Coating	Painting/Staining (Bldg SF)		30,806	SF	$203,546	5
Acoustical Suspended Ceilings	Ceilings - Acoustical Grid System		31,585	SF	$374,614	5
		Sub Total for System	**6**	**items**	**$1,708,336**	

Mechanical

Uniformat Description	LC Type Description		Qty	UoM	Repair Cost	Remaining Life
Facility Hydronic Distribution	2-Pipe Water System (Hot)		36,106	SF	$278,312	5
Note:	Some replaced in boiler rooms					
		Sub Total for System	**1**	**items**	**$278,312**	
		Sub Total for Building 01 - Main Building	**7**	**items**	**$1,986,648**	
		Total for: Saylesville Elementary School	**10**	**items**	**$2,260,687**	

Supporting Photos



Site Aerial

Typical Classroom

Art Room

Existing AHU with New Controls

School Signage


Front Drive


East Elevation


Gymnasium


Typical Classroom


Custodial Sink


Large Exhaust Fan


Radiant Heater


Library


Ponding On Roof


Panelboard


Kitchen


Library


Restroom Finishes


Elevation