Existing Conditions Study
Cohasset Public Schools

Town of Cohasset, MA

Prepared by:
Ai3 Architects, LLC
526 Boston Post Road
Wayland, MA 01778

April 2022

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Report Prepared for:

Cohasset School Facilities Committee
Town of Cohasset
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Cohasset, MA 02025

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Cohasset School Facilities Committee

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1. Introduction

1.01 Origin of Study

Beginning in January of 2022, the Town of Cohasset requested the services of Ai3 Architects, LLC, and consultants to assess the existing conditions of its three public school facilities. The study aimed to collect information that would support submission of a Statement of Interest (SOI) to the Massachusetts School Building Authority (MSBA). Demographic and population trends in the Town, site conditions, structural integrity and state of building systems, and overall program distribution per building were all contributing research factors; the results of which are included in this study.

Cohasset Public Schools

The Cohasset Public School System is a Pre-K to grade 12 district with approximately 1,423 students. The district includes three public school buildings.

Cohasset Middle-High School
143 Pond Street
Cohasset, MA 02025

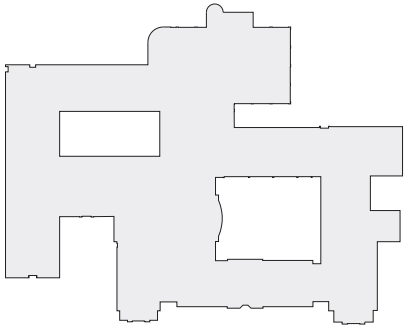
- Grades 6 through 8 | 318 Students
- Grades 9 through 12 | 446 Students
- Approx. 228,837 square feet
- Original construction in 1950 with additions in 1966 and 2001

Deer Hill Elementary School
208 Sohier Street
Cohasset, MA 02025

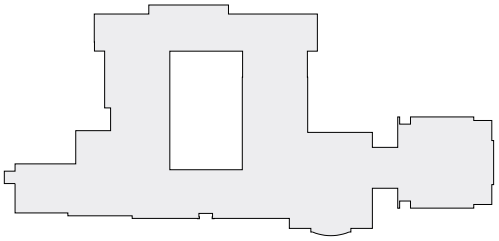
- Grades 3 through 5 | 317 Students
- Approx. 83,363 square feet
- Original construction in 1954 with additions in 1966 and 2001

Joseph Osgood Elementary School
210 Sohier Street
Cohasset, MA 02025

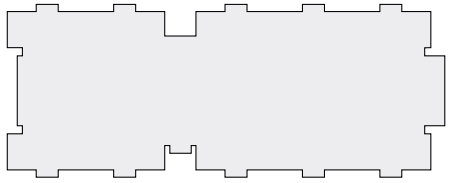
- Grades Pre-K through 2 | 397 Students
- Approx. 70,075 square feet
- Original construction in 1998



Cohasset Middle-High School
footprint as of 2022



Deer Hill Elementary School
footprint as of 2022

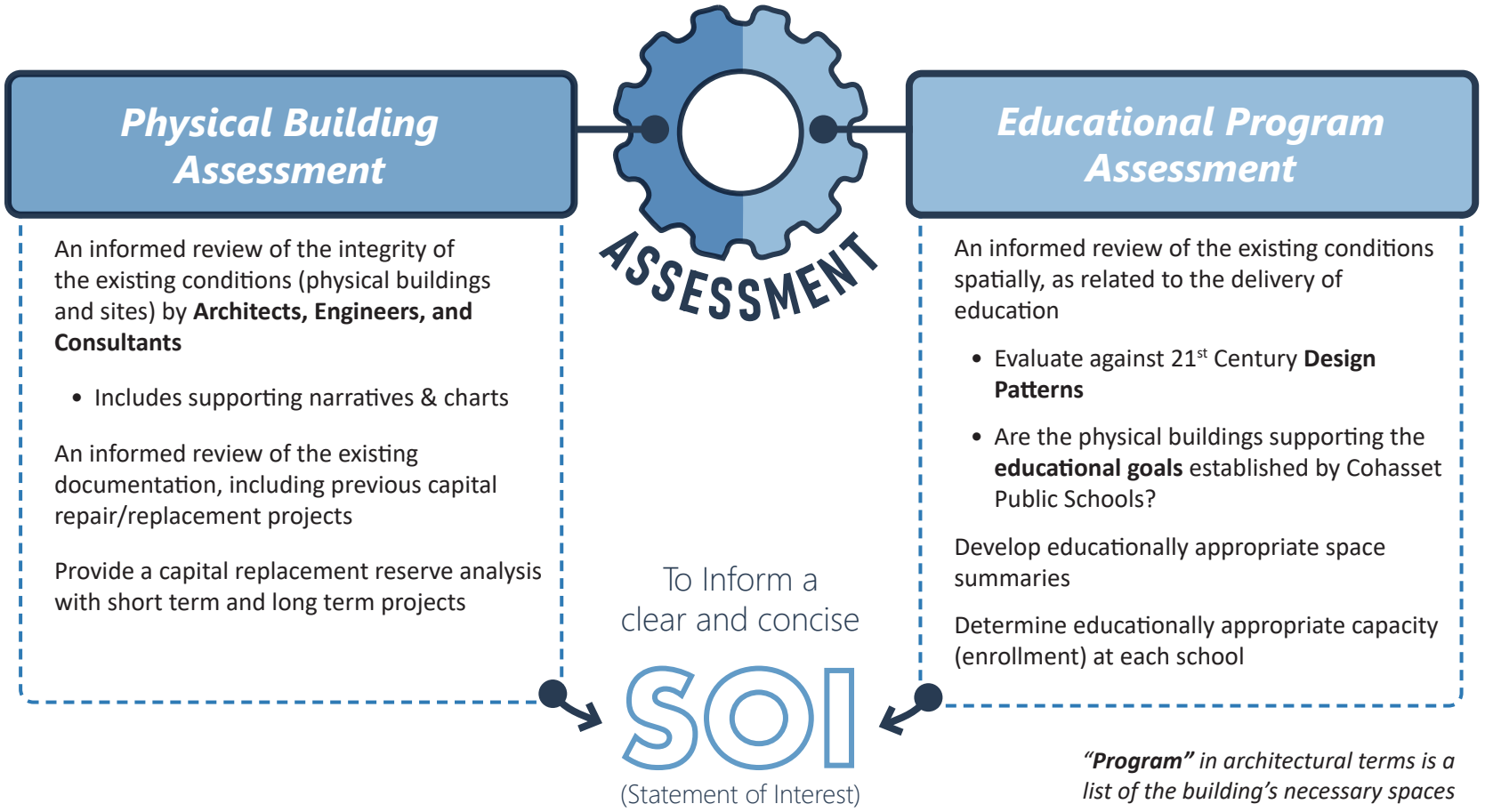


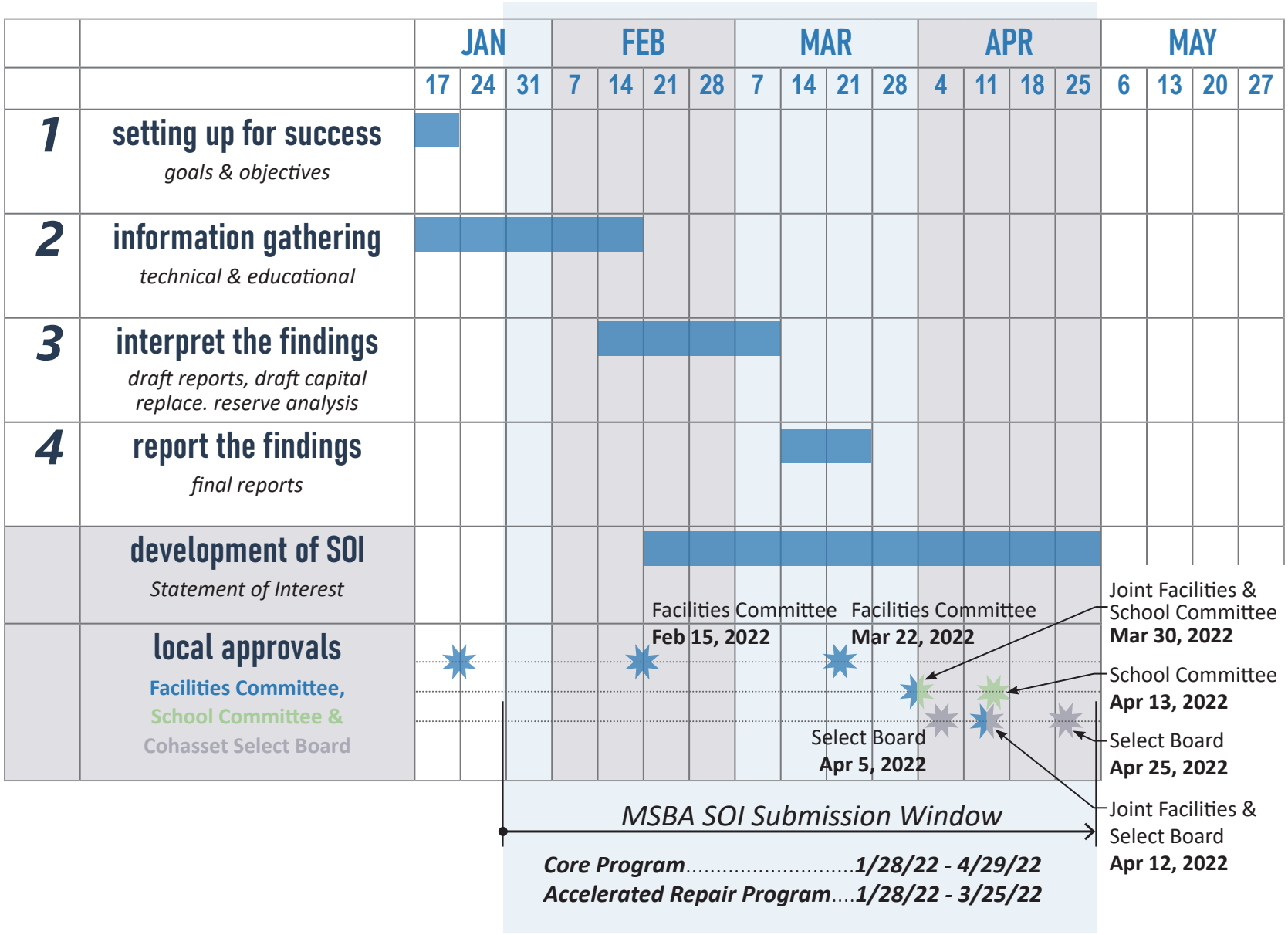
Joseph Osgood Elementary School
footprint as of 2022

1.02 Goals & Project Schedule

The goal of this study is to provide the Cohasset Facilities Committee with the information required to inform a clear and concise Statement of Interest (SOI) for submission to the Massachusetts School Building Authority (MSBA) if determined appropriate to do so.

To best inform a potential SOI, the buildings and sites were assessed both in terms of their physical characteristics and their educational program. The goals per aspect are described as such:

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1
setting up for success
goals & objectives
2
information gathering
technical & educational
3
interpret the findings
draft reports, draft capital replace. reserve analysis
4
report the findings
final reports
development of SOI
Statement of Interest
local approvals
Facilities Committee,
School Committee &
Cohasset Select Board
Facilities Committee
Feb 15, 2022
Facilities Committee
Mar 22, 2022
Select Board
Apr 5, 2022
Joint Facilities & School Committee
Mar 30, 2022
School Committee
Apr 13, 2022
Select Board
Apr 25, 2022
Joint Facilities & Select Board
Apr 12, 2022
MSBA SOI Submission Window
Core Program.....1/28/22 - 4/29/22
Accelerated Repair Program....1/28/22 - 3/25/22

1.03 Evaluation Criteria: Physical Building

The following physical building evaluations reflect items observed during the various site visit assessments that occurred throughout February 2022. Additionally, items reported by the facilities director and school administrative staff have also informed these evaluations. A separate evaluation was performed for each of the three schools.

This study includes an itemized list of capital improvement items observed and noted at the buildings.

The purpose of determining likely projects is to provide direction on how many and what type of potential construction projects are needed to keep the existing buildings operational.

Evaluation Categories

Physical building items were evaluated by category, subcategory, and location. The category refers to the main topics for evaluation outlined in the Request for Services, while the subcategories further specify the item. The interior locations used are those listed in a typical MSBA Space Summary while exterior items are described per cardinal direction.

Categories:	*Sub-categories*:	*Locations*:
Code	Accessibility	Exterior (N/E/S/W)
Structure	Building Code	Core Academic
Exterior Envelope	Flashing	Special Education
Interior	Sealant	Art
Systems	Windows/Doors	Music
Site	Roofing	Vocations
Miscellaneous	Insulation/Thermal Control	Physical Education
	Finishes	Media Center
	Flooring	Dining & Food Service
	Walls/Masonry	Medical
	Ceilings	Administration
	Fire Protection	Guidance
	Plumbing	Custodial
	HVAC	Corridors
	Electrical	Other
	Technology	
	Lighting	
	Acoustics	

A separate evaluation dedicated to existing security conditions was also conducted in February 2022. For safety purposes, the security evaluation report is not contained in this existing conditions study given its public accessibility.

Scoring System

At the time of its evaluation, each item listed was given a score of 1-6. Given the number of items evaluated, denoting each with a score helps to prioritize urgent items over less time-sensitive recommendations. The scoring system also provides a quantitative backbone to structure each evaluation and a direct comparison across the district's school buildings can be drawn.

Scoring System Definitions:

1 - **Critical:** Conditions require attention in the next 1-3 years

2 - **Potentially Critical:** Conditions require attention in the next 4-6 years

3 - **Necessary, Not Yet Critical:** Conditions require attention in the next 7-10 years

4 - **Recommended Upgrade:** Conditions could benefit from sensible upgrade for function or maintenance improvements, but not required by code or severity

5 - **Code Required Upgrade:** Conditions "grand-fathered" (do not conform to existing code); no action required unless substantial work pursued

6 - **Not Critical:** Conditions suitable; no work required (noted for report only)

The scoring system provides an objective means to establishing priorities and recommendations.

An average score of each evaluation category has also been recorded. For example, if evaluating the building "Interior" as related to "Flooring" in the "Core Academic" spaces identified an average score of 1, then replacing flooring in the next ten years would not be considered a high priority.

As it relates to building code, items that have been "grand-fathered" are permissible depending on various code thresholds. For example, per 521 CMR Massachusetts Architectural Access Board (MAAB), if more than 30% of the building's value is spent in construction cost within a 36-month period, the entire building must be brought up to code. Additionally, if grandfathered items create unsafe conditions, those items are considered critical and should be addressed as such.

1.04 Evaluation Criteria: Educational Program

In addition to the physical building evaluations, the success of each school structure as a place of learning was also evaluated throughout February 2022. As a leading firm in PK-12 architecture, Ai3 evaluated the educational program in terms of functionality and organization.

The design team held various meetings with the administration of each school to understand the overall educational goals of the district and establish whether the physical buildings were contributing to achieving these goals, or proving detrimental.

There is no building code that prescribes the use of any or all of the Design Patterns in existence. However, they are proven examples of how good design enhances learning, efficiency, and well-being.

By incorporating Design Patterns into a building, not only do the students and staff benefit directly, but the school district and community benefit as well.

Design Patterns

Design Patterns are three-dimensional themes that improve the overall quality of a place of learning. They use architectural design to create far-reaching solutions for the occupants of the building. Some of the Design Patterns considered include:

Clusters of Learning	*Gardens as a Teaching Tool*	*Layers of Transparency*
Academic Neighborhoods	*Outdoor Gathering*	*Display & Visual Connections*
Diverse-Use Spaces	*Virtual Learning*	*Museum-like Installations*
Moveable Walls	*Professional Workshops*	*Ownership & Branding*
Classroom Flexibility/Size	*Break-out Spaces*	*Story-telling & History*
Multi-Use Classrooms	*Independent Nooks*	*Building as a Teaching Tool*
Distributed Resources	*Maker Spaces*	*Ubiquitous Technology*
Teacher Teaming	*Project-Based Learning Labs*	*Curb Appeal*
STEM/STEAM Adjacencies	*Innovation Labs*	*Greeting & Gate-keeping*
Alternative Storage	*Lifelong Health & Fitness*	*Safety & Security*
Extending the Classroom	*Varied Performance*	*Wayfinding & Streetscapes*
Staff/Team Collaboration	*Learning Commons*	*Universal Design & Access*
Student Socialization	*Hubs of Activity*	*Collaboration Space*
Tech-Media Distribution	*Social, Flexible Dining*	*Sustainable Design*
Natural Light	*Lecture Style Learning*	*Community Resources*
Indoor/Outdoor Spaces	*Enrichment Spaces*	*An Invitation for Parents*

In meeting with administration, the highlighted Design Patterns resonated the most. The success and/or failure of these specific Design Patterns within Cohasset Public Schools are described later in the study.

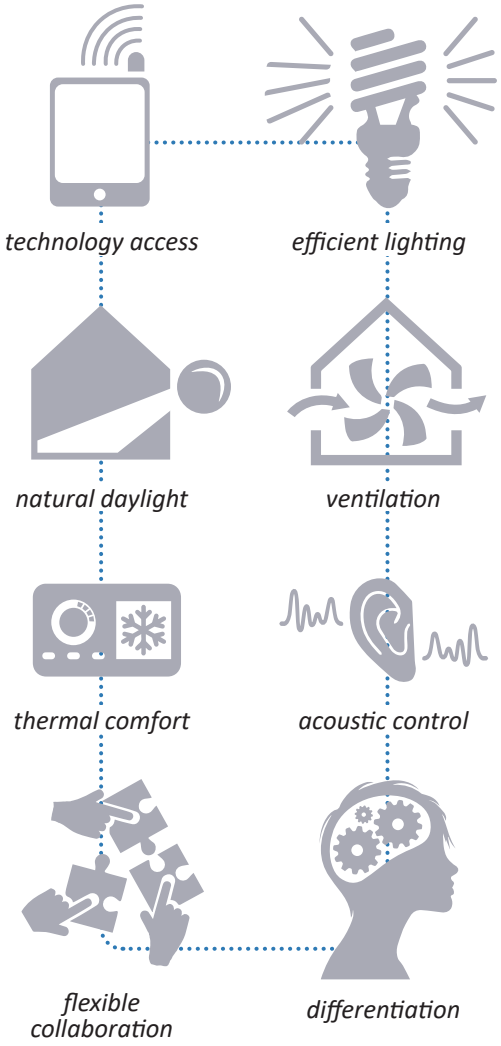
21st Century Learning Environments

The ideal educational environment includes many key factors. Modern 21st Century schools include flexible classrooms that utilize "Laboratories for Learning" where all the necessary environmental factors, technology integration, and spatial configurations work to create "ideal" environments. These modern classrooms allow teachers to introduce "real world" examples of instructional material through the seamless integration of video internet technology. They also allow students to present and facilitate with their peers, giving them invaluable exposure to learning, presentation, and collaboration skills. Technology can be energized quickly and efficiently through teacher facilitator stations. Lighting, ventilation, and carbon dioxide levels are all monitored and adjusted automatically to create ideal environmental conditions.

Teachers have collaborative planning and work areas that allow them to share critical planning and development ideas for their coursework. Cross discipline instruction and work areas are integrated into the academic environment in a manner similar to that of a corporate planning and work environment. Core facilities such as library/media centers have become highly advanced media retrieval centers and are located in close proximity to all academic functions to allow for key sharing of valuable resources. Academic zones are organized for quiet separation from noisier zones such as cafeterias and gymnasiums. Their layouts and plan organizations are structured to promote integration of science, technology, engineering, math, and the arts. Corridors and hallways are organized and designed to create "experience and exposure" in addition to providing functional movement patterns. Performing and practical arts facilities include highly advanced opportunities for students to explore their talents at a critical age when many of their future professional talents are evolving.

Additionally, many decades of focus on energy conservation have yielded dramatic improvements in the physical components and systems of a modern school building, resulting in buildings which are much more energy efficient than those constructed 50 years ago. Buildings that generate as much energy as they consume are possible and desirable in today's climate. Our goal in evaluating each of the existing Cohasset schools is not only to identify the physical deterioration of the buildings' components or systems that must be addressed in the future, but to also provide insight on the environmental, educational, energy efficiency, and organizational deficiencies that exist within the buildings (specifically the middle-high school) when compared to a modern 21st Century school facility.

Features in a Modern Classroom



2. Executive Summary

Executive Summary

2.01 Overview

After reviewing the enrollment projections supplied by the District, existing Cohasset Public School environments, existing building conditions, current educational philosophies, and the concerns of the School Facilities Committee, School Committee, and community at large, the following conclusions were established regarding the highest priorities facing the Cohasset Public Schools.

> The most significant educational facility challenge facing the Cohasset Public School system is the **lack of an appropriate 21st Century middle school environment**. The lack of appropriately-sized classrooms and educational support spaces, combined with aged building systems and components, creates a very challenging environment that is grossly insufficient when compared to numerous districts in the Commonwealth of Massachusetts.

Middle and high school educational environments have changed dramatically over the past seven decades (since the original building was designed and constructed – as a high school, not a co-located middle high school). Young middle school adolescents are not simply older elementary school students nor younger high school students; there are dramatic changes that occur during this time of life, requiring a radically different and unique approach to education.

Over the years, spaces have been re-purposed, re-invented, re-configured, expanded, and divided. The most recent renovations occurred over twenty years ago, which have not kept up with the considerable evolution of education itself over the same amount of time. Despite the best efforts by faculty and staff to offer a modern middle and high school education within the confines of the existing facility, Cohasset Middle-High School does not represent a 21st Century middle and high school learning environment. The middle school program alone has been shoe-horned into a building that was based on long-outdated principles and concepts. Multiple smaller additions constructed since have only added to the disorganization and inefficiencies. Its educational deficiencies, as well as the numerous physical challenges created by its dated building systems and components, are further detailed within this study.

As a result of the professional team's evaluation and discussions with District administrators and educators, it is evident that numerous educational and physical building deficiencies exist within the current middle-high school building.

The following is a sampling of the identified deficiencies, including, but not limited to:

Cohasset Middle-High School:
Educational Deficiencies

- Undersized core classroom spaces
- Undersized auditorium space
- Undersized dining & food service
- Lack of project-based learning labs
- Lack of collaboration space
- Lack of special education space
- Lack of vocational/technology space
- Lack of MS admin./guidance space
- Lack of conference & meeting space
- Lack of outdoor educational space...

Cohasset Middle-High School:
Physical Building Deficiencies

- State building code non-compliance
- MAAB accessibility non-compliance
- Energy code non-compliance
- Inefficient site access & circulation
- Underperforming building envelope
- Deteriorating interior finishes
- Poor siting and orientation
- Building systems at end of service life
- Roof replacement required

Cohasset Public Schools

2.02 Summary - Educational Program Evaluation

Included in this study is a comparative look at space deficiencies (as compared to the MSBA guidelines) and design deficiencies (as compared to the design patterns that resonated most with administration) for all three Cohasset Public Schools.

Both the Deer Hill and Joseph Osgood Elementary Schools were determined to be "not critical" in terms of their educational program evaluations. This means that the existing facilities either include aspects of their designs that support the desired delivery of education, or they include opportunities to achieve said delivery despite their current conditions. Spaces are adequately sized and the interior environments are logically organized.

Cohasset Middle-High School

Cohasset Middle-High School was determined to be "critical" in terms of its educational program evaluation. The existing Cohasset Middle-High School building does not meet 21st Century educational standards, and the physical constraints of the existing building are an impediment to maximizing the educational possibilities for the students of Cohasset. Minor renovations and upgrades necessary to solely meet the standards and compliance of the Massachusetts State Building Code, Accessibility Code (521 CMR), International Energy Codes, and other applicable codes and regulations will not allow the District to realize the full potential of a 21st Century teaching and learning environment.

Because of the inability to meet 21st Century educational needs through minor renovations of the existing building:

> **Cohasset Middle-High School should be considered for a comprehensive renovation and addition or new construction as defined by the Massachusetts School Building Authority and its core program.**

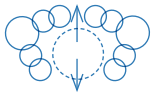
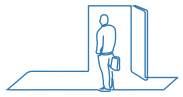
The comprehensive renovation/addition or new construction should meet all applicable codes and the educational standards as set forth by the Massachusetts School Building Authority (MSBA) as well as specific District educational requirements and vision, including the appropriate types and sizes of all learning spaces. In addition to the current compromised core educational spaces and classrooms, the supplemental and specialized programs are critical in the delivery of academic support for students.

Refer to the adjacent page for a comparison of 21st Century educational design patterns across all three Cohasset public schools.

The size and organization of core academic programs, supported by spaces for collaboration, socialization, and hands-on learning directly impact the educational delivery.

Additionally, the schools should invoke a sense of community and well-being, all the while serving as resources for the community at large.

Matrix of Design Patterns

Design Patterns	Cohasset Middle-High School	Deer Hill Elementary School	Joseph Osgood Elementary School
 Classroom Size/ Flexibility	Core academic classrooms **undersized** and lacking adequate amenities	Core academic classrooms **acceptable** in size and quantity	Core academic classrooms **acceptable** in size and quantity
 Academic Neighborhoods	Desired for middle school, but **not currently possible** given cluster of science classrooms	Building organization **amenable** to integration of academic neighborhoods	Building organization **amenable** to integration of academic neighborhoods
 Project-Based Learning Labs	HS wood shop and MS STEM classroom are only spaces; **lack integration** in academic wings, amenities, and square footage	STEM classroom appropriately sized and **opportunities** to expand art and music possible, or utilization of courtyard	**Collaboration** rooms are appropriately sized an integrated into academic wings
 Collaboration Space	There are **no spaces for collaboration** in pairs or small groups, a limited number of conference rooms, and no seminar spaces	Academic wings **lack collaboration spaces** outside the classroom, but possibility to add within courtyard	All classrooms include direct access to a **small group space** and the forum fosters interaction
 Display & Visual Connections	There are **no visual connections** to entries, corridors, into classrooms, through corridors, or to the outdoors; confusing organization	Visual connections through courtyard; could benefit from **increased visibility** into learning spaces; personalized display throughout	Visual connections to outdoors in all classrooms & corridors; personalized display/ **transparency** into shared spaces throughout
 Socialization Space	Socialization is difficult due to **overcrowding** within the social/community spaces, creating disruption and over-stimulation	Community wing and courtyard have **opportunities** for socialization; classrooms zoned for broadening social skills	Forum, open cafeteria, and group rooms available for **socialization**; classrooms zoned for broadening social skills
 Greeting & Gate-keeping	Entries are **not obvious** (especially for Middle School), limited signage, and no lobby space to accommodate multiple visitors at once	Front entry is **obvious from exterior**; administration is adjacent to entry vestibule; lobby and courtyard are welcoming	Front entry is **obvious from exterior**; administration is adjacent to entry vestibule; forum creates welcoming entry experience
 Indoor/Outdoor Spaces	Presence of **courtyards have potential** to contribute more educationally but are inaccessible and overgrown	Presence of courtyard has potential to contribute more educationally and provide an outlet/additional space for learning	Outdoor **classroom** and **gardens** at rear of school foster environmental stewardship at young age; should expand further
 Community Resources	**Auditorium** is outdated, inaccessible, small, and low-functioning; **cafeteria** is undersized and distant; **gym** is appropriately sized	Gym, media center, and cafeteria easily accessible for **after-hours use** if required, with ability to close off academic wings	Media center large/central and forum good for **community use**, but can't partition separate from core academic for after-hours
 Lifelong Health & Fitness	Gym is adequately sized; multipurpose rooms **beneficial** but not accommodating for amount of interest in health/well-being	Gym oversized and includes space for **activities** other than organized sports	Gym **undersized**, but organized sports not critical at PK-2 age
Educational Program Score (out of 6)	**1.7 - critical**	**5.0 - not critical**	**5.6 - not critical**

Cohasset Middle-High School

2.03 Summary - Physical Building Evaluation

After evaluating the physical characteristics of the building, in terms of its individual systems and disciplines, Cohasset Middle-High School is considered to be in fair condition, with evidence of its seventy-two-year-old age becoming apparent. Extensive renovation, reorganization, and upgrades to the envelope, systems, and site conditions would be required to bring the physical school up to acceptable condition.

Evaluation Results

Due to responsive upkeep and consistent maintenance practices on the part of the Facilities Department, the building is currently operational and inhabitable, appearing to be in acceptable working order on the surface. However, the building is not watertight and years of moisture infiltration have begun to impact various surfaces throughout. Degradation of interior finishes, increased humidity, and the smell of mildew are chronic issues that the Facilities Department continually works to resolve. They are also aware of prior occurrences of mold and regularly check to ensure containment and/or remediation as necessary. The instability of the interior environment has also put a strain on mechanical systems, which must work extra hard to mitigate the effects of an insufficient exterior envelope.

Numerous infractions to ADA compliance also prove a significant challenge and impede the building's overall functional performance. The current building does not offer an inclusive environment for all types of occupant abilities. Building and energy code upgrades are required, not only in terms of accessibility but also in terms of safety. This is true of many of the building systems as well, with items like emergency power, the fire alarm system, lighting controls, GFCI protection, and plumbing disposal all in violation.

Average score:
Potentially Critical

2.8

Overall Physical Building

Though the average score of the physical building overall falls within a potentially critical range, a building in critical condition would be nearly uninhabitable by comparison. The state of the Cohasset Middle-High School building can regularly receive treatments to increase its lifespan for years, but these are temporary fixes to broadreaching problems. Acceptance into the MSBA Core Program and its associated timeline, plus subsequent feasibility and construction, would align with this study's recommendation of full replacement within 4-6 years.

The following chart summarizes the results per evaluation category.

AVG. SCORE	EVALUATION CATEGORY	SUBCATEGORY	SUMMARY
1	Architectural Evaluation - Interior	Building Code/Accessibility Compliance	The building **does not meet ADA standards** and therefore, does not offer an inclusive environment for all types of student differentiation; Code upgrades of grandfathered items required for safety
1-2	Architectural Evaluation - Interior	Healthy Environment	Though issues related to noise negatively affect the educational environment, those related to **thermal health, moisture control, and air quality** should be considered highest priorities given their direct impact on occupants' health and well being
4	Architectural Evaluation - Interior	Finishes	Overall, the flooring, walls, and ceilings are in acceptable condition, with some exceptions; Replacement with products that include **Health Product Declarations** are recommended to be used for improved indoor air quality
2-3	Architectural Evaluation - Exterior	Roofing	Worn/inconsistent **flashing**, missing **seals** and gaskets at penetrations, **cracked sealants** at roof patches, unaddressed **tears** in the membrane, and major **water ponding** are potentially critical items; Replace with a more insulated roof that draws less heat
2-3	Architectural Evaluation - Exterior	Walls	Broken gutters, finish grade above foundations, poor seals, holes in masonry, deteriorating finishes, and lack of flashing **may be contributing to the air quality/ moisture control issues** felt on the interior; Failing finishes/bricks are safety hazards
3	Site Evaluation	Landscape	**Accessibility issues** common throughout site, including access to school - upgrading is necessary to avoid hazardous conditions for visitors; **Grading and drainage issues** impact functionality of site (playfields oversaturated); Replace synthetic turf
4	Site Evaluation	Civil	**Access** to and from site is currently the biggest hurdle to achieve a functional site; **Circulation** is tight, access around building is challenging, **drop-off** locations are distant from main entries; **Parking** is a major challenge on site and **wetlands** inhibit expansion
4	Structural Evaluation	Structural	All of the structural components that are visible appear to be **performing adequately**, though exterior **rusted lintels**, **cracks** in the façade, and **displaced bricks** are recommended to be repaired as part of the maintenance program
1-2	Building Systems	Mechanical	Current HVAC equipment operational, but at end of service stage; Some components of current system **no longer manufactured** - replacing individual parts not recommended; Upgrade to meet current **efficiency standards** & achieve better **humidity control**
2	Building Systems	Plumbing	Continue to **replace plumbing fixtures** with high efficiency sensor/low-flow models; Water heaters, water piping, and gas system in acceptable condition; **Booster pump** and **kitchen waste** systems are either in poor condition or require code compliance
6	Building Systems	Fire Protection	The building is **100% sprinklered**, which is compliant with current building code; Continue current practices to maintain the sprinkler system
2	Building Systems	Electrical	**Emergency power systems** need to be upgraded as these items are related to occupant safety; **BDA** and **MNS systems** are recommended for enhanced safety; Recommend upgrade all fixtures to **LED** and add **occupant/daylight sensors** to improve efficiency
3	Building Systems	Technology	Overall **technology is sufficient**, however, upgrades to clocks, PA system, and switches recommended to meet functional and operational procedures of today; Additionally, classroom **interactivity** and **voice lift systems** should be improved upon
2.8	**TOTAL PHYSICAL BUILDING EVALUATION SCORE**		**The building is potentially critical/not yet critical overall; it is operational and inhabitable, but is considered to be in fair condition - replace within 4-6 years**

Deer Hill Elementary School

2.04 Summary - Physical Building Evaluation

After evaluating the physical characteristics of the building, in terms of its individual systems and disciplines, Deer Hill Elementary School is considered to be in acceptable condition, with much less evidence of its seventy-two-year-old age than the Middle-High School.

Evaluation Results

Capital repair projects with positive results have occurred within the last five years, or are currently slated to occur, at Deer Hill Elementary School. These include the installation of a new hot water heater and new flooring within the corridors, which are already complete. Additionally, the Town bid replacement of the HVAC controls and rooftop units over the summer of 2021. These repairs are expected to occur subsequent to this study. This determination is in line with the findings of the evaluation team; note that the mechanical subcategory was the lowest performing of the criteria evaluated.

Like the mechanical system components, sprinkler heads are slated to be replaced, but this work is not yet complete, which ultimately brings the score lower.

The majority of evaluated categories fall within a recommended upgrades score range. This is because their current status is operational and not critical, but there are more energy efficient, code compliant, or healthier products available that would improve the performance of those currently in place. This is true of many of the interior finishes, like the flooring in classrooms, art, and dining, which could use to be upgraded much like the corridors are.

The interior of the building is largely compliant by code and accessibility standards. Additional efforts to bring the site up to accessibility compliance are recommended to ensure a fully inclusive campus. It is understood that accessibility improvements to the playground are already funded.

The following chart summarizes the results per evaluation category.

Average score:
Not Yet Critical

3.6

Overall Physical Building

AVG. SCORE	EVALUATION CATEGORY	SUBCATEGORY	SUMMARY
6	Architectural Evaluation - Interior	Building Code/Accessibility Compliance	The interior of the building is largely **compliant** regarding international and state building codes and by accessibility standards
4	Architectural Evaluation - Interior	Healthy Environment	Other than the pest issue, which seems to be isolated to the electric room, the building **fosters a healthy environment** for students and would benefit from supplemental acoustical treatments
4	Architectural Evaluation - Interior	Finishes	Potentially critical items are all on the surface, in the form of **flooring**, **painting**, **ceilings**, or **casework** updates; As was achieved for the corridors, these are relatively easy **capital repairs** primarily in core classrooms, art, and the cafeteria
3	Architectural Evaluation - Exterior	Roofing	The roof is operational but **requires maintenance** for improved performance; Ensuring seals are applied, membrane is secured, drains are cleared and ponding is monitored will extend the life of the roof
3	Architectural Evaluation - Exterior	Walls	The masonry is in acceptable condition and would benefit from cleaning to **remove water stains and moss**; Paint metal doors, supports, caps, lintels and any other components with rust; FRP should be washed and sealed at joints; **Maintain seals**
4	Site Evaluation	Landscape	**Inaccessible routes** are not yet critical in physical condition, but upgrading is necessary to avoid hazardous conditions for visitors; Maintenance practices of the **grounds**, **plantings**, and **play equipment** should continue
4	Site Evaluation	Civil	Options to **alleviate traffic flows** during drop-off and pick-up times should be reviewed and reconsidered; Consider repaving in areas with **broken/settled pavement**; Parking is a challenge on site and wetlands inhibit expansion
4	Structural Evaluation	Structural	All of the structural components that are visible appear to be **performing adequately**, though exterior **rusted lintels** are recommended to be repaired as part of the maintenance program; **Monitor cracks** along exterior and interior walls
1-2	Building Systems	Mechanical	Current HVAC equipment operational, but at end of service stage; Some components of current system **no longer manufactured** - replacing individual parts not recommended; Upgrade to meet current **efficiency standards**
4	Building Systems	Plumbing	Continue to **replace plumbing fixtures** with high efficiency sensor/low-flow models; Water heaters, water piping, and gas system in acceptable condition; provide **grease trap** at kitchen and **replace fixtures** in art classroom
4	Building Systems	Fire Protection	The building is **100% sprinklered**, which is compliant with current building code; Continue current practices to maintain the sprinkler system
2	Building Systems	Electrical	**Emergency power systems** need to be upgraded as these items are related to occupant safety; **BDA** and **MNS systems** are recommended for enhanced safety; Recommend upgrade all fixtures to **LED** and add **occupant/daylight sensors** to improve efficiency
3	Building Systems	Technology	Overall **technology is sufficient**, however, upgrades to clocks, PA system, and switches recommended to meet functional and operational procedures of today; Additionally, classroom **interactivity** and **voice lift systems** should be improved upon
3.6	**TOTAL PHYSICAL BUILDING EVALUATION SCORE**		**The building is not yet critical overall and would benefit from capital repairs, but is considered to be in acceptable condition - replace within 7-10 years**

Joseph Osgood Elementary School

2.05 Summary - Physical Building Evaluation

After evaluating the physical characteristics of the building, in terms of its individual systems and disciplines, Joseph Osgood Elementary School is considered to be in good condition, performing adequately for a building of twenty-four years old.

Evaluation Results

The Joseph Osgood Elementary School scored high in terms of its interior. It is largely compliant by code and accessibility standards and the original finishes appear to have held up well for the previous two decades. The overall environment is pleasant and inclusive.

Additional efforts to bring the site up to accessibility compliance are recommended to ensure a fully inclusive campus. It is understood that accessibility improvements to the playground are already funded.

Building systems are performing adequately, though electrical system upgrades are necessary to meet current codes. Similarly, sprinkler heads are slated to be replaced due to a recall, and this work is not yet complete, which brings the score lower. Future capital investitures should acknowledge that higher-efficiency plumbing and mechanical options are available in today's market, so upgrades would contibute to a reduction in the building's energy use. Additionally, the building is well-sited for photovoltaic panels along the southern facing asphalt roof, if that is deemed desirable.

At the exterior, windows are the least performing elements of the current building, including many that are fogged due to seal failures. The composite panels are becoming unsightly due to weather and wear. Replacement of these in total is something to be considered and is relatively easy to perform. Both the EPDM roof and asphalt shingle roofs are at a phase where replacements would be more cost-effective than chronic repairs.

With continued maintenance practices and thoughtful replacements overtime, the building should be expected to perform satisfactorily for at least another decade.

The following chart summarizes the results per evaluation category.

Average score:
Recommended Upgrades

4.2

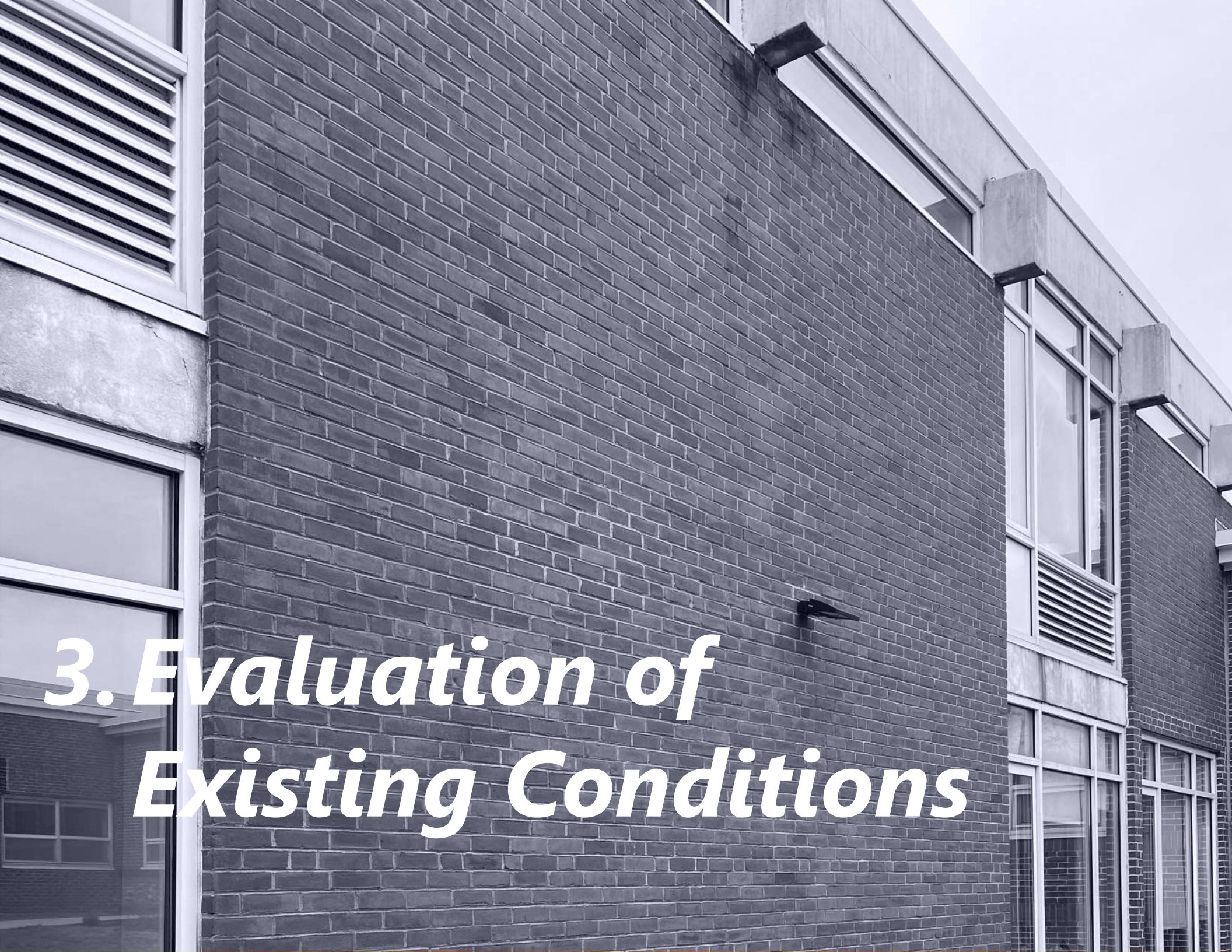
Overall Physical Building

AVG. SCORE	EVALUATION CATEGORY	SUBCATEGORY	SUMMARY
6	Architectural Evaluation - Interior	Building Code/Accessibility Compliance	The interior of the Joseph Osgood Elementary School building is largely **compliant** with building codes and by accessibility standards.
6	Architectural Evaluation - Interior	Healthy Environment	The interior environment is **satisfactory** for its occupants
6	Architectural Evaluation - Interior	Finishes	The interior finishes are in **good condition**
3	Architectural Evaluation - Exterior	Roofing	Consider replacement of asphalt shingle roofs with standing seam instead, to alleviate consistent **shingle replacement**; Continue to review and repair seams at EPDM and monitor ponding, if any; Replace oxidized flashing/accessories
2	Architectural Evaluation - Exterior	Walls	Windows are in **poor condition** and should be replaced; Consider removal of the **composite panels** and replacement with all new, for a cohesive look, or another product, like aluminum composite or wood, for a face lift
4	Site Evaluation	Landscape	**Inaccessible routes** are not yet critical in physical condition, but upgrading is necessary to avoid hazardous conditions for visitors; Maintenance practices of the **grounds**, **plantings**, and **play equipment** should continue
4	Site Evaluation	Civil	Options to **alleviate traffic flows** during drop-off and pick-up times should be reviewed and reconsidered; Consider repaving in areas with **broken/settled pavement**
6	Structural Evaluation	Structural	All of the structural components that are visible appear to be **performing adequately**
2-3	Building Systems	Mechanical	Current HVAC equipment operational, but at end of service stage; Some components of current system **no longer manufactured** - replacing individual parts not recommended; Upgrade to meet current **efficiency standards**
6	Building Systems	Plumbing	Continue to **replace plumbing fixtures** with high efficiency sensor/low-flow models; Water heaters, water piping, and gas system in acceptable condition
4	Building Systems	Fire Protection	The building is **100% sprinklered**, which is compliant with current building code; Continue replacement of **recalled sprinkler heads**
3	Building Systems	Electrical	**BDA** and **MNS systems** are recommended for enhanced safety; Recommend upgrading all fixtures to **LED** and add **occupant/daylight sensors** to improve efficiency
3	Building Systems	Technology	Overall **technology is sufficient**, however, upgrades to clocks, PA system, and switches recommended to meet functional and operational procedures of today; Additionally, classroom **interactivity** and **voice lift systems** should be improved upon
4.2	**TOTAL PHYSICAL BUILDING EVALUATION SCORE**		**The building is not critical overall and would benefit from recommended upgrades, but is considered to be in good condition - replace in 10+ years**

Cohasset Public Schools

2.06 Capital Replacement/Repair Analysis

Text



3. Evaluation of Existing Conditions

Cohasset Middle-High School

3.01 Overview

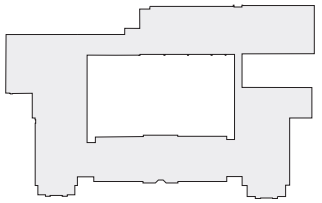
Cohasset High School was first constructed in 1950, serving as the only public high school in the Town. At that time, it was considered a junior/senior school and built to accommodate grades 7-12. The Deer Hill Elementary School was constructed in the same year to serve grades 3-6. The original Joseph Osgood School, serving grades K-2, was the building used today as the public library. When the new Joseph Osgood School was built in 1998 TO SERVE PK-2, the sixth grade moved up to the junior/senior school, which became Cohasset Middle-High School.

Building History

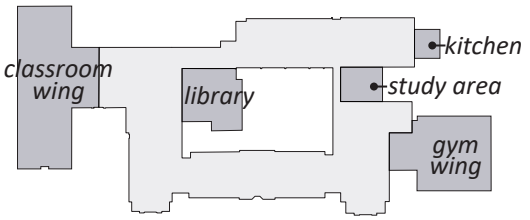
The original building was a low-rise brick structure typical of post-war American school architecture. It included a central main entrance with symmetrical facade that wrapped a courtyard. The signage at this central entrance still reads "Cohasset High School," though it no longer serves as the main entrance or singularly as a high school. The building has undergone a series of modifications since its original construction. The 1960s was a period of growing enrollment throughout U.S. elementary and secondary public schools, as many relocated to suburban areas following World War II. In an effort to accommodate the growth felt in Cohasset, the first series of additions were constructed in 1966 and included a new classroom wing, library, gym, kitchen extension, and study area. The floor level of the new classroom wing was set a half-story lower than the existing first floor level.

In 2001, the second series of additions was constructed. This involved demolishing the library and gym additions of 1966, and instead building a larger gym with locker rooms in the rear of the school. Science classrooms were added onto the 1966 classroom wing and the resulting mass created a second enclosed courtyard. Additionally, a new library was built within the original courtyard. Other than orienting the original construction parallel to Pond Street, orientation in relation to daylighting was not taken into consideration when additions were constructed.

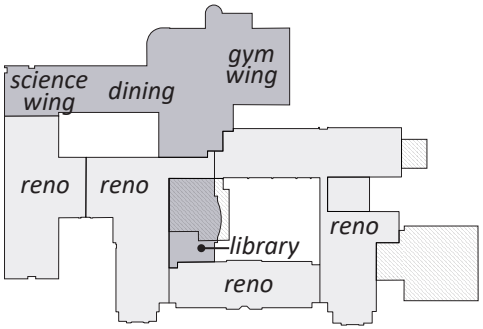
The current seventy-two year old building is a sprawling footprint with a mix of masses. Differing roof levels make maintaining the roofs challenging and differing floor levels make universal access impossible. Lack of orientation has caused uncomfortable interior environments and disorientation for those unfamiliar with the layout. The result is an inefficient and unorganized "Frankenstein" building, as coined by students and staff.



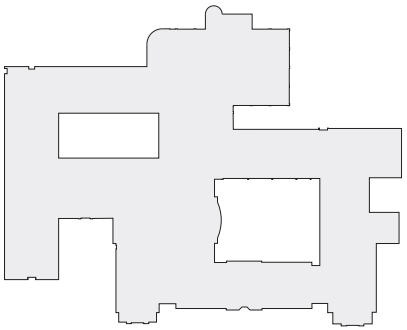
1950 construction



1966 additions



2001 additions/renovations



2022 current footprint

addition
demolish

3.02 Architectural Evaluation - Interior

The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building for code/accessibility compliance, interior finishes, exterior envelope, thermal health, and acoustics, among other categories.

The term "grandfathered" means that an existing building does not have to comply with a current zoning or building code because it was legally built before the application of such code.

The grandfathered rule does not apply to situations that are unsafe. Items deemed unsafe have been identified in this study and require immediate attention.

Building Code/Accessibility Compliance

Aspects of the Cohasset Middle-High School building that do not comply with current building code (IBC 2015 & MA State Building Code 780 CMR) or accessibility standards (MAAB 521 CMR) are prevalent throughout. Though these instances would have been permissible at the time of initial construction, a term known as "grandfathered," they would have to be addressed if a project's construction cost exceeded 30% of the building's assessed value. They would also require attention if their condition posed a hazard to occupant use.

Requirements for handicap accessibility in building planning and design were non-existent in when this building was originally designed. However, on January 26, 1992, the Department of Justice implemented Title III of the Americans with Disabilities Act (ADA) into Public Law. This legislation "prohibits discrimination on the basis of disability by private entities in places of public accommodation." The legislation requires all new places of public accommodation, including schools, to be readily accessible to and usable by persons with disabilities upon design and construction. Disabled persons may include students with a permanent handicap condition, students that are temporarily disabled from athletic activity, and parents, staff, or other visitors that could have any form of disability.

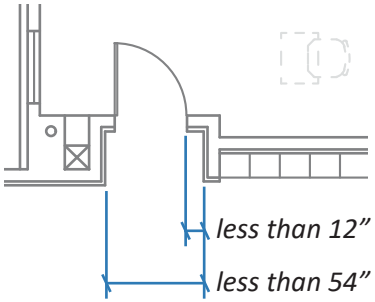
Additionally, on September 1, 1996, the Commonwealth of Massachusetts developed its own accessibility regulations: 521 CMR Architectural Access Board, which in some instances is more restrictive than ADA guidelines. The ADA and AAB regularly update and amend their regulations.

Based on these regulations, the following are examples within Cohasset Middle-High School that were found to be in non-compliance or not accessible to the disabled. Each of the inaccessible features listed has an impact on the ability of disabled students or members of the community to access various spaces throughout the school independently. Any future plans should incorporate as many items as possible to accommodate disabled people to the fullest extent possible.

Push/Pull Clearance at Doorways

Doorways into classrooms that were part of the original 1954 construction are not compliant with push/pull clearances required today per MAAB 521 CMR. Push/pull clearances allow an occupant to open a door without the risk of getting hit by the door if another occupant was coming from the other side. All entries into classrooms require clear floor space adjacent to the latch side of the door for entry and exit.

For front approach, the pull side clearance is required to be no less than 18 inches and the push side clearance should be no less than 12 inches. On average, the push side clearance for the existing non-compliant doors is only 8 inches on average, and less in some instances.

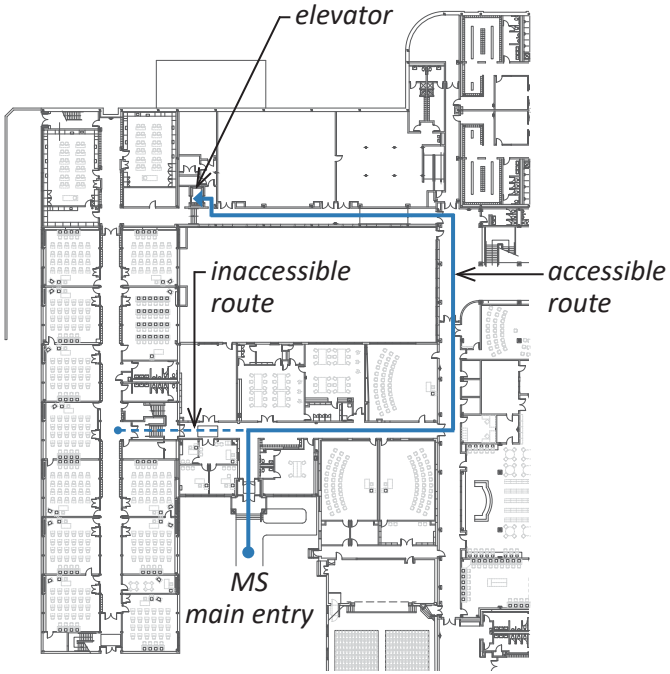


Stairs & Railings

Due to a history of building additions at different floor levels, stairs and ramps are used to connect the additions back to the original construction. However, various building code issues with stairs and railings exist, such as:

- Non-uniform riser heights within the same set of stairs
- Stringers impeding travel
- Handrail heights not consistent
- Handrails that stop short of the full length of ramps
- Handrails that do not extend at least one tread plus one foot beyond the last step
- No secondary handrails (recommended for schools)
- Spacing between balusters greater than 4-inches on center
- Inadequate clear space between handrail and wall/guardrail
- Guardrails not high enough

Additionally, stairs within corridors to connect half-floor levels do not support universal access or comply with ADA standards. As a result, occupants who require elevator or ramp usage are inconvenienced. For example, a student who enters through the middle-school main entry, but is unable to use the stairs and needs to access the classroom wing, would have to travel around the middle-school courtyard to the opposite corridor for elevator access.

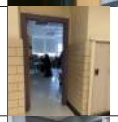


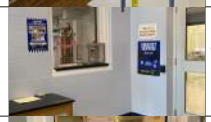
Protruding Objects

Objects protruding from walls along an accessible route pose a hazard to the visually impaired. Fire Department Valve Boxes and drinking fountains are observed examples. These would either need to be replaced with recessed versions, be mounted above 27-inches and protrude less than 4-inches, or include enclosures that return to the floor.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Code	Accessibility Compliance	Core Academic	Platform in HS Language Labs creates accessibility issues		Remove platform
5	Code	Accessibility Compliance	Core Academic	MS science classrooms require at least one ADA sink		Replace one sink with accessible sink
5	Code	Accessibility Compliance	Core Academic	HS science classrooms require at least one ADA sink		Replace one sink with accessible sink
5	Code	Building Code Compliance	Core Academic	General classroom only accessible from within the egress stair; life safety issue per MA State Building Code 780 CMR		Provide a second doorway or cease use of classroom
5	Code	Accessibility Compliance	Core Academic	Doors into HS classrooms and toilet rooms do not meet push/pull clearance requirements (doors into MS rooms do)		Increase width of doorway (approx. 30 locations)
5	Code	Accessibility Compliance	Guidance	Doors into guidance do not meet push/pull clearance requirements		Increase width of doorway (2 locations)
5	Code	Building Code Compliance	Corridors	Protruding objects mounted higher than 27 inches must protrude less than 4 inches into the accessible route		Recess objects or replace w/ a 4” or less option

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Code	Accessibility Compliance	Corridors	Entry into MS academic wing is not ADA accessible; elevator required		Provide lift closer to entry
5	Code	Building Code Compliance	Corridors	A barrier should be provided at the end of egress stairs to prohibit entering beneath the stair; head height issue		Provide barrier/ railing
5	Code	Building Code Compliance	Corridors	Stairs to district admin do not meet code regarding stair width, handrail terminations, and landing depths		Reconsider access route to District Admin from HS
5	Code	Accessibility Compliance	Corridors	Handrail at stairs between MS levels varies in height between 34 inches and 38.5 inches (38 inches is max.)		Replace handrails
5	Code	Accessibility Compliance	MS Administration	Receiving window at MS Admin entry is too high to meet accessibility requirements		Provide taller window at lower elevation
5	Code	Accessibility Compliance	HS Administration	Receiving window at HS Admin entry is too high to meet accessibility requirements		Provide taller window at lower elevation
5	Code	Accessibility Compliance	HS Administration	Handrails at HS entry do not extend the full length of the ramp		Replace handrails
5	Code	Accessibility Compliance	HS Administration	Landing required at end of ramp for doors; ramp appears to start at doors		Replace ramp or move doors further out
5	Code	Accessibility Compliance	HS Administration	Access to elevator buttons does not comply with side approach clearances		Relocate buttons
5	Code	Accessibility Compliance	Music	Auditorium seating lacks appropriate accommodations for wheelchair patrons		Remove seats to accommodate wheelchairs
5	Code	Accessibility Compliance	Music	Auditorium access from within the school includes steps not compliant with ADA accessibility		Remove step, provide landing, modify ramp

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Code	Accessibility Compliance	Music	Built-in casework impedes allowable push/pull clearance at entry		Remove casework
5	Code	Accessibility Compliance	Other	No accessible sink in gang toilet rooms		Provide an accessible sink in all toilet rooms
5	Code	Accessibility Compliance	Corridors	Handrail at corridor outside of the PE multipurpose room does not fall within the allowable 34-38 inch height range		Replace handrail
5	Code	Accessibility Compliance	Corridors	Stringer at corridor outside PE impedes clear floor space to access the elevator; tripping hazard		Cut portion of stringer impeding travel
5	Code	Accessibility Compliance	Corridors	There is no accessible route to the courtyard, without stairs		Provide a ramp instead of stairs
5	Code	Accessibility Compliance	Corridors	Handrail does not meet clear space requirements between the handrail and the wall (521 CMR 27.4.7)		Replace handrail
1	Code	Building Code Compliance	Core Academic	Rooms greater than 250 sf and used as classrooms should have at least one window (2 MS science rooms do not)		Provide a window to the exterior

Average score:
Code Required Upgrade

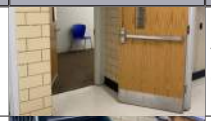
5

Building Code/Accessibility Compliance *(for items not impacting safety)*

Critical Items

Note that items were listed as a score of “5” to indicate that they are not currently in conformance with building codes or standards, but will have to be addressed if substantial renovation were to be pursued.

Items that were permissible at the time of construction, but now pose a hazard to the safety or well being of the occupants are considered critical with a score of "1" and require attention as such. Examples of existing conditions that could lead to harmful situations are included as follows and are recommended to be resolved.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Code	Building Code Compliance	Corridors	Full-swing corridor doors impede clear space into adjacent rooms		Move doorway further into corridor
1	Code	Building Code Compliance	Corridors	Full-swing corridor doors impede clear space of the accessible route from egress stairs; could create a bottleneck during an emergency egress situation		Move doorway further into corridor
1	Code	Building Code Compliance	Corridors	Riser heights at stairs between middle school levels do not have dimensional uniformity (IBC 1009.4.4). Tripping hazard		Remove and replace with new stair
1	Code	Building Code Compliance	Corridors	Spacing between balusters at egress stairs are greater than 4-inches on center		Replace railing
1	Code	Building Code Compliance	Corridors	Spacing between balusters at middle school corridor stairs are greater than 4-inches on center		Replace railing
1	Code	Building Code Compliance	Corridors	Main stair within the lobby requires a central rail due to its greater than 6-foot width		Add center rail
1	Code	Building Code Compliance	Corridors	A lack of storage space has resulted in items being stored within corridors/stairwells; safety hazard		Remove stored items from stairs and access routes

Summary

Not all Code and/or ADA infractions were included in the evaluation log, but the obvious presence of many prove enough to impact the functional performance of the school.

Given the age of the original construction and additions performed in the 1960s, the building does not meet ADA standards and therefore, does not offer an inclusive environment for all types of student differentiation.

Average score:
Critical

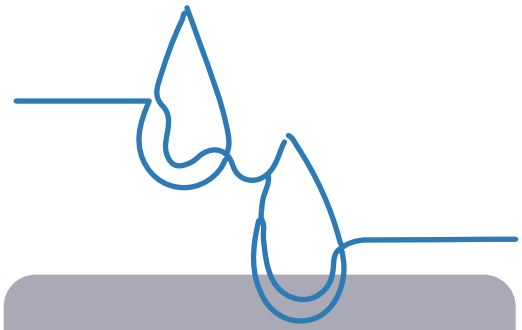
1

Building Code/Accessibility Compliance *(for items impacting safety)*

Interior Environment & Health

Health and safety within a building is not limited to prescribed code. According to the Harvard T.H. Chan School of Public Health, there are nine "foundations" of a healthy building that contribute to the overall well being of its occupants. These foundations are important because studies have consistently shown that a healthy building yields reduced illness, reduced absenteeism, higher productivity, higher test scores for students, and greater workplace satisfaction amongst teachers and staff.

Thermal health, moisture control, air quality, water quality, and ventilation are all foundations that are greatly controlled by adequate mechanical, electrical, and plumbing systems. Deficiencies with these systems are more specifically reported in later portions of this study, however, those affecting the interior environment have been included with the architectural evaluation as their impact is broad reaching. Safety and security is reported separately. The following provides specific instances where these foundations are not currently being met.



"The 9 Foundations of a Healthy Building" according to the T.H. Chan School of Public Health:

- Thermal Health
- Moisture Control
- Air Quality
- Ventilation
- Dust and Pests
- Safety and Security
- Water Quality
- Noise
- Lighting and Views

Thermal Health

Thermal health encompasses comfort standards related to temperature and humidity. There is a lack of thermal control within the existing Cohasset Middle-High School building. In conversations with facilities and administrative staff, it was reported that the occupants have suffered from poor building conditioning on many occasions. In the warmer weather, the building has become so hot that students have been dismissed early. Southern and western oriented windows have had to be permanently covered up due to excessive heat gain. Conversely, occupants in classrooms without windows are unable to garner natural ventilation. There is no air conditioning anywhere in the building and, if anywhere, would be beneficial in the Nurse suites. In the high school corridors, acoustic ceiling tiles were removed and replaced with open grid tiles to better condition the plenum space; a temporary fix to a greater underlying problem.

The building suffers from humidification also. Interior finishes were reported to have deformed from failed adhesives after existing in an overly humid environment for years. There is a lack of destratification fans or dehumidifiers, which would improve the existing environment.

Moisture Control

Due to the building's humid environment, any moisture that has infiltrated from failures in the exterior envelope has lingered. In some locations, particularly spaces with carpeting (like the auditorium and language labs), this has caused a dampness and odor. Standing moisture can lead to mold or air quality issues over time, if not in existence already.

It was reported that moisture issues coincide with seasonal changes; for example, snowmelt has resulted in a greater quantity of leaks. Leaks have manifested in stained ceiling tiles within the interior, of which the facilities department regularly replaces.

Noise, Lighting and Views

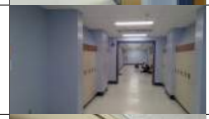
In an educational environment, issues of noise intrusion can negatively impact a student's ability to learn or communicate. Often times, additional soft surface treatments to the walls, ceilings, or floors improve the acoustics within a space.

The conflagration of additions to the existing building resulted in a non-axial organization, which can feel disorienting due to the lack of connections to the exterior.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Healthy Environment	Moisture	Core Academic	Condensation trapped in windows without seals/from excessive humidity; common in second floor MS classrooms		Provide seals at windows without
1	Healthy Environment	Moisture Control	Core Academic	MS science classroom ceiling tiles include evidence of mold where water has infiltrated above		Remediate all mold and replace tiles

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Healthy Environment	Thermal Health	Core Academic	MS Language Lab has a musty, damp smell that may be a result of water infiltration		Provide dehumidification; replace finishes
6	Healthy Environment	Lighting & Views	Core Academic	Lighting appears to be updated and in acceptable condition throughout		No action necessary
1	Healthy Environment	Ventilation	Core Academic	Unit ventilators not equipped with sound insulation and not protected from freezing; flaps usually left open		Check that flaps are operable and controlled
1	Healthy Environment	Thermal Health	Corridors	Ceiling tiles removed and replaced with open tiles to condition the plenum space to resolve a bigger issue with pipes		Resolve issue w/ pipes and return tiles to ceiling
3	Healthy Environment	Moisture Control	Corridors	Condensation from excessive humidity trapped in vaulted roof without seals		Provide seal
1	Healthy Environment	Moisture Control	Corridors	Leaks in ceilings reported to be prevalent during seasonal changes		Resolve roof leak issues beyond ceilings
1	Healthy Environment	Moisture Control	Corridors	MS corridor outside of first floor bathrooms has leaked from ceiling onto floor, resulting in stained tiles		Resolve roof leak issues beyond ceilings
4	Healthy Environment	Lighting & Views	Corridors	Most academic corridors lack views to the outdoors and include limited natural daylight		Remove lockers where possible to open views
1	Healthy Environment	Dust & Pests	Corridors	Exterior door to rear of school has no seal and evidence of birds inhabiting drop ceiling		Provide seal
4	Healthy Environment	Noise	Music	MS and HS band classrooms adjacent and extremely loud		Provide more acoustic treatments
2	Healthy Environment	Moisture Control	Music	Foundation walls beneath Auditorium wet; lack of waterproofing/insulation; creates damp smell in Auditorium above		Provide insulation and/or damp proofing

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Healthy Environment	Thermal Health	Music	Uninsulated pipes beneath Auditorium		Provide insulation
4	Healthy Environment	Noise	Music	Auditorium lacks acoustic treatment; source of noise for HS academic wing when in use		Provide more acoustic treatments
4	Healthy Environment	Noise	Media Center	TV Studio within the Media Center requires more acoustic treatment to prevent noise infiltration		Provide more acoustic treatments
2	Healthy Environment	Moisture Control	Physical Education	History of ceiling ductwork leaking; resolution important to avoid damage to athletic flooring		Replace failing seals at ductwork
2	Healthy Environment	Air Quality	Vocations	Wood shop requires improved ventilation and exhaust systems		Provide proper ventilation
1	Healthy Environment	Moisture Control	Other	Flooding prevalent in main electric room and mechanical spaces, especially around boilers		Provide exterior water proofing; direct water away

Summary

Though issues related to noise negatively affect the educational environment, those related to thermal health, moisture control, and air quality should be considered highest priorities given their direct impact on occupants' health and well being. Additionally, these issues are most likely results of greater problems related to the building's overall envelope, many of which are listed later in this study.

Failure to improve the interior environment may result in poor occupant health and well being.

Average score:
Critical/Potentially Critical

1-2

Healthy Environment

Interior Finishes

Interior finishes encompass all the natural and synthetic materials/devices used to cover the inhabitable environment of a building, ultimately enhancing its service and aesthetic qualities.

The Facilities Department for Cohasset Public Schools regularly maintains paint, cleanliness, and superficial repairs to the building's interior so much so that, on the surface, Cohasset Middle-High School appears as though a renovation in the near future is not required. However, these maintenance procedures protect just that: what's on the surface. The greater issues with the building exist within its systems and organization. Though the flooring, walls, and ceilings are acceptable in most locations, that is not to say that the environment is healthy, safe, functional, organized, or operating as required. Overtime, these greater underlying issues have manifested on the finishes - as stains or cracks - and the Facilities Department has diligently replaced them.

Building products, including paints, furnishings, and carpets, have historically contributed to indoor air pollution which has a negative impact on occupant well-being.

In 2010, Health Product Declarations (HPDs) began accompanying products to allow for full disclosure on what exactly is being used in the built environment, including the potential for impacts on human and environmental health.

Products in place prior to HPDs are recommended to be phased out and replaced with those that meet the standard.

Flooring

Most of the flooring throughout is white vinyl composition tile, or VCT. This is prevalent in all core classrooms and corridors. Additionally, there is navy-colored rubber flooring with a raised profile on stairs and ramps. Broadloom carpet exists in the administration spaces, media center, language labs, and auditorium. The auditorium vestibule is the only location with terrazzo flooring.

Science classrooms, the cafeteria, and corridor locations where leaks above occurred were the locations most in need of future floor replacement due to cracking and gaps between tiles greater than 1/8-inch. Carpets in the language labs and auditorium that have an odor due to moisture infiltration are recommended to be replaced.

Walls

The corridors are painted CMU block, either with an additional glazed-tile wainscot (primarily in the high school wings), or scored (primarily in the middle-school wings). Classroom walls are primarily CMU as well. Though CMU has a high fire-resistance rating, it does not allow for electrical or plumbing, etc., to be placed within it, which is why conduits and receptacles

are surface-mounted on classroom walls. This is not ideal for rooms where teaching wall or display space is critical. Some locations include 6-inch diameter pipes along the surface of walls or conduit runs from floor to ceiling that aren't surface-mounted at all, but in the middle of a classroom. Additionally, hollow CMU walls do not meet the recommended sound transmission class, STC, rating for core academic spaces.

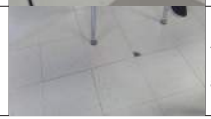
Lockers line the walls of main academic wings, though it has been reported by administration that the high school stopped assigning lockers to students due to a lack of interest and the maintenance required to fix them throughout the school year.

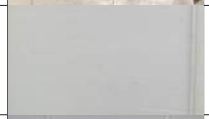
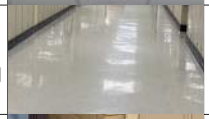
Ceilings

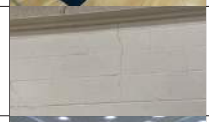
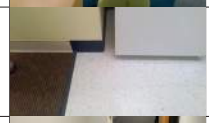
2x2 acoustic ceiling tiles, or ACT, are common in almost all spaces within the school. Overtime, these tend to sag within their grids. Replacement of stained tiles from leaks above is a common maintenance practice throughout the building. ACT ceiling have good acoustic quality for learning spaces, though those intended for music would benefit from additional ceiling cloud treatments to control sound.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Interior Finishes	Flooring	Core Academic	Typical MS classroom vinyl composition tile in acceptable condition		Continue maintenance practices
2	Interior Finishes	Flooring	Core Academic	Typical MS science classroom vinyl composition tile in poor condition with gaps greater than 1/16-inch		Replace broken tiles and monitor gaps

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Interior Finishes	Flooring	Core Academic	Typical HS classroom vinyl composition tile in acceptable condition		Continue maintenance practices
1	Interior Finishes	Flooring	Core Academic	HS science prep room vinyl composition tile in bad condition		Replace flooring
6	Interior Finishes	Walls	Core Academic	Typical CMU block walls in MS and HS classrooms in acceptable condition; high fire resistance rating		Continue painting and maintenance practices
3	Interior Finishes	Ceilings	Core Academic	Typical acoustic ceiling tiles in MS and HS classrooms in acceptable condition w/ exception of stained tiles; some sagging		Continue to replace stained/ sagging tiles
6	Interior Finishes	Flooring	Corridors	Typical corridor vinyl composition tile in acceptable condition; limited locations with cracking, which should be monitored		Continue maintenance practices
3	Interior Finishes	Flooring	Corridors	Rubber base in corridors that is losing adhesion from the wall should be replaced		Replace rubber base or adhere
4	Interior Finishes	Walls	Corridors	Typical CMU block walls in corridors in acceptable conditions, w/ exception of cracks at some intersections		Continue painting; monitor cracking
3	Interior Finishes	Ceilings	Corridors	Typical acoustic ceiling tiles in corridors are in acceptable condition w/ exception of stained tiles and open grid tiles		Continue to replace stained tiles
2	Interior Finishes	Flooring	Dining & Food service	Flooring in dining and senior cafe areas in fair condition w/ signs of fissures/ cracking		Monitor cracking; eventually replace
3	Interior Finishes	Flooring	Music	Carpeting in auditorium in acceptable condition, but given mildew smell replacement should be considered		Improve interior environment/ moisture control
2	Interior Finishes	Flooring	Music	Stage framing in auditorium in poor condition w/ detached boards		Replace wood around stage

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Interior Finishes	Ceiling	Music	Acoustic ceiling tiles in auditorium in fair condition; appear to be sagging, plus lighting inadequate for performances		Replace sagging tiles
6	Interior Finishes	Flooring	Physical Education	Wood athletic flooring in gym is in acceptable condition; no curling or cracking evident		Continue maintenance practices
2	Interior Finishes	Walls	Physical Education	CMU in gym cracking in intervals of approx. 8-12 feet from second level height downward		Monitor cracking and repair when greater than 1/8"
6	Interior Finishes	Flooring/Walls/Ceiling	Media Center	Media Center finishes in good condition due to recent renovation		Continue maintenance practices
6	Interior Finishes	Flooring/Walls/Ceiling	HS Administration	Painted walls, acoustic ceiling tile and carpeting in good condition; painting occurred summer 2021		Continue maintenance practices
6	Interior Finishes	Flooring/Walls/Ceiling	District Administration	Painted walls, acoustic ceiling tile and carpeting in good condition; painting occurred summer 2021		

Summary

Overall, the flooring, walls, and ceilings are in acceptable condition. Science classroom flooring and ceilings should be replaced. Carpets in language labs and the auditorium are also recommended to be replaced. Replacement with products that include Health Product Declarations are recommended to be used for improved indoor air quality.

Additional aesthetic upgrades to flooring and walls with supplemental acoustic treatments are recommended to enhance the learning environment.

Average score:
Recommended Upgrade

4

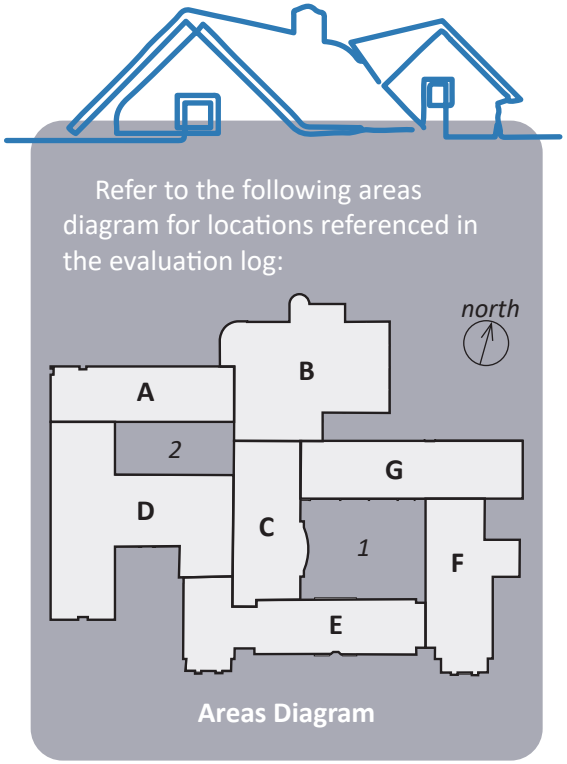
Interior Finishes

3.03 Architectural Evaluation - Exterior

The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building exterior, specifically the roof and walls/windows/doors.

Roofing

The roofs of all areas of Cohasset Middle-High School are adhered EPDM (ethylene propylene diene monomer rubber), with the exception of Area B which additionally includes a 1:1 sloped parapet with asphalt shingles. All EPDM roofs were installed during the 2001 addition projects, with the asphalt roof being part of the gymnasium addition in the same year.



Areas Diagram

EPDM roof manufacturers typically warranty their roof systems for 20 years and asphalt shingle warranties typically span 20-25 years. Adequately venting the roof system improves its life expectancy, however adequate ventilation for the asphalt roof was not observed at the school. Instead, moss was growing on the shingles which indicates moisture infiltration underneath that propagated.

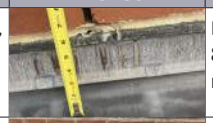
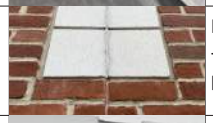
Since installation of the roofs in 2001, the Massachusetts State Energy Code has since raised the minimum requirements for insulating roofs. A new, low-slope roof today would have a minimum of two layers of 2.5-inch polyiso insulation plus the tapered insulation required to properly drain, achieving at least an R-value of 30. The 2001 EPDM roofs only included one layer of 3-inch insulation. This, combined with the black color of the EPDM roofs are most likely contributing to the heat gain felt in the interior that is exacerbated during warmer temperatures. A white or light-gray colored roof is common in low-slope roof construction today.

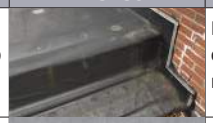
Ponding water is considered water that has remained for forty-eight hours or longer. The evaluation did not persist longer than this time period, but water was observed to be present on the roofs. It is recommended that the facilities department check the roofs within three days of any rain or snow event to determine if major ponding is a persistent issue.

Evaluation Log

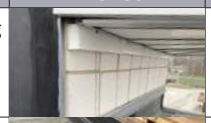
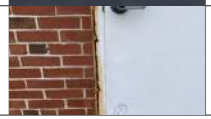
The following log was used during the site visit to record items of note as related to roofing. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Exterior Envelope	Building Code Compliance	Area B	Three-tab shingles fallen and growing moss (IBC 1507.3.3.3 - High wind attachment & IBC 1511; see NCRA Roofing Manual Ch. 5 for reroofing)		Remove and replace shingles; ensure venting
4	Exterior Envelope	Roofing	Area B, Area C	Patch sealant at roof patches is cracking		Repair patch sealant
1	Exterior Envelope	Roofing	Area B	Snow guards are beginning to fail and pop off roof		Repair snow guards
1	Exterior Envelope	Roofing	Area B	Tear in the EPDM roof has caused water infiltration under membrane, diminishing roof life; leak might have caused interior damage within building		Repair tear in EPDM
4	Exterior Envelope	Roofing	Area B, Area G, Courtyard 1, 2	Roof gutters are in acceptable condition with minor vegetation growth; gutters in courtyards need securement		Clean/inspect gutters annually
5	Exterior Envelope	Building Code Compliance	Area B	The only roof access is from a lift inside gym; may have been acceptable when constructed (IBC 1011.12)		Provide roof access ladder at exterior
5	Exterior Envelope	Building Code Compliance	Area B, Area A	Roof Hatch undersized and too close to edge w/out safety rails; (IBC 1011.12.2, 1015.6) RTUs w/in 10-feet of roof edge also require safety railings		Add safety railings
4	Exterior Envelope	Roofing	Area B	Walk pads are recommended on all roofs to provide additional protection from foot traffic and maintenance activities		Add walk pads
1	Exterior Envelope	Roofing	Area D	Roof ladder masonry anchors in poor condition; ladder can be reinstalled with proper anchors		Remove ladder and patch masonry units
4	Exterior Envelope	Roofing	Area D	Roof hatch does not shut properly and has an obstructed path		Repair recommended for access
1	Exterior Envelope	Thermal/Moisture Protection	Area D	Thru-wall flashing heavily oxidized/bent in numerous locations, contributing to moisture build up and leaks; repair flashing to avoid leaks		Repair flashing to avoid leaks

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Exterior Envelope	Thermal/Moisture Protection	Area D, Area F	Flashing elevation varies; "grandfathered" condition, but thru-wall flashing/ roofing membrane edge install recommended 8-inches above surface		Reinstall flashing 8-inches above roof
2	Exterior Envelope	Masonry	Area D, Area E, Area C, Area G	Bricks cracked + mortar joints in fair condition w/ minor spalling; risk of freezing w/in cracks which can lead to more cracking or falling bricks		Retool mortar joints + replace cracked bricks
3	Exterior Envelope	Thermal/Moisture Protection	Area D	Window sealant is cracking; sealant should be replaced to avoid water infiltration.		Replace sealant
2	Exterior Envelope	Roofing	Area D, Area C	EPDM roof patches are peeling around edges		Adhere EPDM patches
3	Exterior Envelope	Masonry	Area D	Brick control joint sealant cracking which; sealant should be replaced to avoid water infiltration		Maintain sealant + replace periodically
3	Exterior Envelope	Masonry	Area D, Area F, Area E	Brick façade damage due to water spilling from roof scupper; scupper flashing cracking		Remove stains from brick using vinegar brush
2	Exterior Envelope	Roofing	Area D	Expansion joint sinking into expansion joint cavity; tie-in point along the eastern wall has been patched against brick; moisture can travel under the roofing membrane through the masonry		Reset expansion joint
1	Exterior Envelope	Thermal/Moisture Protection	Area D, Area F	Thru-wall flashing at roof edge damaged; holes in flashing can result in water build up and infiltration inside		Replace flashing
5	Exterior Envelope	Building Code Compliance	Area D	Roof access ladder does not have cage or means for fall protection to be attached; verify height is to determine if cage or fall arest system satisfies code		Provide fall protection if required
2	Exterior Envelope	Thermal/Moisture Protection	Area D	Sealant is cracking and should be replaced; sealant is a maintenance item that should be reapplied periodically		Maintain sealant + replace periodically
3	Exterior Envelope	Thermal/Moisture Protection	Area D	Oil canning of roof transition flashing; occurs when sheet metal is installed w/out ability to expand/ contract freely		Ensure flashing not adhered directly to membrane

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Exterior Envelope	Thermal/Moisture Protection	Area D, Area C	No thru-wall flashing; further investigation to determine if another means present to wick built-up moisture to the exterior of the wall cavity		Investigate source of moisture mitigation
4	Exterior Envelope	Finishes	Area D	Stucco finish is in poor condition; moisture can work its way behind finish and cause further damage		Investigate source of finish failure
2	Exterior Envelope	Roofing	Area D	There is major water ponding; further investigation is required to determine cause of ponding		Investigate source of ponding
2	Exterior Envelope	Windows	Area D	Window sealant is cracking and glazing gaskets do not extend the length of the glazing		Replace glazing gaskets
2	Exterior Envelope	Masonry	Area D, Area E, Area C, Area A	Brick weeps missing or missing vents (weeps relieve moisture build up in the wall cavity); can cause mold or can freeze leading to further damage		Replace brick weeps
1	Exterior Envelope	Masonry	Area D	Brick separating, causing failed mortar joints (joint sealant was used to repair previously); risk of freezing w/in cracks which can lead to more cracking or falling bricks		Retool mortar joints w/ flexible mortar
1	Exterior Envelope	Masonry	Area D, Area G	Exposed masonry lintel rusted and flaking; further investigation to determine severity and what is being supported by lintel		Remove rust, wire brush, and paint lintels
4	Exterior Envelope	Roofing	Area D, Area B	Roof drains have some build up around grate		Ensure drains clear
3	Exterior Envelope	Roofing	Area D, Area E	The dunnage supporting various HVAC units is unprotected and deteriorating; re-levelling of units required following repair		Protect dunnage
3	Exterior Envelope	Thermal/Moisture Protection	Area D, Area E	Pipe boots are in acceptable condition but sealant around the pipes is cracking		Replace sealant around penetrations
4	Exterior Envelope	Roofing	Area E, Area C, Area G, Area F	There is major water ponding; further investigation is required to determine cause of ponding		Investigate source of ponding

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Exterior Envelope	Thermal/Moisture Protection	Area E, Area A, Area G, Area F	Thru-wall flashing heavily oxidized/bent in numerous locations, contributing to moisture build up and leaks; repair flashing to avoid leaks		Repair flashing to avoid leaks
1	Exterior Envelope	Roofing	Area E	Soft areas of roof present; decaying material or presence of moisture are possible causes - further investigation required		Investigate source of soft roof
4	Exterior Envelope	Masonry	Area E	Roof material dripped on brick (may have occurred during installation of roof); does not appear to have any impact on the masonry		Remove material from brick
4	Exterior Envelope	Roofing	Area E, Area A, Area F	There is conduit laid directly on the roof + CMU to hold siren pole; products laid directly on roofing membrane can lead to holes		Raise conduit & siren pole from roof
3	Exterior Envelope	Roofing	Area E, Area B	Cheek wall where EPDM membrane turns up wall does not appear to have insulation; investigate whether thermal barrier compromised		Investigate presence of insulation
4	Exterior Envelope	Masonry	Area E, Area F	Brick damaged from what appears to be a roof ladder pulling out		Re-install roof ladder
2	Exterior Envelope	Roofing	Area E	Pitch pockets are cracking; may be a source of moisture infiltration		Replace pitch pockets
2	Exterior Envelope	Windows	Area C	Skylight glazing is deteriorating and gaskets are cracking; may be a source of moisture infiltration		Replace glazing and gaskets
3	Exterior Envelope	Windows	Area C, Area A	Window glazing fiberglass is deteriorating		Replace windows
2	Exterior Envelope	Windows	Area C	Penthouse window/vent in poor condition (IBC 1510 Penthouses); may be source of poor air quality		Replace window/ vent
4	Exterior Envelope	Roofing	Area C, Area A	There does not appear to be any mechanism for venting the roof; recommend further investigation to determine how roof is vented		Investigate method of venting

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Exterior Envelope	Roofing	Area C	Soffit tie-in is in poor condition; appears to be falling		Replace soffit
1	Exterior Envelope	Roofing	Area C	EPDM degraded at roof pop-up		
4	Exterior Envelope	Roofing	Area A, Area E	Roof membrane discolored; recommend further investigation to determine reason		Investigate source of discoloration
2	Exterior Envelope	Windows	Area A, Area G	Window sill flashing missing joint sealant; sealant is a maintenance item that should be reapplied periodically to avoid moisture infiltration		Provide sealant
2	Exterior Envelope	Roofing	Area A	Gutter securement in poor condition; gutter falling		Re-install gutter
4	Exterior Envelope	Roofing	Area G	Vegetation growth on roof; recommend determining cause (roof may not be draining properly)		Remove vegetation; adjust slope of roof
1	Exterior Envelope	Masonry	Area F	Roof access door corroded and in poor condition		Replace door; retool joints around door

Summary

Worn and inconsistent thru-wall flashing, missing seals and gaskets at penetrations, cracked sealants at roof patches, unaddressed tears in the membrane, and major water ponding are potentially critical items when considering the negative impact they could have on the interior environment if unaddressed.

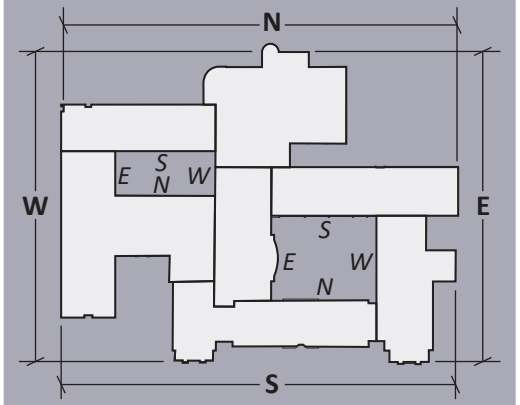
Replacing with a more insulated roof system that draws less heat would be beneficial. Ensure that the roofing membrane is carried up adjacent walls at least 8-inches and includes adequate flashing to prevent moisture infiltration to the interior environment.

Average score:
Potentially/Not Yet Critical

2-3

Roofing

Refer to the following elevations diagram for locations referenced in the evaluation log:



Elevations Diagram

Exterior Walls

The exterior wall is primarily brick, but of different compositions depending on the year of construction. The 2001 additions were constructed with a brick veneer cavity system on CMU back-up. In this system, an air gap between the face brick and insulation helps to allow moisture absorbed through the brick to evaporate or weep out before entering the building. A vapor barrier was provided on the warm side of the insulation, which is the correct method to accommodate Cohasset's coastal, New England climate. Other than maintenance typical of an exterior brick wall system, like replacing seals around openings, removing stains, and repointing every twenty years, the 2001 brick wall system is in acceptable condition.

The original brick wall system does not include a cavity to drain excess moisture or continuous insulation for thermal control. The prevalence of weeps as required today is inconclusive. It is assumed that the 1950 system includes a waterproof membrane between the brick and CMU back-up, as shown in the 1966 construction documents. This composition is problematic. Without continuous insulation, the exterior wall will feel cold. When warm, moist air comes into contact with the cold surface (exterior masonry), the excess moisture in the air condenses because cold air can’t hold as much moisture as the warmer surrounding air. The waterproof membrane does not allow moisture to weep from the inside out, so instead, it condenses, making the interior environment feel damp or staining/warping finishes.

The evaluation of the interior of the building reported issues with high humidity and condensation build-up, especially in the high school classrooms which are located in the original construction portion. Based on the composition of the exterior wall, coupled with other means that allow moisture in (like holes, broken or cracked seals, and missing mortar), it is not surprising that the interior has incurred moisture problems. Given the age of the original building, too, these issues have been allowed to permeate under the surface for many years.

Doors & Windows

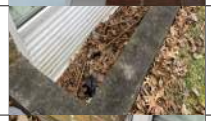
Most of the painted doors appeared to be chipping and the overhead doors weren't entirely operable. Doors were also missing seals and weatherstripping.

Other than brick, the gym addition includes translucent panels, which are constructed very similarly to windows. The 2001 addition/renovations appear to have installed aluminum-framed, double-pane, insulated glass windows which are durable and energy efficient. Note the condensation issues would not be from the windows themselves, but from the wall system deficiencies. Reapplying sealant around all windows would also be recommended. Rusted lintels that are staining window trims should be cleaned and repainted to avoid permanent damage to the window frames.

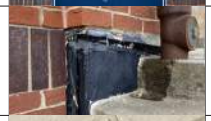
Evaluation Log

The following log was used during the site visit to record items of note as related to the exterior walls, soffits, doors and windows. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Exterior Envelope	Masonry	East, South, North (Courtyard 1, 2)	Brick is in acceptable condition, but weathered with evidence of water stains; typically around entire building perimeter		Remove stains from brick using vinegar brush
2	Exterior Envelope	Thermal/Moisture Protection	East, South, West, North (Courtyard 1, 2)	Mortar and sealant around louvers, windows, and penetrations in poor condition; cracked		Replace sealant around openings
3	Exterior Envelope	Masonry	East, North (Courtyard 1, 2)	Control joint sealant in poor condition; cracked (allows for movement, but wouldn't want pests/ moisture to enter through poor seam)		Replace control joint sealant
4	Exterior Envelope	Masonry	South (Courtyard 1)	Hole in masonry leaves wall susceptible to pests and moisture; recommended to patch		Repair hole in masonry
1	Exterior Envelope	Masonry	South, North, East (Courtyard 1, 2)	Lintels above openings (doors/windows/louvers) corroding and in fair condition		Remove rust, wire brush, and paint lintels
2	Exterior Envelope	Masonry	South (Courtyard 1, 2)	Brick mortar in fair condition; requires repointing and retooling		Repoint mortar joints

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Exterior Envelope	Masonry	South, North (Courtyard 1, 2)	Seal gaps in walls to avoid pest/moisture infiltration		Seal gaps
1	Exterior Envelope	Building Code Compliance	East (Courtyard 1)	Door unable to open full 90-degrees without catching on the floor; serious safety issue. Additionally, not ADA compliant		Remove slab and replace
3	Exterior Envelope	Finishes	South, West (Courtyard 1)	Stucco is in poor condition; chipped and falling		Reapply stucco finish
4	Exterior Envelope	Building Code Compliance	West (Courtyard 1)	Window wells require guards (IBC 1015). Additionally, wells full of leaves/debris which impedes efficiency of louver		Clean wells and provide guards
3	Exterior Envelope	Foundations	West (Courtyard 1)	Window well retaining walls cracked; impedes structural integrity of wall		Fill cracks
4	Exterior Envelope	Masonry	West (Courtyard 1), South	Patched brick areas should be investigated to determine if air/vapor barrier was damaged		Investigate patched areas
1	Exterior Envelope	Foundations	North (Courtyard 2)	Foundation missing at corner, leaving brick fully supported by steel angle, which is at risk of corrosion due to exposure		Reinforce corner
2	Exterior Envelope	Windows	North (Courtyard 2)	Insulated spandrel panels in curtainwalls in poor condition		Replace curtainwall spandrels
2	Exterior Envelope	Masonry	East (Courtyard 2), South	Brick weeps missing; weeps relieve moisture build up in the wall cavity. Trapped moisture can cause mold or can freeze leading to further damage		Replace brick weeps
1	Exterior Envelope	Finishes	North (Courtyard 2)	Soffit above courtyard entry in poor condition; mold growth and failing securement. Soffit in danger of falling		Replace soffit
3	Exterior Envelope	Walls	East (Courtyard 2), West	Abandoned electrical back box should be removed and patched to avoid pest/moisture infiltration		Remove/patch opening

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Exterior Envelope	Miscellaneous	East (Courtyard 2)	Grates bulkheads and louvers are in poor condition		Replace grates
2	Exterior Envelope	Masonry	South, West	Brick mortar in fair condition; requires repointing and retooling		Repoint mortar joints
4	Exterior Envelope	Masonry	South	Hole in masonry leaves wall susceptible to pests and moisture; recommended to patch		Repair hole in masonry
4	Exterior Envelope	Finishes	South, West	Soffit above doors #2, #25, and #28 unfinished with patches; paint finish in poor condition. Soffit above loading dock similar		Repaint soffit
1	Exterior Envelope	Masonry	South, North, West	Lintels above openings (doors/windows/louvers) corroding and in fair condition		Remove rust, wire brush, and paint lintels
4	Exterior Envelope	Finishes	East, West, South	Painted stucco in fair to poor condition		Remove chipped stucco and repair
2	Exterior Envelope	Doors	East	Overhead door #6 in poor condition; not weather tight, cables prevent closure, finish damaged, door jambs rusted		Replace overhead door(s)
2	Exterior Envelope	Windows	East, West	Window sealant is cracking and glazing gaskets do not extend the length of the glazing		Install glazing gaskets
1	Exterior Envelope	Thermal/Moisture Protection	East, North, South	No thru-wall flashing; further investigation to determine if another means present to wick built-up moisture to the exterior of the wall cavity		Investigate source of moisture mitigation
4	Exterior Envelope	Wall	East	Exposed steel at top of foundation, below brick façade, is in poor condition; rusted and pitted		Investigate purpose of steel
3	Exterior Envelope	Masonry	North, West	Control joint sealant in poor condition; cracked (allows for movement, but wouldn't want pests/ moisture to enter through poor seam)		Replace control joint sealant

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
4	Exterior Envelope	Windows	North, East	Window accessories and some precast sills missing, which help to shed water and protect seals; locations with blocking exposed have develop		Install accessories
3	Exterior Envelope	Masonry	East, South, West	Mortar and sealant around louvers, windows, and penetrations in poor condition; cracked		Replace sealant around openings
3	Exterior Envelope	Thermal/Moisture Protection	East, North	Gutter downspouts are missing or damaged and range from fair to poor condition; inadequate water run-off has stained bricks		Repair/replace downspouts
2	Exterior Envelope	Doors	East, North	Doors #11, #16, #18, #19 are in fair condition; paint chipping and hardware appears to be broken		Replace doors
2	Exterior Envelope	Thermal/Moisture Protection	East, North, West	Foundation waterproofing is in poor condition; joints only 2-3 inches overlapped & should not be exposed; sealant degraded		Replace sealant
4	Exterior Envelope	Masonry	South	Precast and brick joints separating and in fair condition; grout to avoid displacement		Apply mortar to gaps
4	Exterior Envelope	Masonry	South	Canopy support anchor is tied into cracked brick that is in fair condition; recommend review of structural integrity of canopy		Evaluate integrity of canopy

Average score:
Potentially/Not Yet Critical

2-3

Exterior Walls

Summary

Broken gutters, portions of finish grade above foundations, poor seals around penetrations, holes in masonry, deteriorating exterior finishes (stucco), and lack of thru-wall flashing at the original construction may all be contributing to the air quality/moisture control issues felt on the interior of the building. Failing finishes and loose bricks are considered safety hazards.

Review the exterior annually for areas impeding water tightness. Provide seals and patch mortar as necessary.

3.04 Site Evaluation - Landscape

The following site evaluation was completed by Traverse Landscape Architects.

Pedestrian & Bicycle Access

There is currently limited accessible pedestrian access to the site from Pond Street. The most eastern access path stops prior to connection to Pond Street. There is pedestrian access route up the main drive but, the route is not accessible. Students are currently moving across the site from Bancroft Way on the stadium field with no path or walkway. There is limited bike parking on the site.

The upper approach to the stairs from the main entrance to administration currently does not meet the 5% walk ADA codes. There are areas along the east main entrance where the sidewalks, stairs and landings are setting +1/2" creating trip hazards.

The main entrance to the high school is hidden behind a large planter making a clear view for security difficult. Additionally, the main entrance to the high school is difficult to identify.

Athletic & Recreation Fields

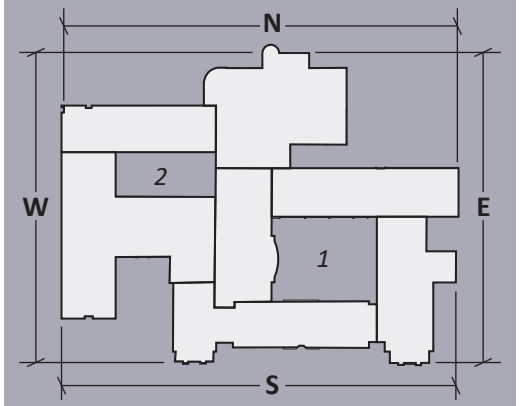
There is no ADA accessible route to the upper natural grass fields other than through the building. There is no ADA accessible route to the lower natural grass field. Accessible access to the stadium bleachers should be addressed. Replacement of the press box with ADA access should be addressed.

The upper field is holding water and has limited drainage capacity. The irrigation system is not operating correctly on the upper field leaving crop circles on the field and creating inconsistent growing patterns. The irrigation system is not operating correctly on the lower field leaving crop circles on the field and creating inconsistent growing patterns. Synthetic turf field and track have reached their expected life and need to be replaced.

Landscape

There is a fair amount of old growth trees on site with older limbs that should be pruned. Major focus should be given to the areas that overhang vehicles and pedestrian paths.

Refer to the following elevations diagram for locations referenced in the evaluation log:



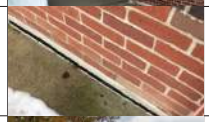
Orientation Diagram


BRIARWOOD LANE
BANCROFT WAY
CLAY SPRING ROAD
POND STREET
WOODLAND DRIVE
Site Constraints Diagram Legend
Property Line
50' Wetland setbacks
100' Wetland setbacks
Wetlands
1% Annual Chance of Flood
Slope Constraints

There is areas along the high school and middle school entrance where the landscape should be pruned and trimmed to create safe secure access.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Landscape	Accessibility Compliance	Site - East	Exterior walk leading to stairs at Administration exceeds the 5% ADA Compliance		Replace stairs and walkway with accessible path
4	Landscape	Accessibility Compliance	Site - South	ADA accessibe ramps not plowed leaving no ADA access to the building		Maintain ramps during weather events
1	Landscape	Site Circulation	Site - South	The main entrance to the high school is hidden behind high walls creating a visual security concern at the front entrance		Consider removing walls
2	Landscape	Site Circulation	Site - East	Stairs/walks leading to athletic fields are settling creating a location for water infiltration		Direct water away from walkways
5	Landscape	Accessibility Compliance	Site - East	The lower athletic field is not accessible by ADA standards		Provide accessible route
5	Landscape	Accessibility Compliance	Site - North	The only accessible route to the upper athletic fields is through the building; ADA access should be provided on site		Provide accessible route
5	Landscape	Accessibility Compliance	Site - East	Sidewalks do not extend to Pond Street, eliminating pedestrian ADA access from the east		Provide accessible route

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Landscape	Accessibility Compliance	Site - South	Main entrance walk from Pond Street does not meet ADA compliance		Continue sidewalk access
2	Landscape	Plantings	Site - Perimeter	There a number of trees/shrubs that pose a potential hazard and should be pruned or removed		Prune plantings
5	Landscape	Accessibility Compliance	Site - Perimeter	There are areas around the school where the pedestrian pavement has settled beyond 1/2-inch; not ADA compliant		Provide additional drainage
1	Landscape	Grading & Drainage	Site - North	The upper field is currently not draining appropriately and during very wet periods is unusable		Provide additional drainage
1	Landscape	Athletic Fields	Site - East	Synthetic turf field is compacted and showing signs of fiber failure		Replace synthetic turf
3	Landscape	Athletic Fields	Site - East, North	Both upper and lower athletic fields could use an upgrade of the irrigation system		Upgrade irrigation system
2	Landscape	Site Circulation	Site - East	There is currently pedestrian access across the existing synthetic turf from Bancroft Way		Evaluate current drop-off and pedestrian access

Average score:
Necessary, Not Yet Critical

3

Site - Landscape

Summary

Accessibility issues are common throughout the site, including access to the school. The building and recreation spaces should be universally accessible. These routes would have been in place prior to ADA standards, and are not yet critical in physical condition, but upgrading is necessary to avoid hazardous conditions for visitors.

Grading and drainage are also issues impacting the functionality of the site. Playfields are often oversaturated and unusable throughout the year. The synthetic turf requires replacement.

3.05 Site Evaluation - Civil

The following site evaluation was completed by The Vertex Companies. Vertex reviewed the natural environment, roadways, vehicular and pedestrian circulation, and utilities.

Natural Environment

Topography

A review of record documents shows an approximately 50-foot change in elevation from the rear of the school to the elevations in the street. The majority of the site slopes from north to south. Smaller portions of the site slope to either the east or the west.

Soils

Based on information from the NRCS, Newport silt loam is expected to be the predominant soil on the site. A well-drained soil with no evidence of high-water table is expected. Further geotechnical investigation must be performed prior to a design process.

Wetlands

Available record documents indicate that bordering vegetated wetlands are located in the southeast corner of the parcel with buffer zones extending onto the property. No site features are constructed within the wetlands, however, underground utilities, paved driveways and parking areas, portions of the athletic amenities, and incidental site grading are all located within the buffer zones.

Rare Species & Cultural Resources

Information regarding rare species was obtained from the MassGIS Rare Species and Priority Habitat data layer showing data recorded by the NHESP in the State Registry. Review of this information indicates that there are no areas of Estimated or Priority Habitat are mapped on or in the vicinity of the site.

The existing Cohasset Middle and High School building is located on approximately 20.7 acres of land owned by the Town of Cohasset.

The building is accessible via two (2) two-way driveways from Pond Street.

The site is furnished with three paved parking areas, paved driveways, athletic fields, landscaping surrounding the building, and sidewalk access from parking areas and Pond Street.

Existing Conditions Site Evaluation

Roadways and Parking Area Conditions

Paved surfaces throughout the site are in poor condition. Rutting, alligator cracking, and potholes are found in driveways and parking areas. There are also signs of settled in paved areas and sidewalks. Multiple manholes and catch basins show signs of settlement resulting in depressed rim elevations and pavement cracks adjacent to the structures. Sidewalks have settled at various locations throughout the site causing them to pull away from buildings and crack. Settlement of paved surfaces is an indication of poor compaction beneath the surface layer, poor subbase material, and/or high groundwater.

Parking

During onsite investigations, parking areas were observed to be full and cars were parked in unmarked parking spaces. This condition indicated a lack of available onsite parking spaces. In an effort to provide additional onsite parking, the school has striping parking spaces in the turnaround loop at the rear of the school.

Loading Dock

The loading dock is located in the northwest portion of the building and is accessed via a 24-ft wide paved driveway. The access drive to the dock connects to the driveway at a 90-degree angle with a 30-ft radius on the north side and a lesser radius on the south side. This configuration provides inadequate access for the reverse turn movements of larger vehicles. The wooden guardrail across from the loading dock area is damaged from larger vehicles attempting to negotiate the turn movement.

Site Circulation and Access

As previously described, site access is provided via two curb cuts on Pond Street. The western curb cut provides access to the main entrance and the parking areas in front of the Middle School and is lined with angled parking spaces. The eastern curb cut provides access to the main parking area and the rear turnaround loop behind the school building.

Bus Drop-Off/Pickup

Six (6) buses are used by the school. Buses use the western curb cut during pickup and drop off. While the loop provides adequate space for the buses, bus queues impede access to the angled parking along the driveway and the parking area in front of the Middle School.

Parent Drop-off/Pickup

School Administration reports that bus use has reduced and more students are dropped off and picked up by parents. Parent drop-off and pickup occurs at the rear turnaround which is accessed by the eastern curb cut. The driveway and loop provides inadequate queuing capacity and School Administration reports that cars queue on Pond Street from the driveway to the railroad tracks approximately 2,500-ft away. In response to tthis condition, some students are dropped off on Briarwood Lane, a residential neighborhood street, and walk from the street across the athletic field to the school. The long queue lines and activity on Briarwood present vehicular and pedestrian safety issues.

Challenges with student drop-off and pickup could potentially be relieved by the addition of a loop road around the school, however, the wetlands areas limit the ability to expand at the site.

Utilities

The existing conditions utility information has been gathered from record plans provided by the school.

Sewer

The Middle School and High School portions of the building each have a six (6) inch sewer service. These services connect to nine (9) inch onsite sewer pipes before connecting to the nine (9) inch sewer pipe found in Pond Street. No known issues exist with the onsite site sewer pipes or structures, however, an ejector station is located adjacent to the eastern driveway. Ejector stations require maintenance and repairs from qualified professionals.

Water

Water service is provided via a single 12-inch water main extending from the water line located in Pond Street. No known issues existing with the water system.

Drainage

Onsite stormwater flows are captured in a closed drainage system consisting of catch basins and manholes. Stormwater is captured and directed to either a subsurface detention system in the southwest corner of the site or a discharge point in the eastern portion of the site. The subsurface system overflows to the drainage system in Pond Street and the eastern discharge point directs flows to the wetland area. Stormwater treatment is provided by Stormceptor treatment units. The existing stormwater systems were implemented per plans prepared in 2001 which is after the passing of the Wetlands Protection Act and creation of the Stormwater Management Standards, however, the record documents do not indicate compliance with applicable regulations. There are no known stormwater management issues on the property.

Gas

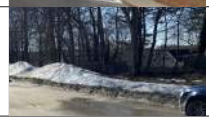
A gas service extending from Pond Street to the main entrance provides service to the school. There are no known exterior gas issues.

Electric

Electric service is provided from a utility pole located in Sohier Street. There are no known exterior electrical issues.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Civil	Site Circulation	Site	Paved surfaces are in poor condition throughout the site		Repave drives
4	Civil	Utilities	Site	Multiple manholes and catch basins show signs of settling, resulting in depressed rim and pavement cracks around structures		Repave drives
4	Civil	Parking	Site	Cars are parked throughout the site including in unmarked areas indicating an inadequate amount of parking spaces		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Loading dock is difficult to access for larger vehicles; guardrail across from the loading dock in damaged		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Queue length for parent drop off/pick up is insufficient; vehicles queue for long distances along Pond Street		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Drop off/pick up ingress and egress occur through the same curb cut. Access to the main parking area is also through this curb cut.		Reconsider parking/ circulation
4	Civil	Site Constraints	Site	Wetlands in the eastern portion of the site constrain the ability to add additional parking and access points		Reconsider parking/ circulation

Summary

Access to and from the site is currently the biggest hurdle to achieve a functional site. Circulation is tight and does not circle the entire school, making access from one side of the site to the other challenging. Drop-off locations are distant from main entries. Parking is also a major challenge on site.

The location of the building in relation to the site is not ideal for functional access. Site constraints such as wetlands make extension of parking or circulation areas difficult.

Average score:
Recommended Upgrade

4

Site - Civil

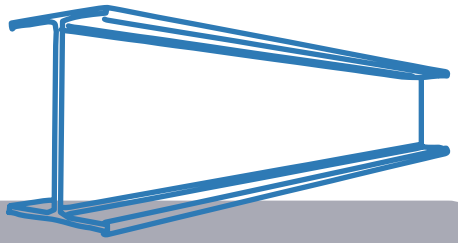
3.06 Structural Evaluation

The following structural evaluation was completed by Engineers Design Group (EDG) Inc. EDG evaluated the structural integrity of the existing Cohasset Middle-High School building.

Basis of Evaluation

This report was based on visual observations during an initial site visit on January 28, 2022 and review of the available documents prepared by Strekalovsky & Hoit, Inc. from their renovations to the school in 2001.

Drawings of the original construction or previous addition or renovations to the school were not available for our review. During the visit we did not remove any finishes or take measurements; so, our understanding of the structure is limited.



Construction of the original 1950's middle-high school building is consistent with school design of its era, which consisted of orthogonal, low-rise structures of brick and concrete masonry units with horizontal ribbon windows or storefront inserts.

Concrete crawl spaces were also common, such is the case beneath the present-day auditorium.

Overall Structural Description

Cohasset Middle-High School is essentially a one and two story structure with a partial basement and several subterranean utility tunnels below the first floor slab on grade. In 2001, the school was renovated extensively and new Science Rooms, Cafeteria, Locker Rooms, Field House, Music Spaces and Library were added to the original school.

The existing school is a complex of connected one and two story steel, concrete and masonry structures with two interior courtyards. The partial basement and majority of the first floor is a concrete slab on grade. There is a large unexcavated crawl space below the Auditorium structure. The supported slab over the basement and the crawl space are reinforced concrete slab supported on reinforced concrete walls and interior concrete and steel beams and columns.

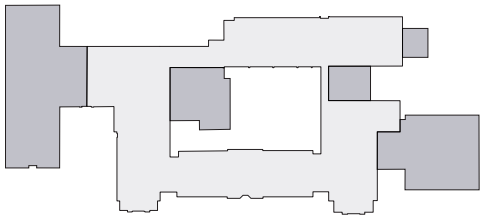
The second floor of the original structure is likely concrete slabs supported on steel beams, columns and masonry bearing walls. The second floor of the 2001 additions are concrete slabs on metal deck supported on steel beams and columns. The roof structure of the 2001 additions is metal roof deck supported on steel framing and long span open web steel joists.

Existing Conditions

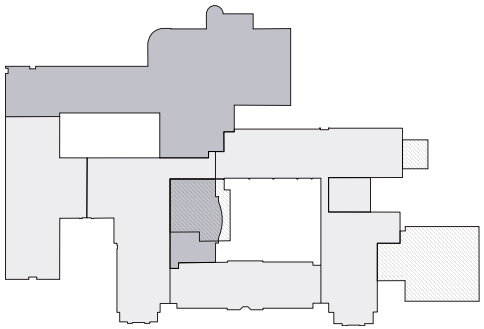
Based on our observations, the original structure is performing satisfactorily for its age. Some cracks in the interior masonry walls were observed, as well as cracks and spalls in the slab on grade at a few locations. Water stains in the ceilings at the upper level were also observed, which indicates signs of leaks from the roof. Standing water was present in portions of the basement and signs of previous flooding were also visible. The flooding may be due to a combination of a high water table and surface runoff from the outside, since portions of the basement are at the exterior grade level. There were no signs of undue vibrations on the supported floors due to footfall.

Additionally, some of the masonry walls in the original structure were clipped to the structure, but numerous masonry walls did not appear to the clipped to the structure. All the masonry walls that were constructed in 2001 are connected to the structure, per the details in the 2001 design drawings.

Most of the exterior façade appeared to be in good repair except for a few cracks at various locations. Rust was observed on exterior painted lintels above the exterior windows and doors, which has led to some displacement and cracks in the masonry. We also observed caulking failure in the control joints of the masonry at some locations, this is mainly due to the age of the joints and the caulking. We did observe areas of past repair of the façade. Though the cracks and displacement of the bricks in the façade are not a structural concern they should be repaired as part of the maintenance program. The rust on the exterior lintels should be removed and lintels wire brushed prior to painting the lintels as part of the ongoing maintenance program. No apparent signs of foundation settlement were observed.



1966 additions

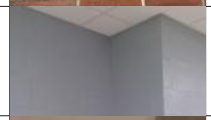


2001 additions/renovations

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Structure	Concrete	Foundations	No signs of foundation settlement		Continue maintenance practices
4	Structure	Concrete	Foundations	Small chunks of foundation walls have chipped off; not detrimental to structural integrity, but may cause moisture issues		Monitor cracks and repair
6	Structure	Concrete	Slab on grade	Slab over the crawl space supported by reinforced concrete walls, columns, and beams is in acceptable condition		Continue maintenance practices
3	Structure	Concrete	Slab on grade	Cracks and spalls present that should be filled, especially to avoid moisture infiltration; locker room an example		Fill cracks greater than 1/8" wide
4	Structure	Concrete	Slab on grade	Flooring cracking where expansion has occurred, but wasn't accounted for		Include expansion joint when replacing flooring
1	Structure	Concrete	Slab on grade	Standing water on slab can fill pores on the surface and eventually break down the concrete, causing cracks/settlement		Direct water runoff away from basement
6	Structure	Concrete	Slab above grade	No signs of undue vibrations on the supported floors		Continue maintenance practices
6	Structure	Steel	Columns	Steel columns and concrete foundation walls in basement appear to be in acceptable condition		Continue maintenance practices
6	Structure	Steel	Joists	Long span open web joists supporting gym roof structure appears to be in acceptable condition		Continue maintenance practices
6	Structure	Steel	Joists	Long span open web joists supporting cafeteria roof structure appears to be in acceptable condition		Continue maintenance practices
1	Structure	Steel	Exterior	Lintels above openings are in fair condition and require cleaning to avoid corrosion		Remove rust, wire brush, and paint lintels

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Structure	Masonry	Exterior	Caulking in masonry control joints is in poor condition and requires filling		Repair joints
2	Structure	Masonry	Exterior	Some displacement and cracks throughout (refer to architectural analysis of the exterior envelope)		Monitor cracking; repoint mortar
3	Structure	Masonry	Interior	CMU cracks observed, particularly in corridors and gymnasium		Continue painting; monitor cracking
4	Structure	Masonry	Interior	Some masonry walls from the original construction include seismic clips to structure, but most not clipped		Add seismic clips where missing
6	Structure	Masonry	Interior	Masonry walls from the 2001 additions include seismic clips to structure		Continue maintenance practices

Summary

The existing structure is performing adequately. All of the structural components that are visible appear to be performing adequately, though the exterior rusted lintels, cracks in the façade and the displaced bricks are recommended to be repaired as part of the maintenance program. There are no critical items in need of immediate attention.

The overall condition of the school is acceptable for continued use.

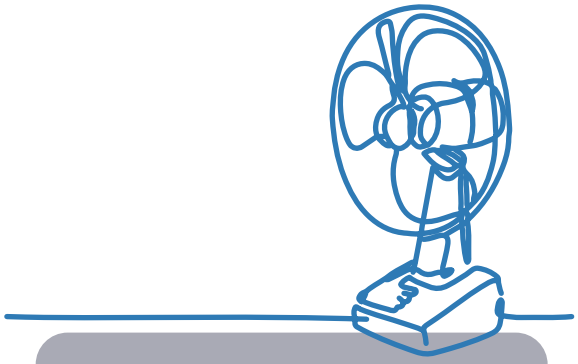
Average score:
Recommended Upgrade

4

Structure
(Primarily exterior rehabilitation)

3.07 Mechanical System Evaluation

The following mechanical system evaluation was completed by Griffith & Vary Consulting Engineers.



Unit ventilators were designed specifically for K-12 applications. For 70 or 80 years, it had been the widely accepted solution for classroom heating and cooling.

Over the past decade, the prevalence of operational and comfort problems, as well as an interest in moving away from gas powered systems for renewable energy, have caused unit ventilators to phase out of popularity.

Boiler Plant

The building is heated by three (3) gas fired cast iron section boilers. The cast iron boilers were manufactured by the Smith model 28A. Each boiler has a max input of 4,517 MBH with an output of 3,098 MBH. The boilers are equipped with Power Flame Burners model C3-G-25HBS-14. The boilers are showing their age being located in a damp and wet environment. The boiler appears to be operating as intended but are inefficient compared to today's high efficiency options. The boilers are 20 years old and are nearing the end of their service life.

The boilers provide hot water for heating to the building which is pumped by a set of pumps. The set is arranged in a primary/stand-by configuration located in the boiler room. If the primary pump was to fail the stand-by would engage. It appears that the motors on both pumps are original and are not invert rated. Variable frequency drivers were added to control pump operation but over time the none invert rated motors will fail prematurely. Overall, the pumps appear to be in fair condition and appear to have received proper maintenance, but they have outlived their useful service life.

Combustion air for the boilers is provided by a wall louver with high and low openings. The openings are fitted with motorized dampers. The dampers would open up upon a call from the boilers to fire.

Controls

The automatic temperature controls system is a combination Niagara Controls and Delta Controls. The system is a direct digital control (DDC). The Delta controls are the original controls system but due to the age of the system have become difficult to maintain and repair. End devices are obsolete and difficult to find if needed for repairs. Niagara Controls was added over the Delta Control system and only control large pieces of equipment such as the RTUs and H&Vs. Work arounds have been implemented to allow the system to work and maintain space comfort. The work arounds are more manual then automatic. The full control system needs to be replaced to get optimal operation out of the HVAC equipment.

HVAC System

Classrooms

Classrooms are heated and ventilated by classroom unit ventilators (UV). There are a combination of vertical cabinet and horizontal ceiling hung type. Outside air is supplied to the unit ventilators via wall louvers located below the windows or through roof hoods. Each unit ventilator has hot water coil, filters, outside/return air dampers and supply fans. Valves and damper actuators are DDC. The classroom unit ventilators were manufactured by America Air Filter (AAF). The unit appear to be in good working order however are nearing their useful service life.

There are a few classroom unit ventilators that were fitted with DX coil for cooling. The UV is paired with a remote air-cooled condenser. The condensers are beginning to fail. The condensers utilize R-22 which has been phased out of manufacturing since 2010. The system can still be serviced from existing R-22 stock but cost has increased over the years. The school has elected to abandon the R-22 condensers and add ductless split units in their place.

General exhaust for the classrooms is provided by a low wall exhaust grille located in each room.

Gymnasium

The gymnasium is heated and ventilated by two (2) gas fired roof mounted units manufactured by Reznor. A galvanized ductwork distribution system is used to distribute supply are throughout the gymnasium. The H&V units appears to be in rough shape but in good working order however the units are nearing the end of their useful service life.

Locker Rooms

Each locker room area is heated and ventilated by a dedicated gas fired roof mounted units manufactured by Reznor. A galvanized ductwork distribution system is used to distribute supply are throughout the locker rooms, toilet rooms, team rooms and offices. Multiple reheat coils are mounted in the ductwork to break up the H&V units into multiple climate-

controlled zones. Each reheat coil has a remote thermostat to control the operation of the reheat coil. The H&V units appears to be in rough shape but in good working order however the units nearing the end of their useful service life.

Administration

The Administration area is heated, cooled and ventilated by a single roof top. The administration is broken up into zones by the use of variable air volume (VAV) terminal boxes. The VAV boxes are equipped with reheat coils. Each VAV box will have a dedicated thermostat with will provide thermal comfort to the zone. There are nine zones. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

Auditorium

The Auditorium is heated, cooled and ventilated by a single roof top. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

Cafeteria

The cafeteria is heated and ventilated by a single roof top unit manufactured by Reznor. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

Kitchen

The kitchen is heated and ventilated by a single roof top unit manufactured by Reznor.
The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

Library

The library is heated, cooled and ventilated by a single roof top, and is broken up into zones by the use of variable air volume (VAV) terminal boxes. The VAV boxes are equipped with reheat coils. Each VAV box will have a dedicated thermostat that conditions the zone. There are 8 zones. The TV studio is serviced by the Library RTU. The tempered air is distributed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

There are two kitchen hoods over the ovens and cooking range. The hoods are equipped with dedicated upblast exhaust fans and make-up air units. The is an additional hood over a conveyor belt oven. The hood is only equipped with an upblast fan. Make-up air is from the space. The hoods are a single speed on/off operation.

Music/Band/Choral Rooms

The music/band/choral rooms are heated and ventilated by either ceiling mounted unit ventilators or wall classroom unit ventilators manufactured by AAF. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The units appear to be in good working order however are nearing the end of their useful service life.

Toilet Rooms

The toilet rooms are exhausted through a system of ceiling grilles, ductwork and roof mounted centrifugal exhaust fans. Although operational, the exhaust fans have outlived their useful service life.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Mechanical Systems	Boiler Plant	Mechanical Room	Boilers are operational and in fair condition; inefficient compared to current high efficiency options		Replace boilers
1	Mechanical Systems	Controls	Mechanical Room	Automatic Controls system is obsolete	None	Replace controls

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Mechanical Systems	Controls	Mechanical Room	End devices are failing; due to age, difficult to find replacement parts	None	Replace end devices
3	Mechanical Systems	Controls	Mechanical Room	System are manual control to maintain occupant comfort; energy consumption higher vs automatic system	None	Replace with automatic system
2	Mechanical Systems	HVAC	Roof	RTU, H&V and Condenser are nearing the end of the service life		Replace RTUs
1	Mechanical Systems	HVAC	Roof	RTU and Condensers utilizing R-22 will become difficult to repair; R-22 was phased out of manufacturing in 2010	None	Replace refrigerants
1	Mechanical Systems	HVAC	Toilet Rooms	Exhaust Fans are operational, but have outlived their useful service life	None	Replace exhaust fans
2	Mechanical Systems	HVAC	Core Academic	Unit ventilators appear to be in good working order but are nearing end of useful service life		Replace unit ventilators
2	Mechanical Systems	HVAC	Music	Ceiling-mounted unit ventilators appear to be in good working order but are nearing end of useful service life	None	Replace unit ventilators

Average score:
Critical/Potentially Critical

1-2

Mechanical Systems

Summary

Much of the current HVAC equipment is operational, but at an end of service stage and will require replacement in the short term. Some of the components of the current system are no longer manufactured, so replacing individual parts is not recommended. Upgrades to meet the current efficiency standards are recommended.

The interior environment requires better measures for humidity control.

3.08 Plumbing System Evaluation

The following plumbing system evaluation was completed by Griffith & Vary Consulting Engineers.

Water Service

The 4-inch domestic water service enters through the basement floor and connects to water meter. The backflow preventer is located at the back wall. They appear to be in good condition. The water service pressure is boosted by a packaged triplex booster pump adjacent to the water service entry to provide ample pressure for all fixtures and equipment on the upper floors. Pump number 2 was leaking on the day of site visit. Facilities dept were preparing to repair the leak. The booster pump is 21 years old and one of the pumps has started leaking. The pump may need to be replaced/ rebuilt. The pump has a life of approximately 30 years so its likely that pumps being replaced / rebuilt will last many more years.

The water feeding the science rooms are protected with backflow preventers as required by code. Also the boiler water make up water is protected with a backflow preventer.

Water Heating

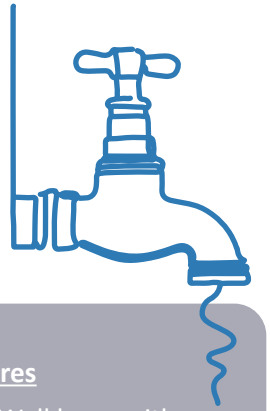
The domestic water heating is provided by a gas fired high efficiency water heater that stores water in duplex storage tanks. This water heater also feeds the 140-degree water to the kitchen equipment. Both systems are recirculated. The pumps are in good condition.

The water heaters are newer equipment and are in excellent condition. The old large horizontal hot water storage tank was not removed.

The science rooms hot water is generated by electric resistance type water heaters located in several locations to be close to each group of science rooms. It was undetermined what condition they were in during site trip.

Water Piping

In general, the water piping is in good condition and insulated. There are a couple locations in which the insulation was missing.



Plumbing Fixtures

Water closets: Wall hung with manual 1.6 gpf flush valves

Urinals: Wall hung with manual .5 gpf flush valves

Lavatories: Tap type metering faucets

Water Coolers: Single manual with sensor bottle filler- newer

Sinks: Self rimming stainless steel with variety of manual 2.0 gpm faucet types based on application

Floor drains: Nickel bronze in toilet rooms & floor sinks in kitchen

Sanitary, Lab Waste, & Storm Systems

There are several exit points for the storm and sanitary systems. Prior incident of a sanitary pipe clog was reported, which resulted in overflow of a sewer in the parking lot and standing gray water. A commercial drain company was commissioned to resolve.

Conventional roof drain collection system with an area of downspouts in sloped roof areas that are collected with gutter / downspouts to cast iron boots at grade.

Lab waste has several treatment /dilution tanks. Only viewed one that was above grade and did not seem to be operating or at least the tracking was not taking place with PH monitor. It was not determined during site visit if the chemicals being utilized in the school warranted a lab waste system. We recommend having the school put together a list of chemicals used to determine treatment if at all. This may have been completed already and why systems are shutdown.

Gas System

The gas meter is located at the front of the school building. There are pressure regulators for 2 psi system to the building. The main distribution thru the building is 2psi with local regulators set for 7" wc that services the water heaters, science rooms and kitchen. The boilers and roof tops are fed with 2 psi gas. The emergency generator is a dedicated 3 inch gas feed at 2 psi.

There were no reported issues with the gas system. It was operating satisfactorily.

Kitchen Waste

The pot sink and prep sinks have point of use grease traps to limit the grease to the main kitchen waste piping to prevent blockages.

Other kitchen equipment and floor drain waste is drained to the kitchen waste system and along with the pot and prep sink waste drain to an exterior 6000-gallon tank. The discharge drains back into the basement where it connects to the interior sanitary system and eventually to the exterior collection system.

Bringing the kitchen waste back into the building underground is not good practice as it may impact the sanitary service and shutdown both systems inside the building where its difficult to rectify.

The pot sink is provided with a disposal in one of the bays. This is a code violation as the grease trap will fill with food particle which tend to clog the trap. It is recommended that the disposal be moved to a sanitary main as required by code.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
4	Plumbing Systems	Fixtures	Toilet Rooms, etc.	Plumbing fixtures not entirely high-efficiency sensor type; upgrading will result in signifigant water/ sewer savings		Upgrade to high-efficiency fixtures
1	Plumbing Systems	Waste	Kitchen	Pot sink provided with disposal (code violation)		Disconnect disposal from pot sink
1	Plumbing Systems	Water Service	Mechanical Room	Booster pump is leaking and in poor condition		Replace Booster Pump

Summary

It appears that some of the flush valves on water closets and urinals have been replaced since with water-saving fixtures. There are some high efficiency sensor 10-year battery fixtures and trim available that would save water and be hands free.

The school has replaced the water coolers with new combination water cooler/ bottle filler fixtures in the public spaces. The fixtures available are 1.1 gpf water closets, .125 urinals, .32 gpm faucets and 1.5 gpm faucets for sinks.

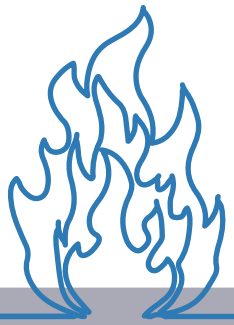
Average score:
Not Yet Critical

2

Plumbing Systems
(recommend replacing fixtures & booster pump)

3.09 Fire Protection System Evaluation

The following fire protection system evaluation was completed by Griffith & Vary Consulting Engineers.



Fire Service

An 8-inch fire service feeds the building and in good condition. A double check valve provides code required protection.

Average score:
Not Critical

6

Fire Protection System

Pipe Distribution

The building fire line distributes horizontally to feed the fire dept valves and to sprinkler flow control valves within the stairs creating multiple sprinkler zones within the building has multiple fire department valves located in the stairs on both floors. The building is 100% sprinkled with a majority of semi-recessed chrome plated quick response type pendants.

There is a mix of exposed and in-cabinet type fire dept valves.

A Fire dept Storz connection at front entry is in good condition. There is also one on level 2 in the rear of the building.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	DESCRIPTION	PHOTOS	ACTION
6	Fire Protection Systems	8-inch service that feeds building in acceptable condition		Continue maintenance practices
6	Fire Protection Systems	FD Storz connection is in acceptable condition		Continue maintenance practices

Summary

The building is 100% sprinklered, which is compliant with current building code. Continue current practices to maintain the sprinkler system.

3.10 Electrical System Evaluation

The following electrical system evaluation was completed by Griffith & Vary Consulting Engineers.

Normal Power System

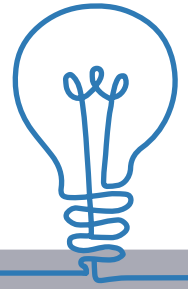
The switchboard is fed by the electric utility co. transformer via underground conduit/cabling. The switchboard rated at 2500 amps, 277/480 volt, three phase, four wire has a 2500 amp main switch and feeds panelboards and transformers located in the Main Electric Room, and throughout the building. K-rated transformers feed computer panelboards which have integral surge protection. The distribution sections of the switchboard are made up of circuit breakers. The normal power distribution is as manufactured by Cutler-Hammer. The normal power system appears to be in fair condition.

Emergency Power System

The building has a permanent 277/480 volt, three phase, four wire, 250 kW natural gas generator as manufactured by Kohler which located within a weatherproof enclosure as located on the site. A temporary generator is sitting on the site and is temporarily connected to the building automatic transfer switches as the permanent generator is in need of repairs.

The generator provides emergency power upon loss of normal utility power to emergency lighting via automatic transfer switch ATS-LS and emergency panelboards. The ATS and the emergency distribution panelboard are located in the Emergency Electric Room. There are other emergency panelboards located throughout the building and they are fed via two hour rated MI cable. ATS-LS is as manufactured by Kohler and is rated at 150 amps. The feeder from the generator to the ATS comes into the Emergency Electric Room underground.

The generator provides emergency power upon loss of normal utility power to Elevators, Kitchen equipment, the Sewage Pumps, and HVAC equipment via automatic transfer switch ATS-OS and optional standby panelboards. The ATS and the optional standby distribution panelboard are located in the Emergency Electric Room. There are other optional standby panelboards located throughout the building. ATS-OS is as manufactured by Kohler and is rated at 400 amps. The feeder from the generator to the ATS comes into the Emergency Electric Room underground.



Electric Service

The primary electric service, which originates from a riser conduit on an electric utility company pole at Pond Street, feeds the pad mounted electric utility company's transformer via underground conduit/cabling.

The transformer is located on the site. The electric utility company meter is mounted on the transformer.

The electric service appears to be in fair condition.

Deficiencies as it relates to current Codes:

- The generator is natural gas fired which according to the National Electrical Code cannot serve emergency loads as natural gas is considered to be an interruptible fuel source.
- Emergency and optional standby panelboards are required to be protected by surge suppressors.

The emergency power system appears to be in fair condition, however as described above does not meet current Codes.

Recommendations:

- A new diesel fuel generator with a sound attenuated, weatherproof enclosure is recommended to comply with the National Electrical Code.
- Surge suppressors should be provided for emergency and optional standby panelboards.

Fire Alarm

The fire alarm control panel is addressable as manufactured by Cerberus Pyrotronics. The fire alarm radio master box is located adjacent to the fire alarm control panel, with the associated antenna located on the exterior of the building. The fire alarm system consists of remote annunciators, smoke detectors, carbon monoxide detectors, heat detectors, duct smoke detectors, pull stations, magnetic door holders, strobes, and horn/strobes.

Deficiencies as it relates to current Codes:

- The building utilizes horn/strobes for notification, therefore it does not comply with the International Building Code as speaker/strobes are required to provide voice evacuation throughout the building.

The fire alarm system appears to be in fair condition, however as described above does not meet current Codes.

Recommendations:

- A new fire alarm system is recommended for the building which would include voice evacuation as required by the International Building Code.

Lighting

Interior

The interior lighting consists of a mix of fluorescent and LED lighting fixtures. Staff indicated that fluorescent lighting fixtures have been replaced with LED type with integral occupancy sensors in common areas and they are still in the process of upgrading fluorescent lighting fixtures in other areas with LED type. Exit signs provide for direction to paths of egress.

The interior fluorescent lighting fixtures appear to be in poor condition, while LED lighting fixtures appear to be in good condition.

Exterior

Lighting consists of wall mounted and pole mounted LED site lighting fixtures.

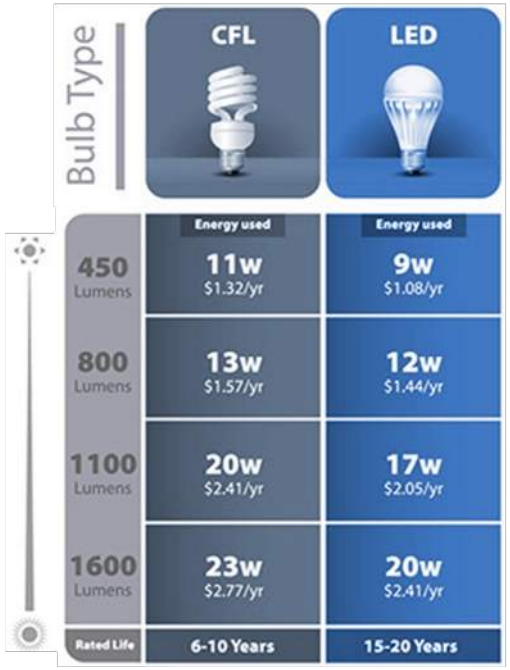
Deficiencies:

- Staff indicated that there have been complaints that the site is not sufficiently illuminated. As such, exterior lighting levels would not appear to meet IESNA Standards.

The exterior lighting appears to be in good condition.

Recommendations:

- LED site lighting should be added to supplement existing lighting to comply with IESNA Standards.



Compact Fluorescent vs. LED

Switching

Interior lighting is controlled by local wall switches, wall mounted combination switch/ occupancy sensors, wall and ceiling mounted occupancy sensors, and lighting relay control panels.

Exterior lighting is controlled by lighting relay control panel.

Deficiencies as it relates to current Codes:

- The current building switching does not meet the International Energy Conservation Code as it is Auto-On. Manual-On is required in most areas, except in Corridors, Stairs, and Toilet rooms.
- Automatic daylight harvesting is required as per the International Energy Conservation Code.

The switching appears to be in fair condition, however as described above, does not meet current Codes.

Recommendations:

- The lighting control system should be replaced with new to comply with the International Energy Conservation Code.

Receptacles

Receptacles are ground type, with some GFCI type throughout the building. Receptacles have been added over the years through the use of EMT conduit with surface boxes, tele-power poles, plugmold, and wiremold.

Deficiencies as it relates to current Codes:

- Receptacles in the Kitchen require GFCI protection where equipment plugs in via cord and plug and is either 125-250 volt single phase 150 volts or less to ground 50 amps or less, or 208 volt three phase 100 amps or less as per National Electrical Code.

Receptacles appear to be in fair condition, however as described above, Kitchen receptacles do not meet current Codes.

Recommendations:

- Receptacles in the Kitchen should be replaced with new as required by the National Electrical Code.

Lightning Protection

The building does not have a lightning protection system.

Recommendations:

- Although it not required by Code, a lightning protection system is recommended which would include air terminals on the roof with downlead conductors to ground and surge protection.

Bi-directional Amplifier System:

The building does not appear to have a bi-directional amplifier system.

Recommendations:

- A bi-directional amplifier system is probably required unless testing proves that Police and Fire Department radios have required signal levels as dictated by the International Building Code. A bi-directional amplifier system would include an amplifier and cabling above ceilings.

Wiring:

Wiring is made up of MC cabling, FA MC cabling, EMT, Rigid, and PVC conduit.

Mass Notification System:

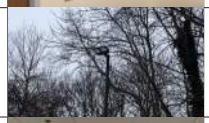
The building does not have a Mass Notification System.

Recommendations:

- Although it is not required by Code, a Mass Notification System is highly recommended for Schools. A Mass Notification System would consist of control panels, info alarm graphic annunciators and controllers, addressable speakers, and amber lens strobes.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Electrical Systems	Emergency Power	Site	A temporary generator is sitting on the site and is temporarily connected to the building automatic transfer switches		Repair broken permanent generator
1	Electrical Systems	Emergency Power	Site	The permanent generator is natural gas fired; per NEC it cannot serve emergency loads as natural gas is an interruptible fuel source		New diesel fuel generator w/ a sound attenuated enclosure rec'd.
1	Electrical Systems	Emergency Power	All	Emergency/optional standby panelboards are required to be protected by surge suppressors; grandfathered but hazardous		Provide surge suppressors
1	Electrical Systems	Building Code Compliance	All	Building utilizes horn/strobes for notification (non-compliant); speaker/ strobes are required to provide voice evacuation throughout the building		Install new fire alarm system w/ voice evacuation
4	Electrical Systems	Exterior Lighting	Site	Site not sufficiently illuminated; does not meet IESNA Standards		Add LED site lighting to comply w/ IESNA
5	Electrical Systems	Energy Conservation Code Compliance	All	The current Auto-On building switching does not meet the IECC; Manual-On is required in most areas, except in Corridors, Stairs, and Toilet rooms.		Replace lighting control system to comply w/ IECC
5	Electrical Systems	Energy Conservation Code Compliance	All	Automatic daylight harvesting is required as per the International Energy Conservation Code		Install auto daylight harvesting
1	Electrical Systems	Building Code Compliance	Kitchen	Receptacles in the Kitchen require GFCI protection where equipment plugs in via cord and plug and is either 125-250 volt single phase 150 volts or less to ground 50 amps or less, or 208 volt three phase 100 amps or less		Replace kitchen receptacles w/ new GFCI receptacles

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Electrical Systems	Electric Service	Site	Electric service (on site transformer with meter) appeas to be in fair condition		Monitor electric service
2	Electrical Systems	Normal Power	All	Normal power system (switchboard/ transformer/panelboard) appears to be in fair condition		Monitor normal power system
1	Electrical Systems	Interior Lighting	All	Interior fluorescent lighting fixtures appear to be in poor condition		Replace fixtures with LED
6	Electrical Systems	Interior Lighting	All	Interior LED lighting fixtures appear to be in acceptable condition		Continue maintenance practices
4	Electrical Systems	Lightning Protection	Roof	Lightning protection is recommended which would include air terminals on the roof with downlead conductors to ground and surge protection		Repair lightning protection
1	Electrical Systems	Building Code Compliance	All	A bi-directional amplifier system is required (unless testing proves PD & FD radios have required signal levels as dictated by the IBC)	None	Add BDA system w/ amplifier & cabling above
4	Electrical Systems	Safety & Security	All	Mass Notification System is highly recommended for schools (not req'd by code). A Mass Notification System would consist of control panels, info alarm graphic annunciators and controllers, addressable speakers, and amber lens strobes	None	Install Mass Notification System

Summary

The need to bring emergency power systems up to code establish the electrical systems as potentially critical because these items are related to occupant safety. Additionally, BDA and MNS systems are recommended for enhanced safety/security.

Upgrades to LED lighting throughout and additions of occupant and daylight sensors will improve energy efficiency.

Average score:
Potentially Critical

2

Electrical Systems

3.11 Technology Evaluation

The following technology evaluation was completed by Ai3 Architects, which retains a full-time technology consultant in house. The Cohasset Information Technology Department is responsible for managing the municipal and educational systems for the Town and school district.

Computer labs used to be the best method of technology integration within a school. They were intended to aid the development of computer use skills.

Today's students are well-versed in technology because it is already such an integral part of their lives. It is no longer a stationary activity situated in a single room.

Because of this, an ability to stay connected or use devices from anywhere within the school is important.

Network

District fiber to the schools is adequate and reliable. Internet service provided at each school is adequate and acceptable. The network cabling is a mix of Category 5e and 6, with ages between 4 to 20 years old. There is no Category 6A in the buildings, which is the typical new building standard installed in new projects. A cable infrastructure upgrade to Category 6A is recommended, to help future proof the buildings.

Most data requirements (99%) are served via wireless access points. Physical data drop locations in each room are available if required. Data service is acceptable, but not up to current design standards (multiple physical Category 6A data drops at the teacher location and at other locations in the classrooms).

Old Category 3 analog/digital phone cabling has been abandoned, as a newer VoIP phone system and data cabling (category 6) has been installed for phone locations.

Switches

Switches are a mix of Dell and HP 48 port. Most are 5-7 years old, and are reliable and acceptable. Older switches are end of life and are scheduled to be replaced in 2022.

Phone System

The phone system is an up to date 4 year old Mitel VoIP system that is reliable and acceptable.

Public Address System

The PS system was replaced in 2019, however the cabling was not replaced. As such, intermittent issues remain at certain locations, and more independent zones would be

beneficial. This would require recalling the PA system from the rack to the speakers. Volume adjustments have been an issue, with one end of a speaker chain too loud, and the volume too low at the far end. There are no emergency call buttons installed in the buildings. Typical PA installations in newer buildings include emergency call buttons in each classroom as a second means of communication from the classroom to the front office in case of emergency. This can be addressed with a PA cable renovation when addressing the zones.

The master clock system is problematic. They are not synced with the bell schedule. Analog clocks are old and some are beyond repair as parts are not available. There are various types of analog clocks in the buildings and no digital clocks in use. Newer systems include digital clocks, with some systems able to scroll messages across them during emergencies. It is recommended that the clocks and cabling be replaced.

Wireless

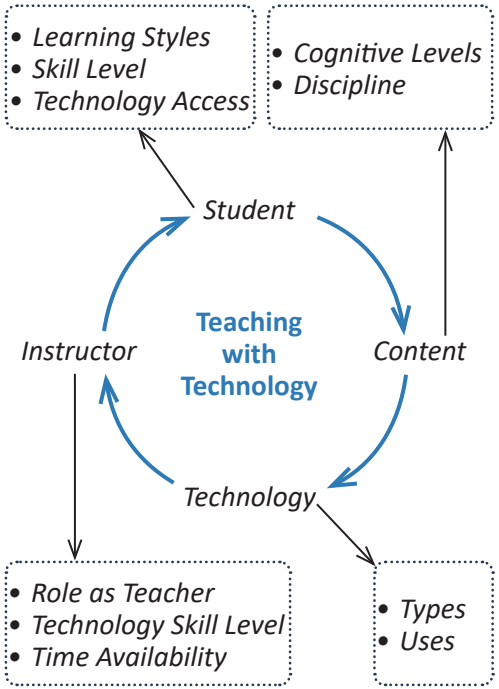
Aerohive (now part of Extreme Networks) is the district's wireless technology standard. The building has new Aerohive wireless access points. All classrooms have a wireless access point, but only one cable drop is in each classroom for the wireless access points. Four data drops are usually provided on new projects. Wireless coverage is currently acceptable.

IPTV

The building does utilize a video distribution system. The old coax video distribution system is still in tact in the technology closets. Industry Weapon is the digital signage system in the District. The schools do not have many displays, but some displays are scheduled for installation this winter break.

Classroom Technology

There is currently almost no interactivity equipment in the classrooms. All newer schools designed today have interactive type equipment in the classrooms. Sixty-three ceiling mounted non-interactive projectors are in use in the Cohasset Public Schools and six Mimio 280 systems are in use. A pilot program has begun to vet newer interactive technologies for consideration. Voicelift, a system to amplify a teacher's voice, is not installed at the schools.



Technology Considerations

Presentation cameras are in use in the classroom.

Current data in the classrooms would not support an interactive display or projector on the teaching wall of the classroom. Audio-video cabling and data cabling would have to be provided at each location (unless existing cabling can be reused).

Other Systems and Information

UPS devices are used in racks for equipment. The break-fix technology repair areas are adequate.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Wide Area Network Fiber	District Schools	Fiber as part of the wide area network is in acceptable condition	None	Continue maintenance practices
6	Technology	Internet Service	District Schools	Internet service is in acceptable condition	None	Continue maintenance practices
5	Technology	Switches	District Schools	Switches that are 5-7 years old are in acceptable condition	None	Continue maintenance practices
1	Technology	Switches	District Schools	Switches that are older than 7 years old are at end of life condition and should be replaced this year	None	Replace switches older than 7 years old
3	Technology	Network Cabling	District Schools	Network cabling does not include Cat6A; it is recommended that the district upgrade to Cat6A	None	Upgrade to Cat6A

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Phone System - VoIP	District Schools	Equipment is only 4 years old and is in acceptable condition	None	Continue maintenance practices
3	Technology	Phone Cabling	District Schools	5e/6 4-20 years old; does not include Cat6A	None	Upgrade to Cat6A
5	Technology	PA System	District Schools	Equipment is only 3 years old; needs zone boards	None	Provide zone boards
1	Technology	PA System	District Schools	No call buttons in rooms in case of emergency	None	Provide call buttons in rooms
3	Technology	PA System	District Schools	Portions with old cabling have volume issues and zone issues	None	Upgrade cabling
6	Technology	PA System	District Schools	Phone paging is in acceptable condition	None	Continue maintenance practices
2	Technology	Master Clock	District Schools	Equipment and cabling in poor condition; causes synch issues	None	Upgrade equipment and cabling
2	Technology	Clocks	District Schools	Clocks are all analog throughout, making repairs problematic and time consuming	None	Upgrade to digital clocks throughout
6	Technology	Wireless Equipment	District Schools	Aerohive devices are in acceptable condition	None	Continue maintenance practices
4	Technology	Wireless Cabling	District Schools	Currently, only 1 cable per device while a minimum of 4 are provided for new projects; upgrade recommended	None	Upgrade to greater capacity cabling
2	Technology	Digital Signage	District Schools	Digital displays are currently under review; should upgrade for consistency across district	None	Upgrade for consistency

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Digital Signage	District Schools	The district standard "Industry Weapon" is in acceptable condition	None	Continue maintenance practices
1	Technology	Classroom Interactivity	District Schools	There are very few projectors in use; learning environments would benefit from increased capability	None	Provide projectors in learning spaces
4	Technology	Projectors	District Schools	There are 63 ceiling-mounted projectors in use; recommended upgrades across district for consistency	None	Upgrades across district for consistency
1	Technology	Voice Lift Systems	District Schools	There are no voice lift systems in use; these are important in learning spaces to aid the hearing impaired	None	Add voice lift in learning spaces
6	Technology	Digital Document Cameras	District Schools	Document cameras are in acceptable condition; less than 4 years old and provided in classrooms	None	Continue maintenance practices
6	Technology	Wifi/Data	District Schools	Data available in classrooms is in acceptable condition; most have wifi	None	Continue maintenance practices
6	Technology	Projectors	District Schools	Ceiling-mounted projectors in Media Centers are in acceptable conditions	None	Continue maintenance practices

Average score:
Not Yet Critical

3

Technology

Summary

Overall technology is sufficient, however, upgrades to the clocks, PA system, and switches are recommended to meet the functional and operational procedures of today.

Additionally, classroom interactivity and voice lift systems should be improved upon and provided in all learning spaces so that learning by every student is attainable.

The integration of technology is essential to achieving the learning objectives of Cohasset Public Schools. These objectives include: creative thinking, problem solving, communication, collaboration, and timely communication with students and families.

Deer Hill Elementary School

3.12 Overview

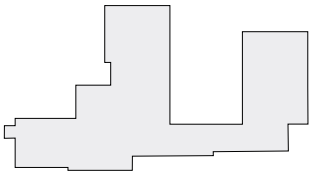
Deer Hill Elementary School was first constructed in 1950, serving as one of two elementary schools in the Town. At that time, it accommodated grades 3-6 while the original Joseph Osgood School (the current public library building) served grades K-2. When the new Joseph Osgood Elementary School was built in 1998, the sixth grade moved up to the junior/senior school, which became Cohasset Middle-High School, and Deer Hill was reduced to grades 3-5 only and continues to serve as the only intermediate elementary school in Cohasset.

Building History

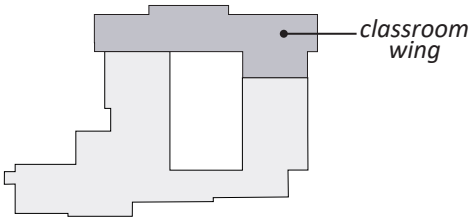
Much like the history of the Cohasset High School building, the original Deer Hill school building was a low-rise brick structure typical of post-war American school architecture that has undergone a series of modifications since its original construction in 1950. Initially, it consisted of two academic wings connected by a perpendicular wing that housed the cafeteria and administrative spaces, creating a U-shape. In 1966, an additional academic wing was added, enclosing the "U" and creating a courtyard. This was most likely due to growing enrollment in the area following World War II.

In 2001, the second addition was constructed. This involved demolishing part of the 1950 construction, and expanding the perpendicular wing with a media center, art classroom, computer lab, two classrooms and gym. The gym includes a stage to double as an auditorium.

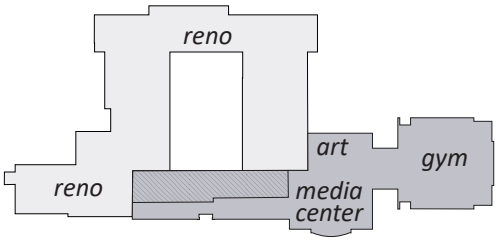
Despite the separate additions over the building's seventy-two year old existence, its organization is uncomplicated. Given its single-story height and proximity to wetlands, however, future expansions of the footprint (if necessary) would greatly impact the open space of the site.



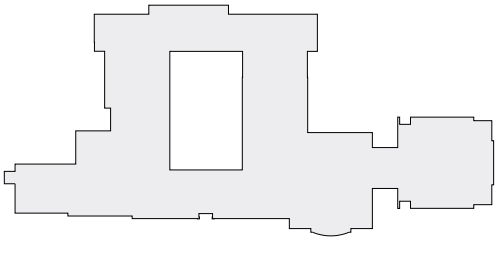
1954 construction



1966 addition



2001 addition/renovations



2022 current footprint

3.13 Architectural Evaluation - Interior

The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building for code/accessibility compliance, interior finishes, exterior envelope, thermal health, and acoustics, among other categories.

Building Code/Accessibility Compliance

Deer Hill Elementary School appears to be largely compliant with current building code.

Though requirements for handicap accessibility in building planning and design were non-existent when this building was originally designed, the building is also largely compliant with ADA and MAAB standards. Being only a single story, the building does not have any interior stairs that inhibit universal access or non-compliant railings (other than access to the basement, which is only intended for the Facilities Department).

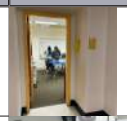
Additionally, all academic and administrative spaces include at least one accessible sink. All toilet rooms appear to be in full compliance also.

Main corridors that circle the courtyard are wide, nearly 10-feet, with no protruding objects that inhibit the path of egress.

The most prevalent infraction is that doors into six classrooms do not meet push/pull clearance requirements, however every location in question includes a second entrance that is compliant.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Code	Accessibility Compliance	Core Academic	Doors do not meet push/pull clearance requirements, however a second means of access into the same room does		Increase width of doorway (approx. 6 locations)
6	Code	Accessibility Compliance	Core Academic, Administration	Spaces include at least one ADA accessible sink		None
6	Code	Accessibility Compliance	Core Academic	Building is a single-story with no interior stairs and universally accessible inside		None

Summary

The interior of the building is largely compliant regarding international and state building codes and by accessibility standards.

Average score:
Not Critical

6

Building Code/Accessibility Compliance

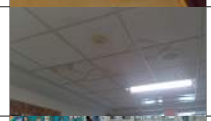
Healthy Environment & Interior Finishes

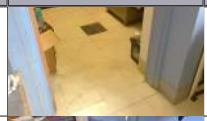
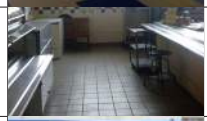
Despite a similar history of construction, the Deer Hill building did not indicate the same thermal health issues prevalent at the Middle-High building. This is perhaps due to its simpler footprint and consistent roof levels, with less means for moisture to seep into building seams. Academic spaces would benefit from greater acoustic treatment to the music, gymnasium and cafeteria spaces, although their organization away from core academic classrooms helps.

Other than the pest issue, which seems to be isolated to the electric room, potentially critical items are all on the surface, in the form of flooring, painting, ceilings, or casework updates. As was achieved for the corridors, these are relatively easy capital repairs within core classrooms, assuming the leaks responsible for staining ceiling tiles are repaired prior to replacement of finishes. Similarly, the cafeteria flooring is recommended to be replaced. The Administration suite and Media Center are like new.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Healthy Environment	Dust & Pests	Main Electric Room	A pest control problem requires attention to avoid spreading		Exterminate pests
6	Healthy Environment	Lighting & Views	Core Academic	Lighting appears updated and in good condition throughout		Continue maintenance practices
4	Healthy Environment	Noise	Physical Education	Gym/Auditorium could benefit from added acoustic treatment to walls or ceiling		Add acoustic treatments
6	Interior Finishes	Flooring	Corridors	Marmoleum composition tiles in corridors are in good condition		Continue maintenance practices
3	Interior Finishes	Walls	Corridors	Glazed CMU throughout corridors are in acceptable condition; repointing should be applied as necessary		Continue maintenance practices
4	Interior Finishes	Doors	Corridors	Hollow metal frames are in acceptable condition but could benefit from repainting		Paint hollow metal frames
3	Interior Finishes	Ceilings	Corridors	Acoustic ceiling tiles in corridors are in acceptable condition, but may be an indication of broader roof leaks		Replace stained tiles as necessary
6	Interior Finishes	Flooring	Corridors	Terrazzo flooring at entry lobby is in good condition		Continue maintenance practices
3	Interior Finishes	Walls	Corridors	Lockers along corridors are in fair condition, with rust and grime buildup		Consider refinishing lockers
2	Interior Finishes	Flooring	Core Academic	Floors in typical classrooms are in fair condition		Replace classroom floors
3	Interior Finishes	Ceilings	Core Academic	Acoustic ceiling tiles in classrooms are in fair condition with apparent staining and sagging		Replace stained tiles as necessary

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Interior Finishes	Flooring	Art	Floors in art and art storage rooms are in fair condition		Replace flooring in art classroom
2	Interior Finishes	Casework	Art	Countertops and casework in art are in fair condition		Replace casework in art classroom
2	Interior Finishes	Flooring	Dining & Food Service	Floors in dining are in fair condition, especially where the 2001 addition occurred, and should be replaced		Replace flooring
3	Interior Finishes	Flooring	Dining & Food Service	Rubber base in dining in fair condition with discoloration and bubbling		Replace base
6	Interior Finishes	Flooring	Dining & Food Service	Quarry tile in kitchen is in acceptable condition		Continue maintenance practices
4	Interior Finishes	Flooring	Physical Education	Gym/Auditorium flooring operational but in fair condition with gaps between boards		Consider future replacement
6	Interior Finishes	Flooring	Administration, Media Center	Carpeting is in good condition		Continue maintenance practices

Summary

Overall, the building fosters a healthy environment for students and would benefit from surface updates to the flooring and ceiling finishes in core classrooms. Additionally, the art classroom would benefit from new flooring and casework, as well as new flooring in the cafeteria. Replacement with products that include Health Product Declarations are recommended to be used.

Supplemental acoustic treatments are recommended to enhance the learning environment. Continue painting and cleaning maintenance practices.

Average score:
Recommended

4

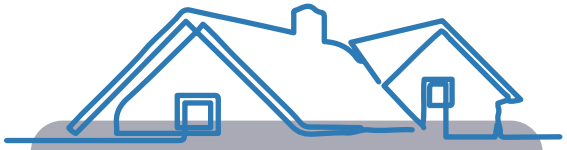
Healthy Environment & Interior Finishes

3.14 Architectural Evaluation - Exterior

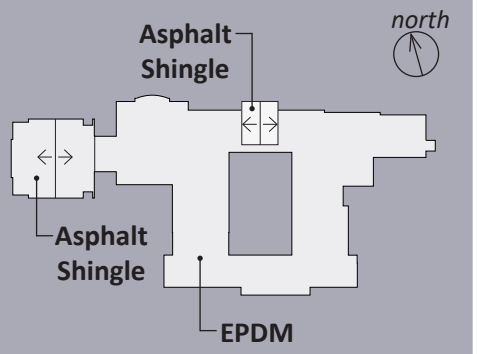
The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building exterior, specifically the roof and walls/windows/doors.

Roofing

The roof of Deer Hill Elementary School is adhered EPDM (ethylene propylene diene monomer rubber), with the exception of the front lobby and the gymnasium which are asphalt shingle roofs. During the 2001 addition projects, all existing roofing was removed down to the insulation and replaced with new EPDM roofing. The asphalt shingles are also from 2001.



Refer to the following areas diagram for locations referenced in the evaluation log:



Location Diagram

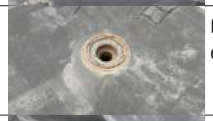
EPDM roof manufacturers typically warranty their roof systems for 20 years and asphalt shingle warranties typically span 20-25 years. There are some areas of the roof where the EPDM has separated from the recovery board. It is critical that the roofing be properly secured to resist damage to the recovery board, from excessive moisture infiltration, and to ensure the roof membrane does not tear or blow off, exacerbating the issue.

Since installation of the roofs in 2001, the Massachusetts State Energy Code has raised the minimum requirements for insulating roofs. A new, low-slope roof today would have a minimum of two layers of 2.5-inch polyiso insulation plus the tapered insulation required to properly drain, achieving at least an R-value of 30. The 2001 EPDM roofs only included one layer of 3-inch insulation (existing) and an additional layer of 1-inch insulation.

Ponding water is considered water that has remained for forty-eight hours or longer. The evaluation did not persist longer than this time period, but minor water ponding was observed to be present on the roofs. It is recommended that the facilities department check the roofs within three days of any rain or snow event to determine if major ponding is a persistent issue.

Evaluation Log

The following log was used during the site visit to record items of note as related to roofing. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Exterior Envelope	Roofing	EPDM	Soft areas of roof present; decaying material or presence of moisture are possible causes - further investigation required		Investigate source of soft roof
2	Exterior Envelope	Roofing	EPDM	Thru-wall flashing is damaged or missing (chimney stack, low wall at curved facade)		Reinstall thru-wall flashing
2	Exterior Envelope	Roofing	EPDM	Thru-wall flashing has been patched with self-adhering weather proofing (not recommended)		Mechanically fasten thru-wall flashing
3	Exterior Envelope	Roofing	EPDM	Standing seam copper siding is in fair condition (dented w/ some oil canning, ribs folded over, holes in the metal have been sealed with caulk)		
5	Exterior Envelope	Roofing	EPDM	Roof Hatch undersized and too close to edge w/out safety rails; (IBC 1011.12.2, 1015.6) RTUs w/in 10-feet of roof edge also require safety railings		Replace when roof replaced and add safety rails
4	Exterior Envelope	Roofing	EPDM	There is minor water ponding; monitor whether ponding subsists for more than 48 hours		Monitor ponding
2	Exterior Envelope	Roofing	EPDM	Roof drains missing grate; may cause drain to clog with debris and allow water to build up on roof		Provide grate at drain
4	Exterior Envelope	Roofing	EPDM	Patch sealant at roof patches is cracking		Repair patch sealant
5	Exterior Envelope	Roofing	EPDM	Expansion joint does not extend to corner; cut of expansion joint must be continuous through entire envelope to avoid damage form building movement		Evaluate if damage from movement
3	Exterior Envelope	Roofing	EPDM	Minor bubbling in EPDM; may indicate water beneath the membrane		Investigate if water underneath
3	Exterior Envelope	Roofing	EPDM	Prevalence of rust on all light casings; eventual corrosion will compromise interior		Remove rust and paint with coating

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
4	Exterior Envelope	Roofing	EPDM	HVAC unit stands sitting directly on roof; should be sitting on plinth and/or include vibration isolation		Raise units
3	Exterior Envelope	Roofing	Asphalt Shingle	Three-tab shingles falling off (IBC 1507.3.3.3 - High wind atachment & IBC 1511; see NCRA Roofing Manual Ch. 5 for reroofing)		Refer to roofing repair manual
4	Exterior Envelope	Roofing	Asphalt Shingle	Gutter does not pitch to downspout locations; may cause roof ponding or water runoff from roof		Apply proper pitch to gutters
3	Exterior Envelope	Roofing	EPDM	Discoloration on EPDM roof is evidence of water ponding beneath asphalt shingle roof		Taper roof away from area under shingle roof
2	Exterior Envelope	Roofing	Asphalt Shingle	FRP sealant is degrading and FRP is separating from roof/wall in some locations		Replace sealant & readhere FRP
4	Exterior Envelope	Roofing	EPDM	Thru-wall fashing/roofing membrane edge install recommended to be at least 8-inches above surface; does not counter-flash in some locations		Reinstall fashing 8-inches above roof
1	Exterior Envelope	Roofing	EPDM	Roof securement has failed during storms; Weights have been placed on roof to keep roofing in place, but this may tear the membrane		Improve securement
2	Exterior Envelope	Roofing	EPDM	Fall protection tie-off anchor is fastened through EPDM roof membrane with no flashing or sealant		Investigate if infiltration damage to roof
1	Exterior Envelope	Roofing	EPDM	Portions of EPDM have lifted from recovery board; may cause infiltration or damage to membrane		Readhere membrane to recovery board
4	Exterior Envelope	Roofing	EPDM	Roof edge metal at the parapet is not secure		Readhere roof edge metal
3	Exterior Envelope	Roofing	EPDM	The dunnage supporting various HVAC units is unprotected (should be covered by membrane); re-levelling of units required following repairs		Protect dunnage

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Exterior Envelope	Roofing	EPDM	Pitch pocket is separating from from roof penetration		Repair pitch pocket to avoid infiltration
3	Exterior Envelope	Roofing	EPDM	Roof drains have build up around grate; may allow water to build up on roof		Maintain clear drains
4	Exterior Envelope	Roofing	EPDM	Walk pads are recommended on all roofs to provide additional protection from foot traffic and maintenance activities		Add walk pads
2	Exterior Envelope	Roofing	Metal	Canopy roof covering is heavily rusted		Replace canopy

Summary

The roof is operational but requires maintenance for improved performance. Ensuring seals are applied, membrane is secured, drains are cleared and ponding is monitored will extend the life of the roof.

Placing HVAC equipment on protected dunnage with vibration isolation will improve the interior environment and protect the roof membrane.

Average score:
Not Yet Critical

3

Roofing

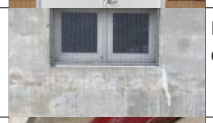
Exterior Walls

The exterior envelope is primarily brick with precast concrete and fiber reinforced polymer (FRP) accents. The 2001 additions include weeps and thru-wall flashing at masonry walls, which is important for removing moisture from the system.

Evaluation Log

The following log was used during the site visit to record items of note as related to roofing. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
4	Exterior Envelope	Masonry	Courtyard, Perimeter	Brick is in acceptable conditon, but weathered with evidence of water stains; typical around building perimeter		Remove stains from brick using vinegar brush
3	Exterior Envelope	Masonry	East, West	No evidence of brick weeps or thru-wall flashing around original construction portion		Investigate moisture mitigation tactics
2	Exterior Envelope	Thermal/Moisture Protection	Perimeter	Mortar and sealant around louvers, windows, and doors in fair conditon; sealant is a maintenance item to be reapplied periodically		Monitor seals around openings
4	Exterior Envelope	Masonry	Perimeter	Precast concrete sills are in fair condition; chipped, cracked, and/or weather stained		Repair to avoid falling concrete
6	Exterior Envelope	Masonry	Perimeter	Mortar appears to be in good condition		Continue maintenance practices
3	Exterior Envelope	Accessories	North	Metal components, like light fixtures, pipes, and columns showing signs of rust and corrosion		Remove rust and provide coating
3	Exterior Envelope	Finishes	North	FRP entablature sealant is degrading and FRP needs power washing		Replace sealant & wash FRP

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Exterior Envelope	Masonry	North	Provide weep vents in weeps without to avoid pests (like wasps) or particulates clogging the weeps		Fill weeps with vents
2	Exterior Envelope	Thermal/Moisture Protection	East	Seal around pipe penetration and/or other holes in masonry		Seal penentration
4	Exterior Envelope	Doors	South	Door paint on metal doors is chipping		Repaint doors to avoid rusting
3	Exterior Envelope	Concrete	South	Evidence of foundation spalling		Resurface concrete
4	Exterior Envelope	Doors	South	Paint finish and sealant on frame of overhead door is in poor condition		Repaint frame
2	Exterior Envelope	Windows	Perimeter	Lintels at openings are rusted and do not appear to be supporting the bricks		Remove rust, wire brush, and paint lintels
3	Exterior Envelope	Concrete	North	Precast concrete sills have moss growing on them, a sign of high acidity in concrete		Neutralize surface to remove moss

Summary

The masonry is in acceptable condition and would benefit from cleaning to remove water stains and moss. Painting of metal doors, supports, caps, lintels and any other components with rust is recommended. FRP should be washed and sealed at joints.

Review the exterior annually for areas impeding water tightness. Provide seals and patch mortar as necessary.

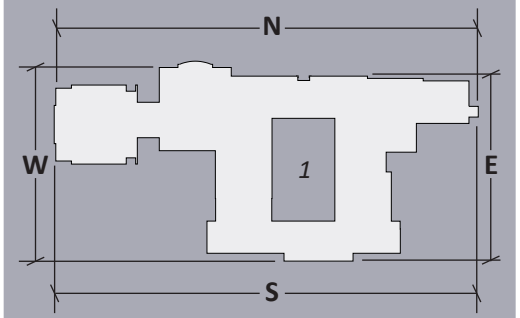
Average score:
Not Yet Critical

3

Exterior Walls

3.15 Site Evaluation - Landscape

Refer to the following elevations diagram for locations referenced in the evaluation log:



Orientation Diagram

The following site evaluation was completed by Traverse Landscape Architects.

Pedestrian & Bicycle Access

Current accessibility on site is not universal. There are a number of doors on the south, east and west that are not accessible. There are areas along the main entrance where the sidewalks and landings are setting +1/2-inch creating trip hazards. There are no detectable warning plates on ADA crossing areas. There is no ADA accessible route to the EOC. Ramps and stairs rails should be ground and painted.

There is limited bike parking on the site.

Outdoor Learning & Recreation Fields

There is no ADA accessible route to the natural grass recreation area behind the school except through the building.

The irrigation system for the fields is not operating correctly.

Landscape

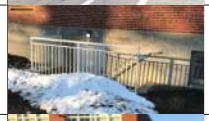
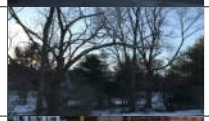
There is a fair amount of old growth trees on site with older limbs that should be pruned. Major focus should be given to the areas that overhang vehicles and pedestrian paths.

The area is surrounded by wetlands in multiple areas that are limiting expansion along the roadways.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.


SOHIER STREET
Deer Hill
Elementary School
Joseph Osgood
Elementary
School
OLD PASTURE ROAD
RESERVOIR ROAD
Site Constraints
Diagram Legend
Property Line
50' Wetland
setbacks
100' Wetland
setbacks
Wetlands
1% Annual
Chance of Flood
Slope
Constraints

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Landscape	Accessibility Compliance	Site - North	The pedestrian pavement in front of the main entrance has settled beyond 1/2-inch; not ADA compliantand trip hazard		Regrade and provide additional drainage
5	Landscape	Accessibility Compliance	Site - South	No accessible route to EOC at the rear of the building		Provide accessible route
5	Landscape	Accessibility Compliance	Site - Perimeter	There are multiple doors around the building that have no accessible route		Provide accessible route
2	Landscape	Plantings	Site - Perimeter	There a number of trees that pose a potential hazard and should be pruned or removed		Prune plantings
4	Landscape	Accessibility Compliance	Site - West	Accessible routes from the west front entrance to the main drop-off area were not plowed limiting ADA accessibilty		Maintain ADA routes during weather events
3	Landscape	Accessibility Compliance	Site - East	Handrails on rear ramps and stairs should be ground and painted		Grind and paint handrails
6	Landscape	Play Equipment	Site - South	Play equipment in acceptable condition and less than 10 years old		Continue maintenance practices

Average score:
Recommended Upgrades

4

Site - Landscape

Summary

Inaccessible routes would have been in place prior to ADA standards, and are not yet critical in physical condition, but upgrading is necessary to avoid hazardous conditions for visitors.

Maintenance practices of the grounds, plantings, and play equipment should continue.

3.16 Site Evaluation - Civil

The following site evaluation was completed by The Vertex Companies. Vertex reviewed the natural environment, roadways, vehicular and pedestrian circulation, and utilities.

Natural Environment

Topography

A review record documents indicates that the school site and adjacent areas are relatively flat with a steeper access drive from Sohier Street. Portions of the site slope to the wetlands behind the school to the south, towards the wetlands to the east, and to Sohier Street to the north.

Soils

Based on information from the NRCS, a combination of soils is expected to be at site, predominantly Montauk fine sandy loam and Udorthents. Further geotechnical investigation must be performed prior to a design process.

Wetlands

Available record documents indicate the presence of bordering vegetated wetlands to the south and east of the school building. Buffer zones associated with these wetlands extend across portions of the building and paved driveways and parking areas.

Rare Species & Cultural Resources

Information regarding rare species was obtained from the MassGIS Rare Species and Priority Habitat data layer showing data recorded by the NHESP in the State Registry. Review of this information indicates that there are no areas of Estimated or Priority Habitat are mapped on or in the vicinity of the site.

The existing Deer Hill Elementary School building is located on approximately 15.4 acres of land owned by the Town of Cohasset. The building is accessible via two (2) two-way driveways from Sohier Street.

The site is furnished with two paved parking areas, paved driveways, one grass athletic field, play area and landscaping surrounding the building. Concrete sidewalks provide access from parking spaces and Sohier St.

Existing Conditions Site Evaluation

Roadways and Parking Area Conditions

Paved surfaces throughout the site are in poor condition. Rutting, alligator cracking, and potholes are found in driveways and parking areas. There are also signs of settlement in paved areas and sidewalks. Multiple manholes and catch basins show signs of settlement resulting in depressed rim elevations and pavement cracks adjacent to the structures. Settlement of paved surfaces is an indication of poor compaction beneath the surface layer, poor subbase material, and/or high groundwater.

Parking

Parking areas are available in front and behind of the school. The main parking area is in front. During onsite investigations, parking areas were observed to be full and cars were parked in unmarked parking spaces. This condition indicates an inadequate number of available onsite parking spaces and/or, in the case of the rear parking area, parking areas that are not ideally located. The Town's Emergency Management offices are in the school building and share the use of a parking area. Parking challenges are further exacerbated when the Emergency Management offices are in use.

Site Circulation and Access

As previously described, site access is provided via two (2) curb cuts on Sohier Street. The eastern curb cut provides access to the main entrance and front parking area. This curb cut is also used to access the Joseph Osgood School. The western curb cut provides access to the smaller rear parking area and the Emergency Management offices.

Bus Drop-Off/Pickup

Buses utilize the eastern curb cut and drop-off/pickup students at the front of the school before looping through the onsite driveways back to Sohier Street. While the available queuing space for buses is adequate, the loop conflicts with vehicles seeking entry into or egress from the front parking area, parent drop-off/pickup and/or the Joseph Osgood School.

Parent Drop-off/Pickup

Parent drop-off and pickup occurs in front of the school as well through the eastern curb cut. Parents are required to contend with buses and people accessing or egressing the Joseph Osgood School during these activities. The shared space for parents and buses in front of the school is insufficient.

Traffic

Traffic issues during peak hours is further exacerbated by the proximity to the Joseph Osgood School which shares access driveways. Both schools have similar operating hours resulting in conflicts during drop-off and pickup. Challenges with student drop-off and pickup could potentially be relieved by the addition of a loop road around the school, however, the wetlands areas limit the ability to expand at the site.

Utilities

The existing conditions utility information has been gathered record documents.

Sewer

Sewage exits the building through multiple services in the front of the school and one location in southeastern portion of the school. Sewer flows travel by gravity to an onsite lift station east of the school. No known issues exist with the onsite site sewer pipes or structures, however, a lift station is located to the east of the school. Lift stations require maintenance and repairs from qualified professionals.

Water

Water service is provided from water main located in Sohier Street. There are no known issues with the water system.

Drainage

Onsite stormwater flows are captured in a closed drainage system consisting of catch basins and manholes. Stormwater is captured and directed into one of two (2) onsite subsurface detention systems or into the drainage system in Sohier Street. The subsurface systems overflow to the southern wetland area. Stormwater treatment is provided by water quality inlets. The existing stormwater systems were implemented per plans prepared in 2001 which is after the passing of the Wetlands Protection Act and creation of the Stormwater Management Standards, however, record documents do not indicate compliance with applicable regulations. There are no known stormwater management issues on the property.

Electric

Electric service is provided from a utility pole located in Sohier Street.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Civil	Site Circulation	Site	Paved surfaces are in poor condition throughout the site		Repave drives
4	Civil	Utilities	Site	Multiple manholes and catch basins show signs of settling, resulting in depressed rim and pavement cracks around structures		Repave drives
4	Civil	Parking	Site	Cars are parked throughout the site including in unmarked areas indicating an inadequate amount of parking spaces		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Queue length for parent drop off/pick up is insufficient		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Poor traffic flow patterns and separation for buses and parent vehicles during pickup/drop off		Reconsider parking/ circulation
2	Civil	Site Circulation	Site	Traffic issues during peak hours is further enhanced by the proximity to the Osgood Elementary School and shared driveways used by both		Reconsider parking/ circulation
4	Civil	Site Constraints	Site	Wetlands to the southern portion of the site constrain the ability to add additional parking and access points		Reconsider parking/ circulation

Evaluation Log

The above log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

Summary

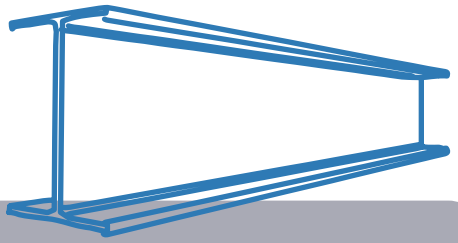
Options to alleviate traffic flows during drop-off and pick-up times should be reviewed and reconsidered. Consider repaving in areas with broken/settled pavement.

Average score:
Recommended Upgrades

4

Site - Civil

3.17 Structural Evaluation



Construction of the original 1950's elementary school building is consistent with school design of its era, which consisted of orthogonal, low-rise structures of brick and concrete masonry units with horizontal ribbon windows or storefront inserts.

The following structural evaluation was completed by Engineers Design Group (EDG) Inc. EDG evaluated the structural integrity of the existing Deer Hill Elementary School building.

Basis of Evaluation

This report is based on visual observations during our initial site visit on January 28, 2022 and review of the available documents of the original 1961 construction and drawings prepared by Strekalovsky & Hoit, Inc. from their renovations to the school in 2001.

Drawings of the original construction or previous addition or renovations to the school were not available for our review. During the visit we did not remove any finishes or take measurements; so, our understanding of the structure is limited.

Overall Structural Description

The school is located on Sohier Street in Cohasset, Massachusetts. The school is essentially a one story structure with a partial basement and several below grade utility tunnels below the first floor slab on grade. In 2001, the school was renovated extensively and new Art Rooms, Administrative Wing, Library and Gymnasium with a stage that functions as an Auditorium as well were added to the original school.

The existing school is a complex of connected one story steel, wood and masonry structures with one interior courtyard. The partial basement and majority of the first floor is a concrete slab on grade. The portion of the supported slab above the basement is reinforced concrete slab supported on interior concrete columns and reinforced concrete walls. The roof of the original school is wood planking supported on conventional wood joists spanning between interior steel beams, columns and exterior masonry walls. The first floor of the 2001 additions are concrete slabs on grade. The roof of the 2001 additions are metal roof deck supported on open web steel joists, wide flange beams and steel columns. The foundations of both the original structure and the 2001 additions are reinforced concrete foundations.

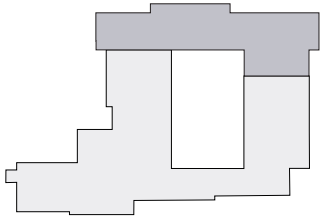
Existing Conditions

Based on our observations, the school structure is performing satisfactorily for its age. We did observe some cracks in the interior masonry walls and cracks and spalls in the slab on grade at a few locations. We did observe some water stains in the ceilings which may be signs of water leaks from the roof. We did not see any signs of undue vibrations on the supported floor above the basement due to footfall.

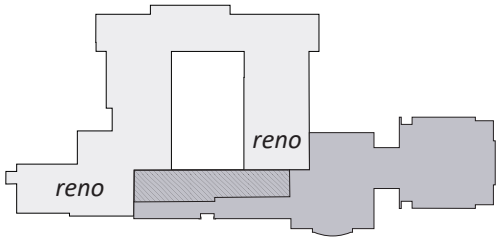
We did not observe any clips from the original masonry walls to the structure. The existing masonry walls will be required to be clipped to the structure when the school undergoes any major renovations. All the masonry walls that were constructed in 2001 are connected to the structure per the details in the 2001 design drawings.

Most of the exterior façade appears to be in good repair except for a few cracks at various locations. We observed rust on some of the lintels over the heads of exterior openings and observed loss of mortar in the joints above the lintels which may be due to the rust on the lintels and from penetration of moisture through the joints. These conditions need to be addressed as part of the ongoing maintenance program.

No apparent signs of foundation settlement were observed.



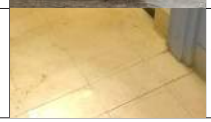
1966 addition

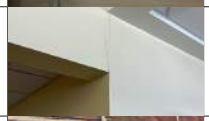


2001 addition/renovations

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Structure	Concrete	Foundations	No signs of foundation settlement		Continue maintenance practices
3	Structure	Concrete	Slab on grade	Cracks and spalls present on floors that should be filled		Fill cracks greater than 1/8" wide

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Structure	Concrete	Slab on grade	No signs of undue vibrations on the supported floors		Continue maintenance practices
4	Structure	Masonry	Interior	Some masonry walls from the original construction include seismic clips to structure, but most not clipped		Add seismic clips where missing
6	Structure	Masonry	Interior	Masonry walls from the 2001 additions include seismic clips to structure		Continue maintenance practices
3	Structure	Framing	Interior	Wall cracks observed, which may indicate lateral movement		Monitor cracks in walls
2	Structure	Steel	Exterior	Lintels above openings are in fair condition and require cleaning to avoid corrosion		Remove rust, wire brush, and paint lintels
6	Structure	Steel	Joists	Long span open web joists supporting gym roof structure appears to be in acceptable condition		Continue maintenance practices

Average score:
Recommended Upgrades

4

Structure
(Monitor Interior Cracks & Clean Rusted Lintels)

Summary

The existing structure is performing adequately. All of the structural components that are visible appear to be performing adequately, though the exterior rusted lintels, cracks in the façade and the displaced bricks are recommended to be repaired as part of the maintenance program. There are no critical items in need of immediate attention.

The overall condition of the school is acceptable for continued use.

3.18 Mechanical System Evaluation

The following mechanical system evaluation was completed by Griffith & Vary Consulting Engineers.

Boiler Plant

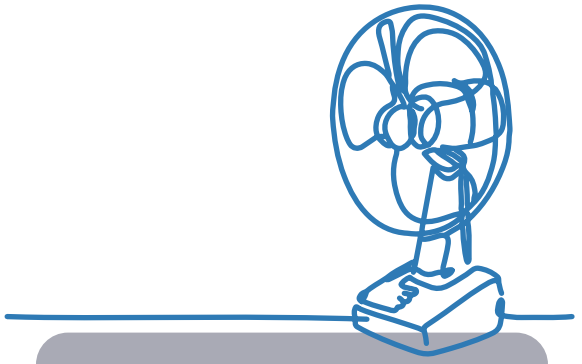
The building is heated by two (2) gas fired cast iron section boilers. The cast iron boilers were manufactured by the Smith model 28A. Each boiler has a Max input of 3,508 MBH with an output of 2,403 MBH. The boilers are equipped with Power Flame Burner model C3-G-20HBS-11. The boilers are in fair condition but are inefficient to operate compared to today high efficiency options. The boilers are 20 years old and are nearing the end of their service life.

The boilers provide hot water for heating to the building which is pumped by a set of pumps. The set is arranged in a primary/stand-by configuration located in the boiler room. If the primary pump was to fail the stand-by would engage. The pumps were manufactured by Taco model FE25. It appears that the motors on both pumps where replaced, most likely when the variable frequency drivers where added. The original motors where not inverter rated. Overall, the pumps appear to be in fair condition and appear to have received proper maintenance, but they have outlived their useful service life.

Combustion air for the boilers is provided a wall louver with high and low openings. The openings are fitted with motorized dampers. The dampers would open up upon a call from the boiler to fire.

Controls

The automatic temperature controls system is by Niagara Controls. The system is a direct digital control (DDC). The system is antiquated. End devices are obsolete and difficult to find if needed for repairs. Work arounds have been implemented to allow the system to work and maintain space comfort. The work arounds are more manual then automatic. The control system needs to be replaced to get optimal operation out of the HVAC equipment.



Unit ventilators were designed specifically for K-12 applications. For 70 or 80 years, it had been the widely accepted solution for classroom heating and cooling.

Over the past decade, the prevalence of operational and comfort problems, as well as an interest in moving away from gas powered systems for renewable energy, have caused unit ventilators to phase out of popularity.

HVAC System

Classrooms

Classrooms are heated and ventilated by classroom unit ventilators (UV). Outside air is supplied to the unit ventilators via wall louvers located below the windows. Each unit ventilator has hot water coil, filters, outside/return air dampers and supply fans. Valve and damper actuators are DDC. The classroom unit ventilators were manufactured by America Air Filter (AAF). The units appear to be in good working order however are nearing the end of their useful service life.

There are a few classroom unit ventilators that were fitted with DX coil for cooling. UVs with DX coils are paired with a remote air-cooled condenser. The condensers are beginning to fail. The condensers utilize R-22 which has been phased out of manufacturing since 2010. The system can still be serviced from existing R-22 stock but cost has increased over the years. The school has elected to abandon the R-22 condensers and add ductless split units in their place.

General exhaust for the classrooms is provided by a low wall exhaust grille located in each room.

Gymnasium

The gymnasium is heated and ventilated by two (2) gas fired roof mounted units manufactured by Reznor. Downstream from each unit are duct mounted DX cooling coils. The DX coils are paired air-cooled condensers located on the roof. The condensers have failed and are too costly to replace in kind. The units utilize R-22 refrigerant. The units appear to be in rough shape but in good working order however the units are nearing the end of their useful service life.

Library

The library is heated, cooled and ventilated by a single roof top unit manufactured by AAON. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is

nearing the end of its useful service life.

Cafeteria

The cafeteria is heated and ventilated by a single roof top unit manufactured by Reznor. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

Kitchen

The kitchen is heated and ventilated by a single ceiling mounted unit ventilator manufactured by AAF. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The unit appears to be in good working order however is nearing the end of its useful service life.

There is a single kitchen hood over the ovens and cooking range. The hood is a single speed on/off operation.

Music Room

The music room is heated and ventilated by two ceiling mounted unit ventilators manufactured by AAF. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The units appear to be in good working order however are nearing the end of their useful service life.

Ductless split AC units have been added to provide condition air to the space.

Corridor & Toilet Rooms

The toilet rooms are exhausted through a system of ceiling grilles, ductwork and roof mounted centrifugal exhaust fans. Although operational, the exhaust fans have outlived their useful service life.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Mechanical Systems	Boiler Plant	Mechanical Room	Boilers are operational and in fair condition; inefficient compared to current high efficiency options		Replace boilers
1	Mechanical Systems	Boiler Plant	Mechanical Room	Boilers pumps in fair condition; outlived useful service life		Replace boiler pumps
1	Mechanical Systems	Controls	Mechanical Room	End devices are obsolete; controls need to be replaced to get optimal operation out of HVAC equipment	None	Replace controls
2	Mechanical Systems	HVAC	Core Academic	Unit ventilators appear to be in good working order but are nearing end of useful service life		Replace unit ventilators
2	Mechanical Systems	HVAC	Roof	RTUs utilize R-22 (was phased out) and are operational but nearing end of useful service life		Replace RTUs

Average score:
Critical/Potentially Critical

1-2

Mechanical Systems

Summary

Much of the current HVAC equipment is operational, but at an end of service stage and will require replacement in the short term. Some of the components of the current system are no longer manufactured, so replacing individual parts is not recommended. Upgrades to meet the current efficiency standards are recommended.

3.19 Plumbing System Evaluation

The following plumbing system evaluation was completed by Griffith & Vary Consulting Engineers.

Water Service

The 4-inch domestic water service enters through the basement floor and connects to water meter. The backflow preventer is located at the back wall. They appear to be in good condition.

The water feeding the boilers are protected with backflow preventers as required by code.

Water Heating

The domestic water heating is provided by a gas fired high water heater that stores water in a storage tank. This water heater also feeds the 140-degree water to the kitchen equipment. Both systems are recirculated. The pumps are in good condition. The storage tank is newer equipment and in excellent condition

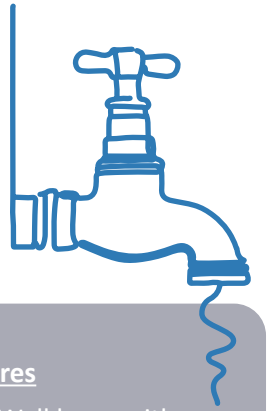
Water Piping

In general, the water piping is in good condition and insulated. There are a couple locations in which the insulation was missing.

Sanitary & Storm Systems

There are several exit points for the storm and sanitary systems. There were no reported issues with piping leaks / replacements.

Conventional roof drain collection system with an area of downspouts in sloped roof areas that are collected with gutter / downspouts to cast iron boots at grade.



Plumbing Fixtures

Water closets: Wall hung with manual 1.6 gpf flush valves

Urinals: Wall hung with manual .5 gpf flush valves

Lavatories: Tap type metering faucets

Water Coolers: Single manual with sensor bottle filler- newer

Sinks: Self rimming stainless steel with variety of manual 2.0 gpm faucet types based on application

Floor drains: Nickel bronze in toilet rooms & floor sinks in kitchen

Gas System

The gas meter is located adjacent to the boiler room. There are pressure regulators for 7-inch wc to the building. The main distribution through the building is 7-inch wc that services the water heaters, boilers, roof top units and kitchen. The emergency generator is a dedicated 4-inch gas feed at 7-inch wc.

The gas feeding the kitchen stoves is an issue when power is lost as the stove has a pilot. If the pilot goes out at any point it needs to be manually set.
This issue should be corrected.

Kitchen Waste

The pot sink has a point of use grease trap to limit the grease to the main kitchen waste piping to prevent blockages.

Other kitchen equipment and floor drain waste is drained to the kitchen waste system and along with the pot and prep sink waste drain to the exterior drainage system. An exterior grease trap was not seen or indicated on the floor plans.

Art Classroom Sinks

It was reported that the art room sinks are very slow draining even though plaster traps have been cleaned out. We recommend that new sinks with grid strainers and larger drains and larger plaster traps be provided. The faucets should be rebuilt as they are constantly dripping.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Plumbing Systems	Water Service	Mechanical Room	Water service (meter & backflow preventer) appears to be in acceptable condition		Continue maintenance practices
6	Plumbing Systems	Water Heating	Mechanical Room	Water heaters/tanks and pumps appear to be in acceptable condition		Continue maintenance practices
6	Plumbing Systems	Storm & Sanitary	All	Sanitary and storm systems appear to be in acceptable condition	None	Continue maintenance practices
4	Plumbing Systems	Fixtures	Toilet Rooms, etc.	Plumbing fixtures not entirely high-efficiency sensor type; upgrading will result in signifigant water/ sewer savings		Upgrade to high-efficiency fixtures throughout
2	Plumbing Systems	Waste	Kitchen	There is no exterior grease trap and waste drains to exterior drainage system		Provide grease trap
2	Plumbing Systems	Water Service	Mechanical Room	There are no plaster traps at art sinks and faucets leak		Provide new sinks, faucets, traps and strainers in art
6	Plumbing Systems	Fixtures	Corridors	Water coolers with bottle fillers are high-efficiency and appear to be in acceptable condition		Continue maintenance practices

Summary

It appears that some of the flush valves on water closets and urinals have been replaced since with water-saving fixtures. There are some high efficiency sensor 10-year battery fixtures and trim available that would save water and be hands free.

The school has replaced the water coolers with new combination water cooler/ bottle filler fixtures in the public spaces. The fixtures available are 1.1 gpf water closets, .125 urinals, .32 gpm faucets and 1.5 gpm faucets for sinks.

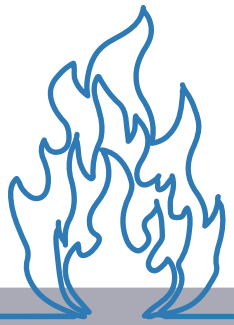
Average score:
Recommended Upgrades

4

Plumbing Systems
(Grease Traps & Art Classroom Fixtures)

3.20 Fire Protection System Evaluation

The following fire protection system evaluation was completed by Griffith & Vary Consulting Engineers.



Fire Service

An 8-inch fire service feeds the building and in good condition. A double check valve provides code required protection.

Average score:
Recommended Upgrades

4

Fire Protection System
(sprinkler heads)

Pipe Distribution

The building fire line distributes horizontally to feed the sprinkler flow control valves creating multiple sprinkler zones within the building. The building is 100% sprinkled with a majority of semi-recessed chrome plated quick response type pendants. Some of the sprinkler heads are in fair condition and should be replaced.

A fire department Storz connection at front entry is in good condition.

There have been no reported issues with leaks/ pipe replacements

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	DESCRIPTION	PHOTOS	ACTION
6	Fire Protection Systems	8-inch service that feeds building in acceptable condition		Continue maintenance practices
6	Fire Protection Systems	FD Storz connection is in acceptable condition	None	Continue maintenance practices
2	Fire Protection Systems	Sprinkler heads are in fair condition		Replace sprinkler heads

Summary

The building is 100% sprinklered, which is compliant with current building code. Continue current practices to maintain the sprinkler system, including replacement of heads.

3.21 Electrical System Evaluation

The following electrical system evaluation was completed by Griffith & Vary Consulting Engineers.

Normal Power System

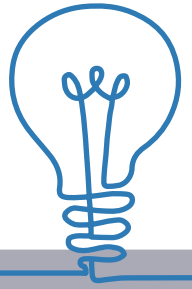
The switchboard is fed by the electric utility co. transformer via underground conduit/cabling. The switchboard rated at 1600 amps, 277/480 volt, three phase, four wire has a 1600 amp main switch and feeds panelboards and transformers located in the Main Electric Room, and throughout the building. K-rated transformers feed computer panelboards which have integral surge protection. The distribution sections of the switchboard are made up of circuit breakers. The normal power distribution is as manufactured by Square D. The normal power system appears to be in fair condition.

Emergency Power System

The building has a 277/480 volt, three phase, four wire, 150 kW natural gas generator as manufactured by Kohler which is located in the Emergency Electric Room.

The generator provides emergency power upon loss of normal utility power to emergency lighting via automatic transfer switch ATS-LS and emergency panelboard. The ATS and the emergency panelboard are located in the Emergency Electric Room. ATS-LS is as manufactured by Asco and is rated at 100 amps. The feeder from the generator to the ATS comes into the Emergency Electric Room underground.

The generator provides emergency power upon loss of normal utility power to Kitchen equipment and HVAC equipment via automatic transfer switch ATS-OS and optional standby panelboards. The ATS and the optional standby distribution panelboard are located in the Emergency Electric Room. There are other optional standby panelboards located throughout the building. ATS-OS is as manufactured by Asco and is rated at 100 amps. The feeder from the generator to the ATS comes into the Emergency Electric Room underground.



Electric Service

The primary electric service, which originates from a riser conduit on an electric utility company pole at Sohier Street, feeds the pad mounted electric utility company's transformer via underground conduit/cabling.

The transformer is located on the site. The electric utility company meter is mounted on the transformer.

The electric service appears to be in fair condition.

Deficiencies as it relates to current Codes:

- The generator is natural gas fired which according to the National Electrical Code cannot serve emergency loads as natural gas is considered to be an interruptible fuel source.
- Emergency and optional standby panelboards are required to be protected by surge suppressors.

The emergency power system appears to be in fair condition, however as described above does not meet current Codes.

Recommendations:

- A new diesel fuel generator with a sound attenuated, weatherproof enclosure is recommended to comply with the National Electrical Code.
- Surge suppressors should be provided for emergency and optional standby panelboards.

Fire Alarm

The fire alarm control panel is addressable as manufactured by Cerberus Pyrotronics. The fire alarm radio master box is located adjacent to the fire alarm control panel, with the associated antenna located on the exterior of the building. The fire alarm system consists of remote annunciators, smoke detectors, carbon monoxide detectors, heat detectors, duct smoke detectors, pull stations, magnetic door holders, strobes, and horn/strobes.

Deficiencies as it relates to current Codes:

- The building utilizes horn/strobes for notification, therefore it does not comply with the International Building Code as speaker/strobes are required to provide voice evacuation throughout the building.

The fire alarm system appears to be in fair condition, however as described above does not meet current Codes.

Recommendations:

- A new fire alarm system is recommended for the building which would include voice evacuation as required by the International Building Code.

Lighting

Interior

The interior lighting consists of a mix of fluorescent and LED lighting fixtures. Staff indicated that fluorescent lighting fixtures have been replaced with LED type with integral occupancy sensors in common areas and they are still in the process of upgrading fluorescent lighting fixtures in other areas with LED type. Exit signs provide for direction to paths of egress.

The interior fluorescent lighting fixtures appear to be in poor condition, while LED lighting fixtures appear to be in good condition.

Exterior

Lighting consists of wall mounted and pole mounted LED site lighting fixtures.

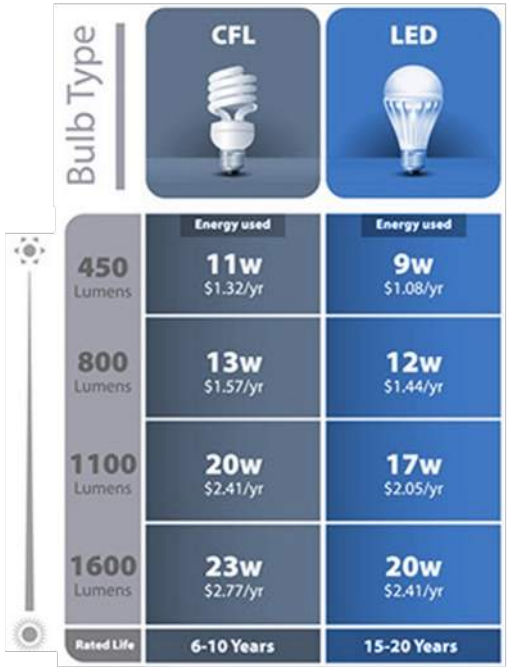
Deficiencies:

- Staff indicated that there have been complaints that the site is not sufficiently illuminated. As such, exterior lighting levels would not appear to meet IESNA Standards.

The exterior lighting appears to be in good condition.

Recommendations:

- LED site lighting should be added to supplement existing lighting to comply with IESNA Standards.



Compact Fluorescent vs. LED

Switching

Interior lighting is controlled by local wall switches, wall mounted combination switch/ occupancy sensors, wall and ceiling mounted occupancy sensors, and lighting relay control panels.

Exterior lighting is controlled by lighting relay control panel.

Deficiencies as it relates to current Codes:

- The current building switching does not meet the International Energy Conservation Code as it is Auto-On. Manual-On is required in most areas, except in Corridors, Stairs, and Toilet rooms.
- Automatic daylight harvesting is required as per the International Energy Conservation Code.

The switching appears to be in fair condition, however as described above, does not meet current Codes.

Recommendations:

- The lighting control system should be replaced with new to comply with the International Energy Conservation Code.

Receptacles

Receptacles are ground type, with some GFCI type throughout the building. Receptacles have been added over the years through the use of EMT conduit with surface boxes, tele-power poles, plugmold, and wiremold.

Deficiencies as it relates to current Codes:

- Receptacles in the Kitchen require GFCI protection where equipment plugs in via cord and plug and is either 125-250 volt single phase 150 volts or less to ground 50 amps or less, or 208 volt three phase 100 amps or less as per National Electrical Code.

Receptacles appear to be in fair condition, however as described above, Kitchen receptacles do not meet current Codes.

Recommendations:

- Receptacles in the Kitchen should be replaced with new as required by the National Electrical Code.

Lightning Protection

The building does not have a lightning protection system.

Recommendations:

- Although it not required by Code, a lightning protection system is recommended which would include air terminals on the roof with downlead conductors to ground and surge protection.

Bi-directional Amplifier System:

The building does not appear to have a bi-directional amplifier system.

Recommendations:

- A bi-directional amplifier system is probably required unless testing proves that Police and Fire Department radios have required signal levels as dictated by the International Building Code. A bi-directional amplifier system would include an amplifier and cabling above ceilings.

Wiring:

Wiring is made up of MC cabling, FA MC cabling, EMT, Rigid, and PVC conduit.

Mass Notification System:

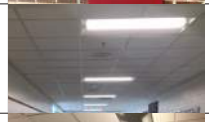
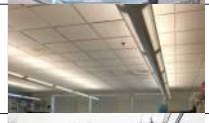
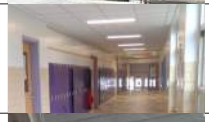
The building does not have a Mass Notification System.

Recommendations:

- Although it is not required by Code, a Mass Notification System is highly recommended for Schools. A Mass Notification System would consist of control panels, info alarm graphic annunciators and controllers, addressable speakers, and amber lens strobes.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Electrical Systems	Normal Power System	All	Normal power system (switchboard/ transformer/panelboard) appears to be in fair condition		Monitor normal power system
1	Electrical Systems	Emergency Power System	Site	The permanent generator is natural gas fired; per NEC it cannot serve emergency loads as natural gas is an interruptible fuel source		New diesel fuel generator w/ a sound attenuated enclosure rec'd.
1	Electrical Systems	Emergency Power System	All	Emergency/optional standby panelboards are required to be protected by surge suppressors; grandfathered but hazardous		Provide surge suppressors
1	Electrical Systems	Building Code Compliance	All	Building utilizes horn/strobe notification (non-compliant); speaker/strobes required to provide voice evacuation throughout		Install new fire alarm system w/ voice evacuation
6	Electrical Systems	Interior Lighting	All	Interior LED lighting fixtures appear to be in acceptable condition		Continue maintenance practices
1	Electrical Systems	Interior Lighting	All	Interior fluorescent lighting fixtures appear to be in poor condition		Replace fixtures with LED
4	Electrical Systems	Exterior Lighting	Site	Site not sufficiently illuminated; does not meet IESNA Standards		Add LED site lighting to comply w/ IESNA
5	Electrical Systems	Energy Conservation Code Compliance	All	The current Auto-On building switching does not meet IECC; Manual-On req'd in most areas, except Corridors, Stairs, Toilets		Replace lighting control system to comply w/ IECC
5	Electrical Systems	Energy Conservation Code Compliance	All	Automatic daylight harvesting is required as per the International Energy Conservation Code		Install auto daylight harvesting

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Electrical Systems	Building Code Compliance	Kitchen	Receptacles appear to be in fair condition, however, Kitchen receptacles do not meet current Codes		Replace kitchen receptacles w/ new GFCI's
4	Electrical Systems	Lightning Protection	Roof	Lightning protection is recommended; includes air terminals on roof w/ downlead conductors to ground and surge protection		Install lightning protection
1	Electrical Systems	Building Code Compliance	All	A bi-directional amplifier system is required (unless testing proves PD & FD radios have required signal levels as dictated by the IBC)	None	Add BDA system w/ amplifier & cabling above
4	Electrical Systems	Safety & Security	All	Mass Notification System is highly recommended for schools (not req'd by code). A Mass Notification System would consist of control panels, info alarm graphic annunciators and controllers, addressable speakers, and amber lens strobes	None	Install Mass Notification System

Summary

The need to bring emergency power systems up to code establish the electrical systems as potentially critical because these items are related to occupant safety. Additionally, BDA and MNS systems are recommended for enhanced safety/security.

Upgrades to LED lighting throughout and additions of occupant and daylight sensors will improve energy efficiency.

Average score:
Potentially Critical

2

Electrical Systems

3.22 Technology Evaluation

The following technology evaluation was completed by Ai3 Architects, which retains a full-time technology consultant in house. The Cohasset Information Technology Department is responsible for managing the municipal and educational systems for the Town and school district.

Computer labs used to be the best method of technology integration within a school. They were intended to aid the development of computer use skills.

Today's students are well-versed in technology because it is already such an integral part of their lives. It is no longer a stationary activity situated in a single room.

Because of this, an ability to stay connected or use devices from anywhere within the school is important.

Network

District fiber to the schools is adequate and reliable. Internet service provided at each school is adequate and acceptable. The network cabling is a mix of Category 5e and 6, with ages between 4 to 20 years old. There is no Category 6A in the buildings, which is the typical new building standard installed in new projects. A cable infrastructure upgrade to Category 6A is recommended, to help future proof the buildings.

Most data requirements (99%) are served via wireless access points. Physical data drop locations in each room are available if required. Data service is acceptable, but not up to current design standards (multiple physical Category 6A data drops at the teacher location and at other locations in the classrooms).

Old Category 3 analog/digital phone cabling has been abandoned, as a newer VoIP phone system and data cabling (category 6) has been installed for phone locations.

Switches

Switches are a mix of Dell and HP 48 port. Most are 5-7 years old, and are reliable and acceptable. Older switches are end of life and are scheduled to be replaced in 2022.

Phone System

The phone system is an up to date 4 year old Mitel VoIP system that is reliable and acceptable.

Public Address System

The PS system was replaced in 2019, however the cabling was not replaced. As such, intermittent issues remain at certain locations, and more independent zones would be

beneficial. This would require recalling the PA system from the rack to the speakers. Volume adjustments have been an issue, with one end of a speaker chain too loud, and the volume too low at the far end. There are no emergency call buttons installed in the buildings. Typical PA installations in newer buildings include emergency call buttons in each classroom as a second means of communication from the classroom to the front office in case of emergency. This can be addressed with a PA cable renovation when addressing the zones.

The master clock system is problematic. Analog clocks are old and some are beyond repair as parts are not available. There are various types of analog clocks in the buildings, and while synchronized, they are not reliable. There were no digital clocks in use. Newer systems include digital clocks, with some systems able to scroll messages across them during emergencies. It is recommended that the clocks and cabling be replaced.

Wireless

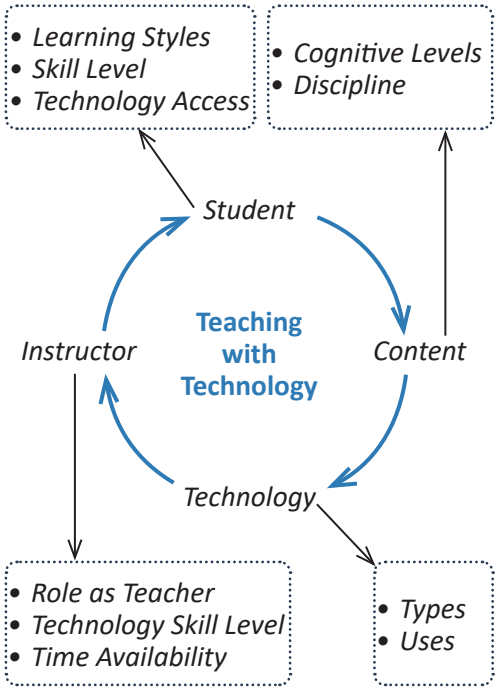
Aerohive (now part of Extreme Networks) is the district's wireless technology standard. The building has new Aerohive wireless access points. All classrooms have a wireless access point, but only one cable drop is in each classroom for the wireless access points. Four data drops are usually provided on new projects. Wireless coverage is currently acceptable.

IPTV

The building does utilize a video distribution system. The old coax video distribution system is still in tact in the technology closets. Industry Weapon is the digital signage system in the District. The schools do not have many displays, but some displays are scheduled for installation this winter break.

Classroom Technology

There is currently almost no interactivity equipment in the classrooms. All newer schools designed today have interactive type equipment in the classrooms. Sixty-three ceiling mounted non-interactive projectors are in use in the Cohasset Public Schools and six Mimio 280 systems are in use. A pilot program has begun to vet newer interactive technologies for consideration. Voicelift, a system to amplify a teacher's voice, is not installed at the schools.



Technology Considerations

Presentation cameras are in use in the classroom.

Current data in the classrooms would not support an interactive display or projector on the teaching wall of the classroom. Audio-video cabling and data cabling would have to be provided at each location (unless existing cabling can be reused).

Other Systems and Information

UPS devices are used in racks for equipment. The break-fix technology repair areas are adequate.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Wide Area Network Fiber	District Schools	Fiber as part of the wide area network is in acceptable condition	None	Continue maintenance practices
6	Technology	Internet Service	District Schools	Internet service is in acceptable condition	None	Continue maintenance practices
5	Technology	Switches	District Schools	Switches that are 5-7 years old are in acceptable condition	None	Continue maintenance practices
1	Technology	Switches	District Schools	Switches that are older than 7 years old are at end of life condition and should be replaced this year	None	Replace switches older than 7 years old
3	Technology	Network Cabling	District Schools	Network cabling does not include Cat6A; it is recommended that the district upgrade to Cat6A	None	Upgrade to Cat6A

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Phone System - VoIP	District Schools	Equipment is only 4 years old and is in acceptable condition	None	Continue maintenance practices
3	Technology	Phone Cabling	District Schools	5e/6 4-20 years old; does not include Cat6A	None	Upgrade to Cat6A
5	Technology	PA System	District Schools	Equipment is only 3 years old; needs zone boards	None	Provide zone boards
1	Technology	PA System	District Schools	No call buttons in rooms in case of emergency	None	Provide call buttons in rooms
3	Technology	PA System	District Schools	Portions with old cabling have volume issues and zone issues	None	Upgrade cabling
6	Technology	PA System	District Schools	Phone paging is in acceptable condition	None	Continue maintenance practices
2	Technology	Master Clock	District Schools	Equipment and cabling in poor condition; causes synch issues	None	Upgrade equipment and cabling
2	Technology	Clocks	District Schools	Clocks are all analog throughout, making repairs problematic and time consuming	None	Upgrade to digital clocks throughout
6	Technology	Wireless Equipment	District Schools	Aerohive devices are in acceptable condition	None	Continue maintenance practices
4	Technology	Wireless Cabling	District Schools	Currently, only 1 cable per device while a minimum of 4 are provided for new projects; upgrade recommended	None	Upgrade to greater capacity cabling
2	Technology	Digital Signage	District Schools	Digital displays are currently under review; should upgrade for consistency across district	None	Upgrade for consistency

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Digital Signage	District Schools	The district standard "Industry Weapon" is in acceptable condition	None	Continue maintenance practices
1	Technology	Classroom Interactivity	District Schools	There are very few projectors in use; learning environments would benefit from increased capability	None	Provide projectors in learning spaces
4	Technology	Projectors	District Schools	There are 63 ceiling-mounted projectors in use; recommended upgrades across district for consistency	None	Upgrades across district for consistency
1	Technology	Voice Lift Systems	District Schools	There are no voice lift systems in use; these are important in learning spaces to aid the hearing impaired	None	Add voice lift in learning spaces
6	Technology	Digital Document Cameras	District Schools	Document cameras are in acceptable condition; less than 4 years old and provided in classrooms	None	Continue maintenance practices
6	Technology	Wifi/Data	District Schools	Data available in classrooms is in acceptable condition; most have wifi	None	Continue maintenance practices
6	Technology	Projectors	District Schools	Ceiling-mounted projectors in Media Centers are in acceptable conditions	None	Continue maintenance practices

Average score:
Not Yet Critical

3

Technology

Summary

Overall technology is sufficient, however, upgrades to the clocks, PA system, and switches are recommended to meet the functional and operational procedures of today.

Additionally, classroom interactivity and voice lift systems should be improved upon and provided in all learning spaces so that learning by every student is attainable.

The integration of technology is essential to achieving the learning objectives of Cohasset Public Schools. These objectives include: creative thinking, problem solving, communication, collaboration, and timely communication with students and families.

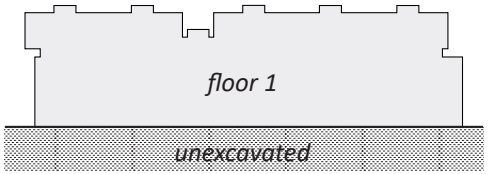
Joseph Osgood Elementary School

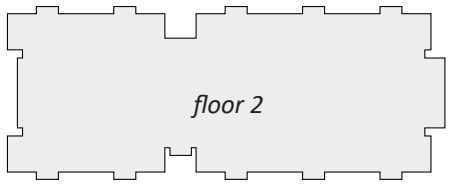
3.23 Overview

Joseph Osgood Elementary School is the youngest school building in the Town, completed in 1998. It serves as one of two elementary schools in Cohasset, specifically for grades PK-2. The original Joseph Osgood School was located on Ripley Road and exists today as the public library. The school is named for Reverend Joseph Osgood, pastor of the Town's first parish for more than fifty years.

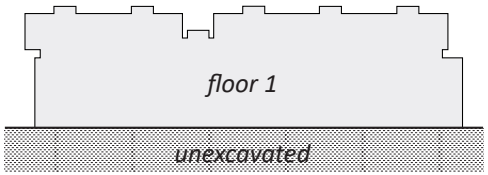
Building History

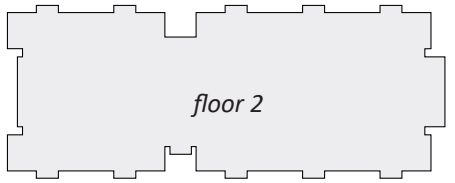
The building remains much unchanged since its erection twenty-four years ago.





1998 current footprint





2022 current footprint

Note: since original construction, no additions or significant renovations have occurred.

addition
demolish

3.24 Architectural Evaluation - Interior

The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building for code/accessibility compliance, interior finishes, exterior envelope, thermal health, and acoustics, among other categories.

Building Code/Accessibility Compliance

At the time of its construction, Massachusetts State Building Code and ADA accessibility standards had been adopted. For example, all core classrooms include an accessible sink, there is a centrally located elevator, stairs and railings are consistent and compliant, and doors include appropriate clearances. A second lower handrail is recommended on stairs becuase of the student age group.

Average score:
Not Critical

6

Building Code/Accessibility Compliance

Summary

As a result, the interior of the Joseph Osgood Elementary School building is largely compliant with building codes and by accessibility standards.

Healthy Environment & Interior Finishes

In terms of a healthy environment, there are a lot of features within the school that contribute positively. With ceiling-mounted unit ventilators, there isn't a hole in the exterior wall pulling untempered air into the conditioned space. Instead, the warm air from occupants is better transfered from higher up. The exterior wall includes plentiful daylight and views to the wetlands beyond from each classroom, as well as direct access outdoors. There is appropriate acoustic treatment on the walls and adequate lighting.

The finishes are original, but appear to have maintained their condition. This is also attributed to the consistent maintenance practices by the Facilities Department.

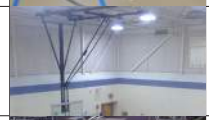
Average score:
Not Critical

6

Healthy Environment & Interior Finishes

Summary

The interior finishes are in good condition and the interior environment is satisfactory for its occupants.

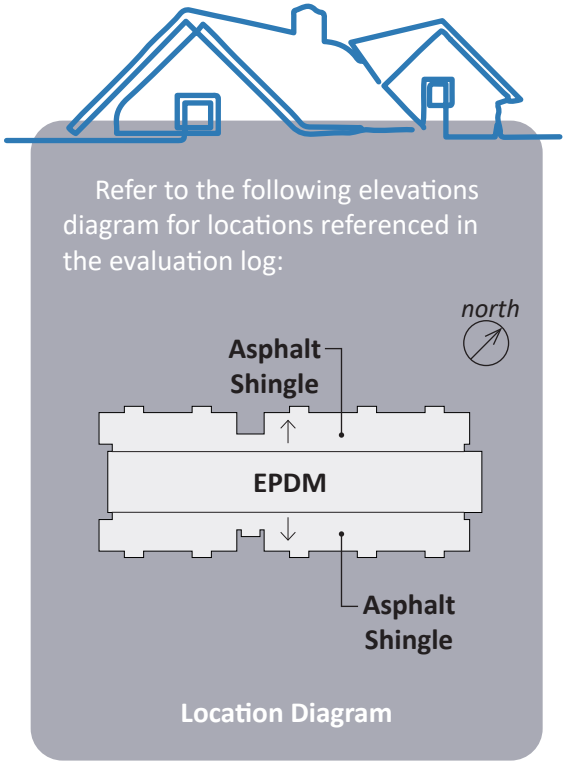
SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Interior Finishes	Flooring	Core Academic	Vinyl composition tiles in classrooms are in good condition		Continue maintenance practices
6	Interior Finishes	Walls	Core Academic	Walls are in good condition with adequate acoustic treatment		Continue maintenance practices
6	Interior Finishes	Ceilings	Core Academic	Wood ceilings in classrooms are in good condition		Continue maintenance practices
6	Interior Finishes	Flooring	Corridors	Vinyl composition tiles in corridors are in good condition		Continue maintenance practices
4	Interior Finishes	Flooring	Forum	Carpet on forum assembly seats is in acceptable condition, but recommend replacement at main entry		Replace at main entry
6	Interior Finishes	Walls	Corridors	Wood wainscot on walls in corridors is in good condition		Continue maintenance practices
6	Interior Finishes	Ceilings	Corridors	Acoustic ceilings in corridors are in good condition		Continue maintenance practices
6	Interior Finishes	Flooring	Physical Education	Poured flooring surface in gym is in good condition		Continue maintenance practices
6	Interior Finishes	Walls	Physical Education	Walls in gym are in good condition with adequate acoustic treatment		Continue maintenance practices
6	Interior Finishes	Flooring	Dining & Food Service	Vinyl composition tiles in dining are in good condition		Continue maintenance practices

3.25 Architectural Evaluation - Exterior

The following architectural evaluation was completed by Ai3 Architects, LLC. Ai3 evaluated the existing building exterior, specifically the roof and walls/windows/doors.

Roofing

The roof of Joseph Osgood Elementary School includes a combination of asphalt shingles and adhered EPDM (ethylene propylene diene monomer rubber). From the front, the building appears as though it has an entirely sloped roof of shingles, but beyond the front elevation, the roof turns down to a low-slope roof of EPDM, before returning up at the rear for another sloped profile. The mechanical equipment sits within the EPDM zone.



EPDM roof manufacturers typically warranty their roof systems for 20 years and asphalt shingle warranties typically span 20-25 years. There have been numerous replacements to individual shingles.

Since installation of the roof in 1998, the Massachusetts State Energy Code has raised the minimum requirements for insulating roofs. A new, low-slope roof today would have a minimum of two layers of 2.5-inch polyiso insulation plus the tapered insulation required to properly drain, achieving at least an R-value of 30. The 1998 roof notes a 3-inch minimum insulation layer, which is below today's standard.

Ponding water is considered water that has remained for forty-eight hours or longer. The evaluation did not persist longer than this time period, but minor water ponding was observed to be present on the roofs. It is recommended that the facilities department check the roofs within three days of any rain or snow event to determine if major ponding is a persistent issue.

Evaluation Log

The following log was used during the site visit to record items of note as related to roofing. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Exterior Envelope	Roofing	EPDM	Soft areas of roof present; decaying material or presence of moisture are possible causes - further investigation required		Investigate source of soft roof
4	Exterior Envelope	Roofing	EPDM	Patch sealant at roof patches is cracking; some areas appear to be different material altogether		Repair patch sealant
3	Exterior Envelope	Roofing	EPDM	Roof depressed below HVAC unit		Monitor for ponding water at unit
1	Exterior Envelope	Roofing	Asphalt Shingle	Three-tab shingles falling off (IBC 1507.3.3.3 - High wind atachment & IBC 1511; see NCRA Roofing Manual Ch. 5 for reroofing)		Refer to roofing repair manual
4	Exterior Envelope	Roofing	EPDM	There are no snow guards on sloped shingle roofs; recommend for safety of falling snow		Consider addition of snow guards
2	Exterior Envelope	Roofing	Asphalt Shingle	Roof edge metal has oxidized; further corrosion will leave roof edges unprotected		Remediate or replace roof edge metal
6	Exterior Envelope	Roofing	EPDM	Overall roof appears to have minimal ponding		Continue maintenance practices

Summary

Consider replacement of asphalt shingle roofs with standing seam instead, to alleviate consistent shingle replacement. Continue to review and repair seams at EPDM and monitor ponding, if any. Replace oxidized flashing/accessories.

Average score:
Not Yet Critical

3

Roofing

Exterior Walls

The exterior is a combination of brick, concrete masonry units (CMU), and composite panels (most likely fiber cement board). The brick is in acceptable condition overall, with minor cracking or damage. The composite panels are weathered and discolored with many instances of damage or staining.

Doors & Windows

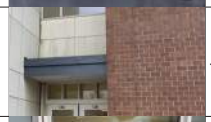
The foggy windows are a result of failed seals that have allowed moisture to infiltrate the space between the panes of glass. Overtime, the moisture has stained the glass. With broken window seals, repair is not possible and requires replacement of the double-pane insulated glass.

Additionally, the window frames show rusting at the base, which is probably excess moisture that was allowed to build up once the seals were compromised. Rust should be removed from frames and treated with a preventative coat, or consider replacing frames too.

Evaluation Log

The following log was used during the site visit to record items of note as related to roofing. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Exterior Envelope	Masonry	North	Brick is in acceptable conditon, but with some efflorescence and moss growth on mortar		Remove stains from brick using vinegar brush
3	Exterior Envelope	Walls	North, East, West	Composite panels are in fair condition stained, particularly from water running off of facade accessories; option to replace for a new look		Wash with soap and water or replace panels
2	Exterior Envelope	Walls	North, East, West	Damaged composite panels are in poor condition (note replacing individual panels will not match/be weathered in the same way as the others)		Replace damaged panels (or all for a new look)

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Exterior Envelope	Doors	Perimeter	Door frames are in fair condition with rust; this is ture for other metal components on site (pipes, accessories)		Remove rust and apply new coating to metal elements
3	Exterior Envelope	Doors	West	Louver is in fair condition showing signs of mold or organic growth		Clean and recoat louver
2	Exterior Envelope	Thermal/Moisture Protection	Perimeter	Sealant around louvers, windows, and penetrations in fair condition; cracked		Replace sealant around openings
1	Exterior Envelope	Thermal/Moisture Protection	North, South	Clerestory windows in poor condition; fogged due to broken seals		Replace windows and seals
2	Exterior Envelope	Masonry	East	Control joint degraded and in poor condition; replace to avoid pests or moisture infiltration		Replace control joint
1	Exterior Envelope	Windows	East, West	Windows discolored and in poor condition due to broken seal		Replace windows
3	Exterior Envelope	Masonry	North, South	Provide weep vents in weeps without to avoid pests (like wasps) or particulates clogging the weeps		Fill weeps with vents

Summary

Windows are in poor condition and should be replaced. Consider removal of the composite panels and replacement with all new, for a cohesive look, or another product, like aluminum composite or wood, for a face lift.

Review the exterior annually for areas impeding water tightness. Provide seals and patch mortar as necessary.

Average score:
Potentially Critical

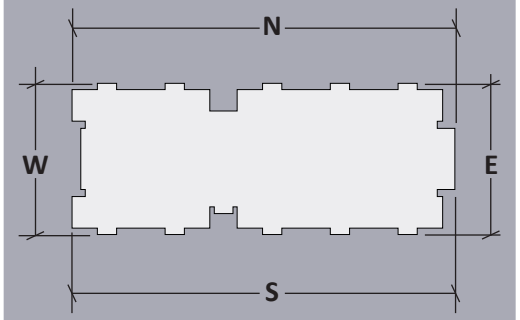
2

Exterior Walls
(window & composite panel replacements)

3.15 Site Evaluation - Landscape

The following site evaluation was completed by Traverse Landscape Architects.

Refer to the following elevations diagram for locations referenced in the evaluation log:



Orientation Diagram

Pedestrian & Bicycle Access

Current accessibility on site is not universal. There are a number of doors on the north, east and west that are not accessible. There are areas along the main entrance where the sidewalks and landings are setting +1/2" creating trip hazards. There are no detectable warning plates on ADA crossing areas.

There is limited bike parking on the site.

Outdoor Learning & Recreation Fields

There is no ADA accessible route to the natural grass recreation area behind the school except through the building. There is no ADA accessible route to the outdoor learning area. There is no ADA accessible companion seating in outdoor learning area. There is no ADA accessible is to outdoor vegetable gardens. The access gate to the outdoor vegetable gardens doesn't meet ADA accessibility requirements.

Landscape

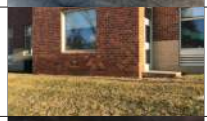
There is a fair amount of old growth trees on site with older limbs that should be pruned. Major focus should be given to the areas that overhang vehicles and pedestrian paths.

There are pavers along the front entrance for runoff from the roof that are falling apart. The area is surrounded by wetlands in multiple areas that are limiting expansion along the roadways.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.


SOHIER STREET
Deer Hill
Elementary School
Joseph Osgood
Elementary
School
OLD PASTURE ROAD
RESERVOIR ROAD
Site Constraints
Diagram Legend
Property Line
50' Wetland
setbacks
100' Wetland
setbacks
Wetlands
1% Annual
Chance of Flood
Slope
Constraints

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
5	Landscape	Accessibility Compliance	Site - North	The pedestrian pavement from Deer Hill to main entrance has settled beyond 1/2-inch; not ADA compliantand trip hazard		Regrade and provide additional drainage
5	Landscape	Accessibility Compliance	Site - Perimeter	There are multiple doors around the building that have no accessible route		Provide exterior accessible route
5	Landscape	Accessibility Compliance	Site - South	There is no accessible route to the outdoor learning area and area does not include companion seating		Provide exterior accessible route & companion seats
5	Landscape	Accessibility Compliance	Site - South	There is no accessible route to the outdoor garden area and area does not include accessible garden beds		Provide exterior accessible route & garden beds
2	Landscape	Plantings	Site - Perimeter	There a number of trees that pose a potential hazard and should be pruned or removed		Prune plantings
3	Landscape	Stormwater Management	Site - East	Pavers placed in the landscape to deal with stormwater runoff from roof are deteriorating		Improve roof stormwater management
3	Landscape	Stormwater Management	Site - East, West	There is stormwater run-off creating erosion of the slope on the east and west sides of the building		Improve roof stormwater management

Average score:
Recommended Upgrades

4

Site - Landscape *(primarily accessibility & stormwater managment upgrades)*

Summary

Inaccessible routes are not yet critical in physical condition, but upgrading is necessary to avoid hazardous conditions for visitors. Rainwater and runoff management should be reviewed and additional means to retain stormwater should be evaluated and provided, espcially at the rear grass areas which are often swampy.

Maintenance practices of the grounds, plantings, and play equipment should continue.

3.27 Site Evaluation - Civil

The following site evaluation was completed by The Vertex Companies. Vertex reviewed the natural environment, roadways, vehicular and pedestrian circulation, and utilities.

Natural Environment

Topography

A review of record documents indicate an elevation change of approximate 60-feet across the site. The area around the school is relatively flat with a steeper access drive and steep slopes behind the school. The topography of the site general slopes to the northwest with grades up to 15%. Steeper slopes beyond the south face of the existing building would present construction challenges should the school seek expansion.

Soils

Based on information from the NRCS, a combination of soils is expected to be at site, predominantly Newport silt loam. Further geotechnical investigation must be performed prior to a design process.

Wetlands

Available record documents indicate the presence of bordering vegetated wetlands to the north, east, and west of the school building. Buffer zones associated with these wetlands extend across portions of the building and paved driveways and parking areas.

Rare Species & Cultural Resources

Information regarding rare species was obtained from the MassGIS Rare Species and Priority Habitat data layer showing data recorded by the NHESP in the State Registry. Review of this information indicates that there are no areas of Estimated or Priority Habitat are mapped on or in the vicinity of the site.

The existing Joseph Osgood Elementary School building is located on approximately 38.1 acres of land owned by the Town of Cohasset.

The building is accessible via one (1) two-way driveway from Sohier Street. The site is furnished with two paved parking areas, paved driveways, play area and landscaping surrounding the building. Concrete sidewalk access from parking spaces and one pedestrian access from Sohier St. The site shares its only access point with Deer Hill Elementary School.

Existing Conditions Site Evaluation

Roadways and Parking Area Conditions

Paved surfaces throughout the site are in poor condition. Rutting, alligator cracking, and potholes are found in driveways and parking areas. There are also signs of settled in paved areas and sidewalks. Multiple manholes and catch basins show signs of settlement resulting in depressed rim elevations and pavement cracks adjacent to the structures. Settlement of paved surfaces is an indication of poor compaction beneath the surface layer, poor subbase material, and/or high groundwater.

Parking

Parking areas are available in front of the school and adjacent to the school to the south. The main parking area is in the front. During on site investigations, parking areas were observed to be full and cars were parked in unmarked parking spaces along the access driveway. This condition indicates an inadequate number of available on site parking spaces.

Site Circulation and Access

As previously described, site access is provided via a curb cut on Sohier Street. This is a shared access point with the Deer Hill School. Accessing the Joseph Osgood School requires traveling through the driveways and/or parking area associated with the Deer Hill school.

Bus Drop-Off/Pickup

Buses enter the school site by first traveling through the Deer Hill School driveways and dropping-off/picking up students in front of the school. Due to past conflicts with parents dropping off and picking up, buses angle park in front of the school instead of lining up parallel with the building. This prevents parents from using the driveway in front of the school while buses are loading and unloading. Buses egress by passing the exit point of the main parking area and traveling through the same driveway used for entrance. This movement creates conflict points with parents dropping off and picking up and with vehicles maneuvering through the Deer Hill School parking area and driveways. Congestion is reported at the mouth

of the driveway that leads to the school as buses and parents contend for the same space.

Parent Drop-off/Pickup

Parent drop-off and pickup occurs in front of the school as well. Insufficient queue length is provided causing vehicles to line the driveway beyond the mouth of the driveway leading to the school. Conflict points exist with buses and the front parking area.

Traffic

Traffic issues during peak hours is further exacerbated by the proximity to the Deer Hill School which shares access driveways. Both schools have similar operating hours resulting in conflicts during drop-off and pickup. Challenges with student drop-off and pickup could potentially be relieved by the addition of a loop road around the school, however, the wetlands areas limit the ability to expand at the site.

Utilities

The existing conditions utility information has been gathered record documents.

Sewer

Sewage discharges from the school, around the northern wetland system and into the on site lift station. No known issues exist with the on site sewer pipes or structures, however, a lift station is located on site. Lift stations require maintenance and repairs from qualified professionals.

Water

Water service is provided from the water main located in Sohier Street.

Drainage

On site storm water flows are captured in a closed drainage system consisting of catch basins and manholes. Storm water is captured and ultimately discharged towards the northern wetland system. Record documents do not indicate compliance with applicable storm water regulations. There are no known storm water management issues on the property.

Electric

Electric service is provided from utility pole located in Sohier Street.

Evaluation Log

The above log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
3	Civil	Site Circulation	Site	Paved surfaces are in poor condition throughout the site		Repave drives
4	Civil	Utilities	Site	Multiple manholes and catch basins show signs of settling, resulting in depressed rim and pavement cracks around structures		Repave drives
4	Civil	Parking	Site	Cars are parked throughout the site including in unmarked areas indicating an inadequate amount of parking spaces		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Queue length for parent drop off/pick up is insufficient		Reconsider parking/ circulation
4	Civil	Site Circulation	Site	Poor traffic flow patterns and separation for buses and parent vehicles during pickup/drop off		Reconsider parking/ circulation
2	Civil	Site Circulation	Site	Traffic issues during peak hours is further enhanced by the proximity to the Osgood Elementary School and shared driveways used by both		Reconsider parking/ circulation
4	Civil	Site Constraints	Site	Wetlands to the southern portion of the site constrain the ability to add additional parking and access points		Reconsider parking/ circulation

Summary

Options to alleviate traffic flows during drop-off and pick-up times should be reviewed and reconsidered. Consider repaving in areas with broken/settled pavement.

Average score:
Recommended Upgrades

4

Site - Civil

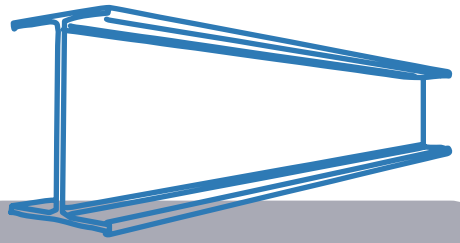
3.28 Structural Evaluation

The following structural evaluation was completed by Engineers Design Group (EDG) Inc. EDG evaluated the structural integrity of the existing Deer Hill Elementary School building.

Basis of Evaluation

This report is based on visual observations during our initial site visit on January 28, 2022 and review of the available documents prepared by Earl R. Flansburgh + Associates, Inc. Architects dated March 12, 1997.

During the visit we did not remove any finishes or take measurements; so, our understanding of the structure is limited.



The aesthetic of the Joseph Osgood Elementary School is unique because of its glue laminated timber beams that are exposed within classrooms.

These beams express the sloped roof structure of the school's upper floor while also creating a warm environment on the interior.

Building Description

The school is located on Sohier Street in Cohasset, Massachusetts. The school is essentially a two story structure for the most part. At the one story portion the floor matches the second level of the two story structure.

The existing school is a rectangular shaped school. The lowest level is a concrete slab on grade. The supported floor is a concrete metal deck slab supported on opens web steel joists or wide flange steel beams spanning between wide flange steel girders and steel columns. The typical roof is metal deck roof supported on open web steel joists, wide flange steel girders and steel columns. The roof over the class rooms is wood decking supported on Glue laminated timber beams spanning between wide flange steel beams and columns. The foundations are traditional shallow reinforced concrete foundations. The foundation wall separating the two story structure form the one story structure is a buttressed reinforced concrete wall.

Existing Conditions

Based on our observations, the original structure is performing well. We did observe some cracks in the interior masonry walls at a few locations. We did observe some water stains in the ceilings at the upper level which may be signs of water leaks from the roof. We observed some of the masonry walls were clipped to the structure though we observed some of the

masonry walls were not clipped to the structure. We did not see any signs of undue vibrations on the supported floors due to footfall.

Most of the exterior façade appears to be in good repair except for a few cracks at various locations. No apparent signs of foundation settlement were observed.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Structure	Concrete	Foundations	No signs of foundation settlement		Continue maintenance practices
6	Structure	Concrete	Slab on grade	No signs of undue vibrations on the supported floors		Continue maintenance practices
4	Structure	Framing	Interior	Some masonry walls from the original construction include seismic clips to structure, but most not clipped		Add seismic clips where missing
6	Structure	Framing	Core Academic	Glulam timber beams in classrooms appear to be in acceptable conditions		Continue maintenance practices
6	Structure	Steel	Joists	Long span open web joists supporting cafeteria and gym roof structures appear to be in acceptable condition		Continue maintenance practices

Evaluation Log

The above log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

Summary

The existing structure is performing adequately. All the observed deficiency are not a structural concern. All of the structural components that are visible appear to be performing adequately. The overall condition of the school is acceptable for continued use.

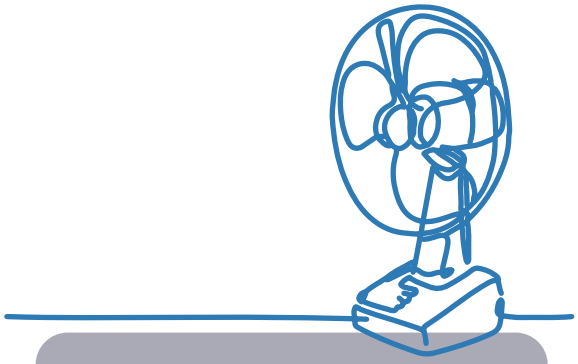
Average score:
Not Critical

6

Structure

3.29 Mechanical System Evaluation

The following mechanical system evaluation was completed by Griffith & Vary Consulting Engineers.



Unit ventilators were designed specifically for K-12 applications. For 70 or 80 years, it had been the widely accepted solution for classroom heating and cooling.

Over the past decade, the prevalence of operational and comfort problems, as well as an interest in moving away from gas powered systems for renewable energy, have caused unit ventilators to phase out of popularity.

Boiler Plant

The building is heated by two (2) gas fired cast iron section boilers. The cast iron boilers were manufactured by the Weil-McLain model 88. Each boiler has a Max input of 3,392 MBH with an output of 2,369 MBH. The boilers are equipped with Power Flame Burner model WCR3-G-20. The boilers are in fair condition but are inefficient to operate compared to today high efficiency options. The boilers are over 20 years old and are nearing the end of their service life.

The boilers provide hot water for heating to the building which is pumped by a set of pumps. The set is arranged in a primary/stand-by configuration located in the boiler room. If the primary pump was to fail the stand-by would engage. The pumps were manufactured by Taco model FE3010. It appears that the motors on both pumps where replaced, most likely when the variable frequency drivers where added. The original motors where not inverter rated. Overall, the pumps appear to be in fair condition and appear to have received proper maintenance, but they have outlived their useful service life.

Combustion air for the boilers is provided an indoor make-up air unit locating in the boiler room. The make-up air is manufactured by McQuay. A galvanized ductwork system is used to distribute the combustion air to each boiler.

Controls

The automatic temperature controls system is by Auto Matrix. The system is a direct digital control (DDC). The system is antiquated. End devices are obsolete and difficult to find if needed for repairs. Work arounds have been implemented to allow the system to work and maintain space comfort. The work arounds are more manual then automatic. The control system needs to be replaced to get optimal operation out of the HVAC equipment.

HVAC System

Classrooms

Classrooms are heated, cooled and ventilated by classroom unit ventilators (UV). The first-floor classrooms have vertical cabinet type. The second-floor classrooms have horizontal ceiling hung type. Outside air is supplied to the unit ventilators via wall louvers located below the windows on the first floor and between the windows on the second floor. Each unit ventilator has hot water coil, DX coil, filters, outside/return air dampers and supply fans. Valve and damper actuators are DDC. The classroom unit ventilators were manufactured by America Air Filter (AAF). The units appear to be in good working order however are nearing the end of their useful service life.

All the classroom unit ventilators that were fitted with DX coil for cooling. Each UV is paired with a remote air-cooled condenser. The condensers are beginning to fail. The condensers utilize R-22 which has been phased out of manufacturing since 2010. The system can still be serviced from existing R-22 stock but cost has increased over the years.

General exhaust for the classrooms is provided by a ceiling grille located in each room.

Gymnasium

The gymnasium is heated and ventilated by a roof mounted modular air handling unit with a hot water reheat coil manufactured by McQuay. The tempered air is distributed into the space by a galvanized ductwork system. The unit appears to be in fair shape but in good working order however the unit is nearing the end of its useful service life.

Library

The library is heated, cooled and ventilated by a split roof mounted modular air handling unit with a hot water reheat coil manufactured by McQuay. The tempered air is distributed into the space by a galvanized ductwork system. The AHU unit appears to be in fair shape but in good working order however the unit nearing the end of its useful service life. The air handler is paired with a remote DX air cooled condenser. The condensers utilize R-22 which has been

phased out of manufacturing in 2010. The system can still be serviced from existing R-22 stock but cost has increased over the years.

Cafeteria

The cafeteria is heated, cooled and ventilated by a split roof mounted modular air handling unit with a hot water reheat coil manufactured by McQuay. The tempered air is distributed into the space by a galvanized ductwork system. The AHU unit appears to be in fair shape but in good working order however the unit is nearing the end of its useful service life. The air handler is paired with a remote DX air cooled condenser. The condenser has failed. The condensers utilize R-22 which has been phased out of manufacturing in 2010. The system can still be serviced from existing R-22 stock but cost has increased over the years. The school is in the process of determine if the condenser is worth repairing or replacing.

Kitchen

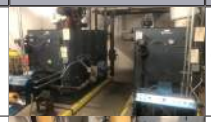
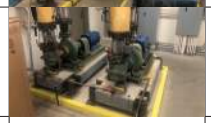
The kitchen is heated and ventilated by a single ceiling mounted unit ventilator manufactured by AAF. The tempered air is disturbed to the space by an insulated galvanized ductwork system terminating with ceiling grilles. The units appear to be in good working order however are nearing their useful service life. There is a single ceiling exhaust grill located over one of the ovens. The equipment should be located under capture hoods to better capture the heat rejections from the equipment.

Toilet Rooms

The toilet rooms are exhausted through a system of ceiling grilles, ductwork and roof mounted centrifugal exhaust fans. Although operational, the exhaust fans have outlived their useful service life.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
4	Mechanical Systems	Boiler Plant	Mechanical Room	Boilers are operational and in acceptable condition; higher efficiency options available though		Higher efficiency available
2	Mechanical Systems	Boiler Plant	Mechanical Room	Boilers pumps in fair condition; approaching end of useful service life		Replace boiler pumps
4	Mechanical Systems	Controls	Mechanical Room	Controls acceptable but would get optimal operation out of newer HVAC equipment	None	Replace controls
4	Mechanical Systems	HVAC	Core Academic	Unit ventilators appear to be in good working order but do not meet today's noise level standards		
2	Mechanical Systems	HVAC	Roof	RTUs utilize R-22 (was phased out) and are operational but nearing end of useful service life		Replace RTUs
2	Mechanical Systems	HVAC	Roof	AHU at library is operational but nearing end of useful service life		Replace AHU
2	Mechanical Systems	HVAC	Kitchen	Ceiling mounted unit ventilators appear to be in good working order but are nearing end of useful service life		Replace unit ventilators

Summary

Much of the current HVAC equipment is operational, but at an end of service stage and will require replacement in the short term. Some of the components of the current system are no longer manufactured, so replacing individual parts is not recommended. Upgrades to meet the current efficiency standards are recommended.

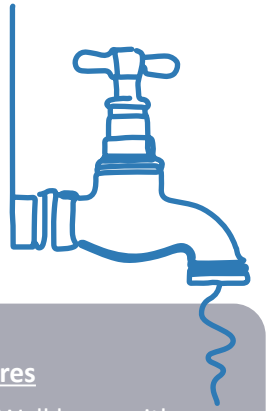
Average score:
Potentially/Not Yet Critical

2-3

Mechanical System

3.30 Plumbing System Evaluation

The following plumbing system evaluation was completed by Griffith & Vary Consulting Engineers.



Plumbing Fixtures

Water closets: Wall hung with manual 1.6 gpf flush valves

Urinals: Wall hung with manual .5 gpf flush valves

Lavatories: Tap type metering faucets

Water Coolers: Single manual with sensor bottle filler- newer

Sinks: Self rimming stainless steel with variety of manual 2.0 gpm faucet types based on application

Floor drains: Nickel bronze in toilet rooms & floor sinks in kitchen

Water Service

The 4-inch domestic water service enters through the first floor and connects to water meter. There is no service backflow preventer in this school. The service and meter appear to be in good condition.

The water feeding the boilers are protected with backflow preventers as required by code.

There have been minor water distribution leaks reported but nothing major.

Water Heating

The domestic water heating is provided by a gas fired high efficiency storage type water heater. This water heater also feeds the 140-degree water to the kitchen equipment. Both systems are recirculated. The pumps are in fair condition. We recommend that the pumps be replaced.

The water heater is newer equipment and in excellent condition.

There is a master mixing valve on the outlet of the heater but it does not appear to function correctly. This type of valve tends to have the need to exercise the full temp spread to keep the internal springs to function as intended. We recommend that the mixing valve changed out to a digital type to keep a more even water temperature.

Water Piping

In general, the water piping is in good condition and insulated. There are a couple locations in which the insulation was missing.

Sanitary & Storm Systems

There are several exit points for the storm and sanitary systems. There was one report that a 20-foot section of storm piping was replaced at top of stairs at the lobby area at some point due to corrosion of piping and elbow. There was no indication of the cause.

Conventional roof drain collection system with an area of downspouts in sloped roof areas that are collected with gutter / downspouts to cast iron boots at grade.

Gas System

The gas meter is located on the exterior east wall There are pressure regulators for 7“ wc to the building. The main distribution thru the building is 7” wc that services the water heaters, boilers and kitchen.

Kitchen Waste

The pot sink has a point of use grease trap to limit the grease to the main kitchen waste piping to prevent blockages.

Other kitchen equipment and floor drain waste is drained to the kitchen waste system and along with the pot and prep sink waste drain to the exterior drainage system. An exterior grease trap was not seen or indicated on the floor plans.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Plumbing Systems	Water Service	Mechanical Room	Water service (meter & backflow preventer) appears to be in acceptable condition		Continue maintenance practices
6	Plumbing Systems	Water Heating	Mechanical Room	Water heaters/tanks and pumps appear to be in acceptable condition		Continue maintenance practices
1	Plumbing Systems	Water Heating	Mechanical Room	Mixing valve does not appear to function correctly		Replace mixing valve with a digital model
6	Plumbing Systems	Storm & Sanitary	All	Sanitary and storm systems appear to be in acceptable condition; Previous replacements have occurred	None	Continue maintenance practices
4	Plumbing Systems	Fixtures	Toilet Rooms, etc.	Plumbing fixtures not entirely high-efficiency sensor type; upgrading will result in signifigant water/ sewer savings		Upgrade to high-efficiency fixtures throughout
6	Plumbing Systems	Waste	Kitchen	An exterior grease trap is provided at the kitchen pot sink		Continue maintenance practices

Average score:
Not Critical

6

Plumbing Systems
(Recommend switching to high-efficiency fixtures)

Summary

It appears that some of the flush valves on water closets and urinals have been replaced since with water-saving fixtures. There are some high efficiency sensor 10-year battery fixtures and trim available that would save water and be hands free.

The school has replaced the water coolers with new combination water cooler/ bottle filler fixtures in the public spaces. The fixtures available are 1.1 gpf water closets, .125 urinals, .32 gpm faucets and 1.5 gpm faucets for sinks.

3.31 Fire Protection System Evaluation

The following fire protection evaluation was completed by Griffith & Vary Consulting Engineers.

Pipe Distribution

There is low water pressure at the school to provide sufficient pressure to operate the sprinkler system. The building is provided with a 20 HP, 500 gpm fire pump to provide the added pressure for complete operation of the sprinkler system.

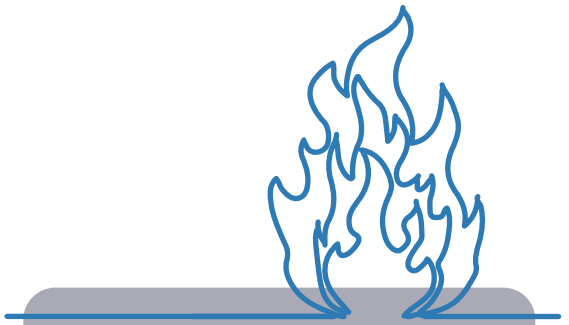
The fire pump is complete with fire pump control panel and transfer switch, jockey pump and control panel. It's located in a 2-hour enclosure accessible from the interior and exterior. It appears to be in good condition, although the room is tight for access. The discharge fire line from the pump distributes horizontally to feed the sprinkler flow control valves creating multiple sprinkler zones within the building. Sprinkler coverage is 100%, however, the sprinkler heads have been recalled and need to be replaced. The school is in the process of changing out all the heads to quick response type during school breaks and holidays.

The building is 100% sprinkled with a of semi-recessed chrome plated quick response type pendants. There have been no reported issues with leaks/ pipe replacements.
A Fire department Storz connection at front entry is in good condition.

SCORE	EVALUATION CATEGORY	DESCRIPTION	PHOTOS	ACTION
6	Fire Protection Systems	8-inch service that feeds building in acceptable condition		Continue maintenance practices
6	Fire Protection Systems	FD Storz connection is in acceptable condition		Continue maintenance practices
1	Fire Protection Systems	Sprinkler heads have been recalled		Replace sprinkler heads

Summary

The building is 100% sprinklered, which is compliant with current building code. Continue current practices to maintain the sprinkler system, including replacement of recalled heads.



Fire Service

An 6-inch fire service feeds the building and in good condition. A double check valve provides code required protection.

Average score:
Recommended Upgrades

4

Fire Protection System
(sprinkler heads)

3.32 Electrical System Evaluation

The following electrical system evaluation was completed by Griffith & Vary Consulting Engineers.

Normal Power System

The switchboard is fed by the electric utility co. transformer via underground conduit/cabling. The switchboard rated at 3000 amps, 120/208 volt, three phase, four wire has a 3000 amp main switch and feeds panelboards located in the Main Electric Room, and throughout the building. The distribution sections of the switchboard are made up of circuit breakers. The normal power distribution is as manufactured by Cutler Hammer. The normal power system appears to be in fair condition.

Electric Service

The primary electric service, which originates from a riser conduit on an electric utility company pole at Sohier Street, feeds the pad mounted electric utility company's transformer via underground conduit/cabling.

The transformer is located on the site. The electric utility company meter is mounted on the transformer.

The electric service appears to be in fair condition.

Emergency Power System

The building does not have an emergency generator. Emergency lighting is provided through the use of emergency battery units, and exit signs with backup batteries.

Fire Alarm

The fire alarm control panel is addressable as manufactured by Edwards EST. The fire alarm radio master box is located adjacent to the fire alarm control panel, with the associated antenna located on the exterior of the building. The fire alarm system consists of remote annunciators with microphones, smoke detectors, carbon monoxide detectors, heat detectors, duct smoke detectors, pull stations, magnetic door holders, strobes, and speaker/strobes.

The fire alarm system appears to be in good condition.

Lighting

Interior

The interior lighting consists of a mix of fluorescent and LED lighting fixtures. Staff indicated that fluorescent lighting fixtures have been replaced with LED type with integral occupancy sensors in common areas and they are still in the process of upgrading fluorescent lighting

fixtures in other areas with LED type. Exit signs provide for direction to paths of egress.

The interior fluorescent lighting fixtures appear to be in poor condition, while LED lighting fixtures appear to be in good condition.

Exterior

Lighting consists of bollards and wall mounted and pole mounted LED site lighting fixtures.

Deficiencies:

- Staff indicated that there have been complaints that the site is not sufficiently illuminated. As such, exterior lighting levels would not appear to meet IESNA Standards.

The exterior lighting appears to be in good condition.

Recommendations:

- LED site lighting should be added to supplement existing lighting to comply with IESNA Standards.

Switching

Interior lighting is controlled by local wall switches, wall mounted combination switch/ occupancy sensors, wall and ceiling mounted occupancy sensors, and lighting relay control panels.

Exterior lighting is controlled by lighting relay control panel.

Deficiencies as it relates to current Codes:

- The current building switching does not meet the International Energy Conservation Code as it is Auto-On. Manual-On is required in most areas, except in Corridors, Stairs, and Toilet rooms.
- Automatic daylight harvesting is required as per the International Energy Conservation Code.

The switching appears to be in fair condition, however as described above, does not meet current Codes.

Recommendations:

- The lighting control system should be replaced with new to comply with the International Energy Conservation Code.

Receptacles

Receptacles are ground type, with some GFCI type throughout the building. Receptacles have been added over the years through the use of EMT conduit with surface boxes, tele-power poles, plugmold, and wiremold.

Deficiencies as it relates to current Codes:

- Receptacles in the Kitchen require GFCI protection where equipment plugs in via cord and plug and is either 125-250 volt single phase 150 volts or less to ground 50 amps or less, or 208 volt three phase 100 amps or less as per National Electrical Code.

Receptacles appear to be in fair condition, however as described above, Kitchen receptacles do not meet current Codes

Recommendations:

- Receptacles in the Kitchen should be replaced with new as required by the National Electrical Code.

Lightning Protection

The building has a lightning protection system consisting of air terminals on the roof with downlead conductors to ground and surge protection.

Bi-directional Amplifier System:

The building does not appear to have a bi-directional amplifier system.

Recommendations:

- A bi-directional amplifier system is probably required unless testing proves that Police and Fire Department radios have required signal levels as dictated by the International Building Code. A bi-directional amplifier system would include an amplifier and cabling above ceilings.

Wiring:

Wiring is made up of MC cabling, FA MC cabling, EMT, Rigid, and PVC conduit.

Mass Notification System

The building does not have a Mass Notification System.

Recommendations:

- Although it is not required by Code, a Mass Notification System is highly recommended for Schools. A Mass Notification System would consist of control panels, info alarm graphic annunciators and controllers, addressable speakers, and amber lens strobes.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
2	Electrical Systems	Normal Power System	All	Normal power system (switchboard/ transformer/panelboard) appears to be in fair condition		Monitor normal power system
6	Electrical Systems	Building Code Compliance	All	Fire alarm system appears to be in good condition		Continue maintenance practices
6	Electrical Systems	Interior Lighting	All	Interior LED lighting fixtures appear to be in acceptable condition		Continue maintenance practices

SCORE	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
1	Electrical Systems	Interior Lighting	All	Interior fluorescent lighting fixtures appear to be in poor condition		Replace fixtures with LED
4	Electrical Systems	Exterior Lighting	Site	Site not sufficiently illuminated; does not meet IESNA Standards		Add LED site lighting to comply w/ IESNA
5	Electrical Systems	Energy Conservation Code Compliance	All	The current Auto-On building switching does not meet IECC; Manual-On req'd in most areas, except Corridors, Stairs, Toilets		Replace lighting control system to comply w/ IECC
5	Electrical Systems	Energy Conservation Code Compliance	All	Automatic daylight harvesting is required as per the International Energy Conservation Code		Install auto daylight harvesting
1	Electrical Systems	Building Code Compliance	Kitchen	Receptacles appear to be in fair condition, however, Kitchen receptacles do not meet current Codes		Replace kitchen receptacles w/ new GFCI's
1	Electrical Systems	Building Code Compliance	All	A bi-directional amplifier system is required (unless testing proves PD & FD radios have required signal levels as dictated by the IBC)	None	Add BDA system w/ amplifier & cabling above
4	Electrical Systems	Safety & Security	All	Mass Notification System is highly recommended for schools (not req'd by code)	None	Install Mass Notification System

Average score:
Not Yet Critical

3

Electrical System

Summary

Upgrades to LED lighting throughout and additions of occupant and daylight sensors will improve energy efficiency. The orientation of the building is ideal for daylight harvesting and energy conservation.

Additionally, BDA and MNS systems are recommended for enhanced safety/security.

3.33 Technology Evaluation

The following technology evaluation was completed by Ai3 Architects, which retains a full-time technology consultant in house. The Cohasset Information Technology Department is responsible for managing the municipal and educational systems for the Town and school district.

Network

District fiber to the schools is adequate and reliable. Internet service provided at each school is adequate and acceptable. The network cabling is a mix of Category 5e and 6, with ages between 4 to 20 years old. There is no Category 6A in the buildings, which is the typical new building standard installed in new projects. A cable infrastructure upgrade to Category 6A is recommended, to help future proof the buildings.

Most data requirements (99%) are served via wireless access points. Physical data drop locations in each room are available if required. Data service is acceptable, but not up to current design standards (multiple physical Category 6A data drops at the teacher location and at other locations in the classrooms).

Old Category 3 analog/digital phone cabling has been abandoned, as a newer VoIP phone system and data cabling (category 6) has been installed for phone locations.

Switches

Switches are a mix of Dell and HP 48 port. Most are 5-7 years old, and are reliable and acceptable. Older switches are end of life and are scheduled to be replaced in 2022.

Phone System

The phone system is an up to date 4 year old Mitel VoIP system that is reliable and acceptable.

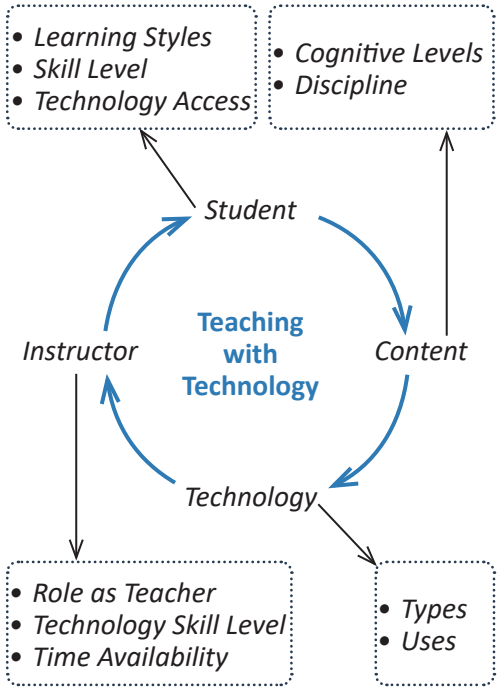
Public Address System

The PS system was replaced in 2019, however the cabling was not replaced. As such, intermittent issues remain at certain locations, and more independent zones would be

Computer labs used to be the best method of technology integration within a school. They were intended to aid the development of computer use skills.

Today's students are well-versed in technology because it is already such an integral part of their lives. It is no longer a stationary activity situated in a single room.

Because of this, an ability to stay connected or use devices from anywhere within the school is important.



Technology Considerations

beneficial. This would require recalling the PA system from the rack to the speakers. Volume adjustments have been an issue, with one end of a speaker chain too loud, and the volume too low at the far end. There are no emergency call buttons installed in the buildings. Typical PA installations in newer buildings include emergency call buttons in each classroom as a second means of communication from the classroom to the front office in case of emergency. This can be addressed with a PA cable renovation when addressing the zones.

The master clock system is problematic. Analog clocks are old and some are beyond repair as parts are not available. There are various types of analog clocks in the buildings, and while synchronized, they are not reliable. There were no digital clocks in use. Newer systems include digital clocks, with some systems able to scroll messages across them during emergencies. It is recommended that the clocks and cabling be replaced.

Wireless

Aerohive (now part of Extreme Networks) is the district's wireless technology standard. The building has new Aerohive wireless access points. All classrooms have a wireless access point, but only one cable drop is in each classroom for the wireless access points. Four data drops are usually provided on new projects. Wireless coverage is currently acceptable.

IPTV

The building does utilize a video distribution system. The old coax video distribution system is still in tact in the technology closets. Industry Weapon is the digital signage system in the District. The schools do not have many displays, but some displays are scheduled for installation this winter break.

Classroom Technology

There is currently almost no interactivity equipment in the classrooms. All newer schools designed today have interactive type equipment in the classrooms. Sixty-three ceiling mounted non-interactive projectors are in use in the Cohasset Public Schools and six Mimio 280 systems are in use. A pilot program has begun to vet newer interactive technologies for consideration. Voicelift, a system to amplify a teacher's voice, is not installed at the schools.

Presentation cameras are in use in the classroom.

Current data in the classrooms would not support an interactive display or projector on the teaching wall of the classroom. Audio-video cabling and data cabling would have to be provided at each location (unless existing cabling can be reused).

Other Systems and Information

UPS devices are used in racks for equipment. The break-fix technology repair areas are adequate.

Evaluation Log

The following log was used during the site visit to record items of note. Suggested actions to resolve have also been provided.

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Wide Area Network Fiber	District Schools	Fiber as part of the wide area network is in acceptable condition	None	Continue maintenance practices
6	Technology	Internet Service	District Schools	Internet service is in acceptable condition	None	Continue maintenance practices
5	Technology	Switches	District Schools	Switches that are 5-7 years old are in acceptable condition	None	Continue maintenance practices
1	Technology	Switches	District Schools	Switches that are older than 7 years old are at end of life condition and should be replaced this year	None	Replace switches older than 7 years old
3	Technology	Network Cabling	District Schools	Network cabling does not include Cat6A; it is recommended that the district upgrade to Cat6A	None	Upgrade to Cat6A

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Phone System - VoIP	District Schools	Equipment is only 4 years old and is in acceptable condition	None	Continue maintenance practices
3	Technology	Phone Cabling	District Schools	5e/6 4-20 years old; does not include Cat6A	None	Upgrade to Cat6A
5	Technology	PA System	District Schools	Equipment is only 3 years old; needs zone boards	None	Provide zone boards
1	Technology	PA System	District Schools	No call buttons in rooms in case of emergency	None	Provide call buttons in rooms
3	Technology	PA System	District Schools	Portions with old cabling have volume issues and zone issues	None	Upgrade cabling
6	Technology	PA System	District Schools	Phone paging is in acceptable condition	None	Continue maintenance practices
2	Technology	Master Clock	District Schools	Equipment and cabling in poor condition; causes synch issues	None	Upgrade equipment and cabling
2	Technology	Clocks	District Schools	Clocks are all analog throughout, making repairs problematic and time consuming	None	Upgrade to digital clocks throughout
6	Technology	Wireless Equipment	District Schools	Aerohive devices are in acceptable condition	None	Continue maintenance practices
4	Technology	Wireless Cabling	District Schools	Currently, only 1 cable per device while a minimum of 4 are provided for new projects; upgrade recommended	None	Upgrade to greater capacity cabling
2	Technology	Digital Signage	District Schools	Digital displays are currently under review; should upgrade for consistency across district	None	Upgrade for consistency

SCORE (1-6)	EVALUATION CATEGORY	SUBCATEGORY	LOCATION	DESCRIPTION	PHOTOS	ACTION
6	Technology	Digital Signage	District Schools	The district standard "Industry Weapon" is in acceptable condition	None	Continue maintenance practices
1	Technology	Classroom Interactivity	District Schools	There are very few projectors in use; learning environments would benefit from increased capability	None	Provide projectors in learning spaces
4	Technology	Projectors	District Schools	There are 63 ceiling-mounted projectors in use; recommended upgrades across district for consistency	None	Upgrades across district for consistency
1	Technology	Voice Lift Systems	District Schools	There are no voice lift systems in use; these are important in learning spaces to aid the hearing impaired	None	Add voice lift in learning spaces
6	Technology	Digital Document Cameras	District Schools	Document cameras are in acceptable condition; less than 4 years old and provided in classrooms	None	Continue maintenance practices
6	Technology	Wifi/Data	District Schools	Data available in classrooms is in acceptable condition; most have wifi	None	Continue maintenance practices
6	Technology	Projectors	District Schools	Ceiling-mounted projectors in Media Centers are in acceptable conditions	None	Continue maintenance practices

Summary

Overall technology is sufficient, however, upgrades to the clocks, PA system, and switches are recommended to meet the functional and operational procedures of today.

Additionally, classroom interactivity and voice lift systems should be improved upon and provided in all learning spaces so that learning by every student is attainable.

The integration of technology is essential to achieving the learning objectives of Cohasset Public Schools. These objectives include: creative thinking, problem solving, communication, collaboration, and timely communication with students and families.

Average score:
Not Yet Critical

3

Technology

4. Educational Program Evaluations

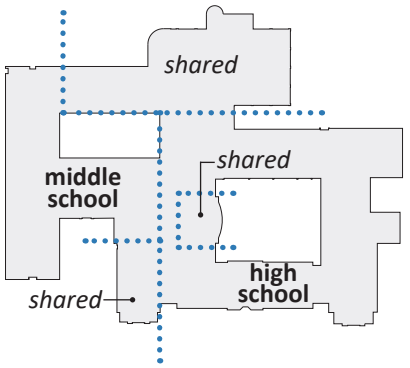
Cohasset Middle-High School

4.01 Overview

Middle and high school educational environments have changed dramatically over the past seven decades, since the original building was designed and constructed. This contrast is made worse by the fact that the original building was intended for high school use only; it was not intended to house the middle school, as it has now for nearly thirty years.

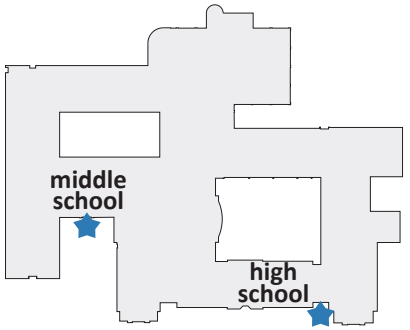
Middle School vs. High School

The school is "unoffically" delineated between Cohasset Middle School and Cohasset High School along the arts corridor, which runs along a north/south axis. Shared spaces (such as the gymnasium, cafeteria, auditorium, and media center) that fall within one of these halves, break the simplicity of the delineation. As recent as three years ago, when its own entry point was established, the middle school had no individual identity from the high school. This hasn't improved much in the years since, considering the middle school program was never intended to be in the same building, but administration has made what changes it could given that the school was "shoe-horned" into an antiquated building to begin with.



Unofficial Delineation of Schools

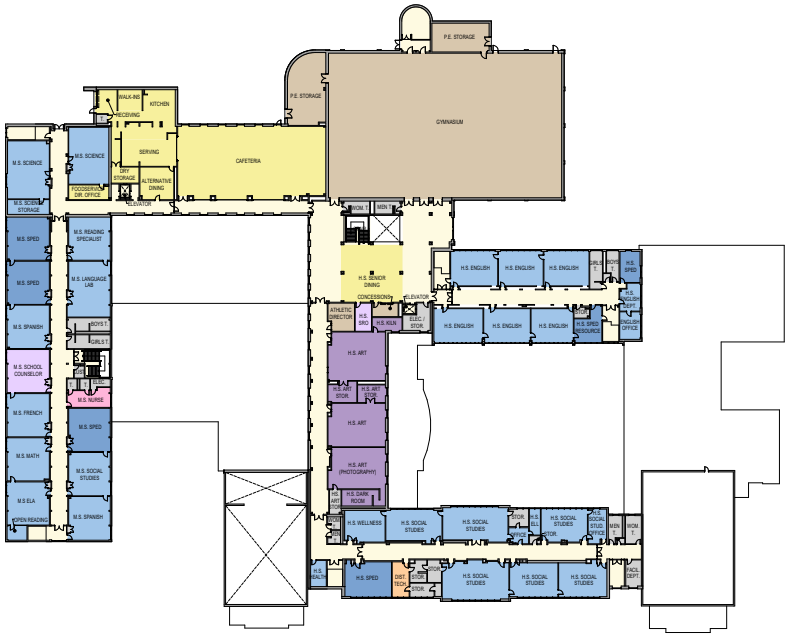
Co-located middle-high schools are not discouraged. In fact, when done correctly, they provide both age groups with a safe, comfortable environment where learning and collaboration amongst their appropriate peer groups is encouraged. Additionally, the Cohasset enrollment makes sharing amenities practical, rather than investing in two of everything. The critical factor, however, is that middle school aged students are at a much different life stage than high school students. They are neither older elementary school students nor younger high school students. There is a greater need for guidance and support services at this juncture, program spaces that have been difficult to accommodate within the existing facility. Middle school students are in a period of radical change, which requires a unique approach to education.



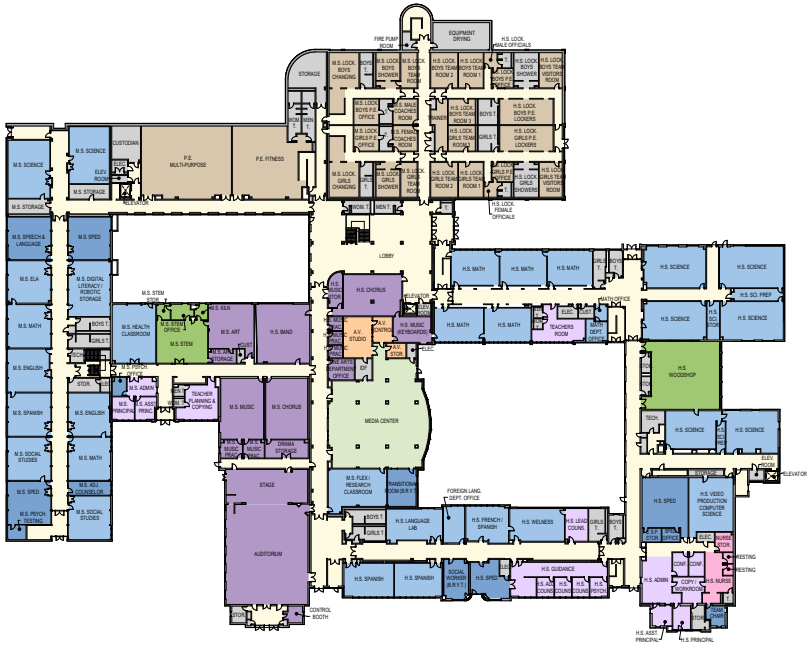
School Main Entrances

This approach includes the need for accommodating special instructional, curricular, and administrative changes in the way that education takes place for kids in early adolescence. Among these changes is the establishment of a mentor relationship between teacher and student, the creation of small communities of learners, and the implementation of a flexible interdisciplinary curriculum that encourages active and personalized learning. Newly created middle schools are designed to support these changes and have proven beneficial to the support of teaching, learning, socialization, and student confidence. Despite the best efforts by administration and faculty, the facility does not support 21st Century learning environments.

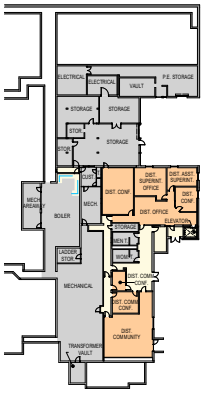
PROGRAM LEGEND
Core Academic Spaces
Special Education
Art & Music
Vocations & Technology
Media Center
Health & Physical Education
Medical
Administration & Guidance
District Programs
Dining & Food Service
Circulation
Custodial / Service / Toilet



Floor 2 - Program



Floor 1 - Program



Floor 0 - Program

Cohasset Middle-High School

The following is a plan diagram of the organization of the existing building, with colors indicating the different program types

4.02 Educational Program Evaluations

The following is a comparative look at Cohasset Middle-High School and successful learning environments built today. Multiple conversations between the evaluation team and school administration helped to inform this report.

21st Century Learning Environments

At the time of Cohasset High School's construction in 1950, spaces for education followed the industrial revolution model. Desks were placed in rows with little space remaining to integrate other educational tools or layouts. Class sizes were smaller, collaboration amongst students wasn't encouraged, and technology had no place in daily lesson plans. Since 1950, people have changed in response to a changing world, education has changed in response to a changing people, and building design has changed in response to changing education. Methods of "future-proofing" school buildings have developed, which take enrollment fluctuations, curriculum changes, and even global pandemics into consideration. Learning isn't relegated to individual classrooms only, but instead, a layering of learning spaces allow educators to foster differentiation. The current building plan does not reflect a modern approach to effective middle or high school organization and design.

Classroom Flexibility/Size

Over ninety-percent of classroom and lab instruction at Cohasset Middle High School occurs in the original 1950 and 1966 buildings within spaces that are grossly undersized and lack appropriate space for teaching and learning. Many of the academic classrooms are at least thirty-percent over student capacity based on their size (600-700 square feet) and generally accepted educational guidelines and standards for available space per student. Classrooms that are sized to accommodate 18-22 students are crowded with 24-28 students. The flexibility of some classrooms is additionally restricted by pipes or conduits in the center of the room.

These classrooms should be a between 850-950 square feet in order to allow for differentiated learning modalities. In a general classroom setting, having the ability to work together or independently is critical. Classroom projects require students to collaborate in groups and/or have present their work to other students regularly. Instead, classroom space limitations throughout all grade-levels require students to sit in tightly packed rows in an industrial revolution model identical to classroom instruction of the 19th Century. Teachers who need to

21st C. General Classroom

Cohasset Typical General Classroom

reorganize their classrooms to support interdisciplinary projects and presentation on a daily basis, are instead forced to limit such practices to a single day every-other-week when they can schedule a larger space to relocate students. Teachers fully understand the importance of developing a facilitative and flexible learning environment, but are restricted by the limited amount of classroom space. The crowded classrooms also increase the potential for student conflict, as teachers and staff confirm a much higher level of anxiety and conflict in these spaces. Given the lack of support space, multiple classrooms intended for general instruction have been re-purposed into guidance or special education rooms, reducing the quantity of classrooms necessary to accommodate student enrollment

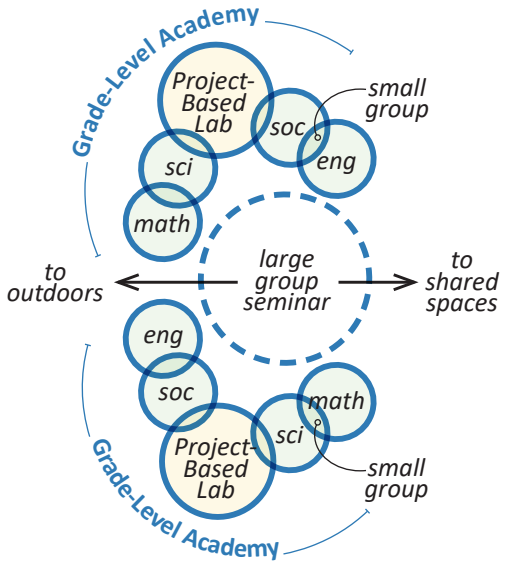
Special Education resource and support rooms that should provide 75-100 square feet per student are located within re-purposed spaces that only provide 30-50 square feet per student. Many of these students have social and emotional needs and can be easily distracted. Placing them in more restrictive spatial environments provides an additional challenge to their instruction. Additionally, the small general classroom sizes prohibit the necessary and required integration of special education students into the regular academic environment. Special education students that should be nicely integrated into an appropriately sized general education classroom sometimes struggle to find adequate space to seamlessly integrate into the undersized classrooms. This compromises the kind of productive integration that could occur if our classrooms were all appropriately sized.

Science lab schedules have been constantly modified over the past several years as a result of the limited number of appropriately-sized facilities. Each of the six high school science classrooms are nearly one-third smaller than the square footage recommended per MSBA guidelines, which means they can really only accommodate 15 students safely. At the middle school level, there are four classrooms dedicated to middle school science that were built as part of the 2001 additions, each only 900 sf on average. Not only are these rooms also one-third smaller than MSBA guidelines recommend, they lack amenities, safety features, and even windows to the exterior. Instead, they include islands of fixed casework that further reduce functionality of the space and their configurations are obsolete for the curriculum. Science prep rooms are not directly accessible from all science classrooms, either. The isolated location of the science classrooms within the building does not allow for the type of grade-level team teaching desired by the middle school teaching staff.

Modern learning environments include enough square footage per classroom to accommodate enrollment and there are enough of them to navigate annual fluctuations. They include basic needs like sinks, storage, and daylight. Technology plays an integral role in a modern classroom, too. Classrooms allow for complete connectivity, whether that be through 1:1 devices, projection, virtual learning, or "huddle spaces" which allow groups of students to come together around an interactive digital display to facilitate collaboration.

Academic Neighborhoods

Academic neighborhoods create grade-level clusters within the larger school organization, allowing for interdisciplinary collaboration. They provide students with a sense of belonging. Beyond inadequate size, the classrooms are not organized in a manner to allow students to be broken down into functional teams or grade-level academies of approximately 100 students. For example, the isolated location of the science classrooms within the middle school academic wing does not allow for the type of team teaching desired by the educators. Research indicates that breaking students down into smaller teams/academies in this manner allows teachers and facilitators to work directly with their team members (students and other teachers), allowing them to more closely monitor and foster student development. It also shows that a team arrangement enables teachers to combine classrooms to facilitate cross discipline instruction, so that students can better understand the interwoven relationships between subjects like math and science.



Sample Academic Neighborhood

According to administration, it was reported that the integration of academic neighborhoods, or at least the ability for grade-level team teaching, is desirable at the middle school level in Cohasset. This model of organization was not as applicable at the high school level. Unfortunately, schools that are divided into multiple floors, where classrooms cannot be grouped in teams and no space is available for team projects, provide insurmountable challenges to a truly functional team organization.

Project-Based Learning Labs

Students within a team or grade-level academy also collaborate on the development of hands-on projects, which allows them to understand the practical application of the subjects they are studying. It also supports students who are tactile learners, who may have been failed by a visual learning approach in the past, to excel in their academic pursuits. These hands-on projects are often completed in "Project-Based Learning Labs" where activities can proceed simultaneously to classroom interaction, which requires dedicated space for each team. Over the past 20 years, middle schools across the country have been migrating to this proven, successful model.

There is minimal opportunity within the current school for project-based learning at either the middle or high school level. There is one former classroom that has been converted to a STEM room, but at 962 square feet, this is insufficient to act as a project-based learning lab and lacks any amenities that would set it apart from a general classroom. Its location is not within the academic wing, which does not support team teaching. The high school wood shop is the only vocational program available for grades 9-12. The existing space is not suited to act as anything other than a wood shop, which is limiting to the educational program, and furthermore lacks the proper ventilation system to fully function.

According to administration, there is a great interest for project-based learning labs at the middle school level and vocational spaces at the high school level, especially those that would support programs more aligned to the locale, such as marine biology or coastal engineering. Programs that help students to connect with the community, or offer resources that the community could benefit from, are also untapped possibilities. The after-school robotics club has seen increased involvement, but with no place to service the activity, not all students can participate at regularly.

Cohasset Middle School STEM Classroom

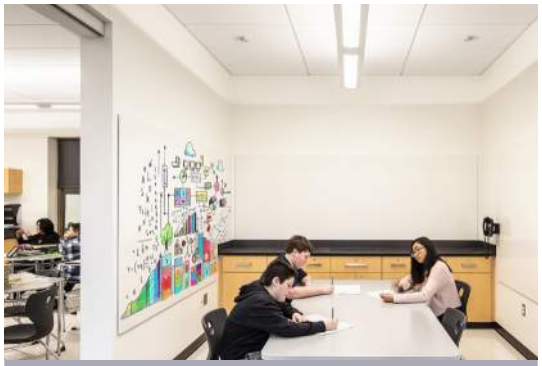
21st C. Project-Based Learning Lab

Collaboration Space

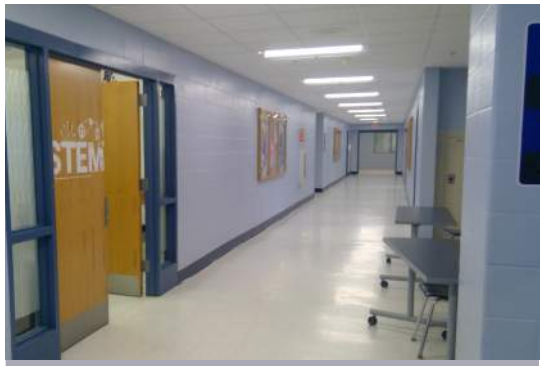
The desire for small group collaboration space is obvious throughout the school. There are no spaces to accommodate small group collaboration within the academic wings, so students choose to sprawl out on the hard floor of the corridors to work in pairs or trios. Along the entire length of the academic wings, one or two tables with a couple stray classroom chairs exist to facilitate such collaboration, but these do not include any additional writing surfaces, amenities, or separation from the general noise or distractions of a corridor.

Integration of collaboration space can occur in many different ways within a modern learning environment. In an academic neighborhood, small group rooms may exist between pairs of classrooms to accommodate cross-discipline collaboration or provide an outlet for independent learners. Another organization technique is the integration of small group spaces directly off of corridors for the use of anyone within the academic team. Or the corridor may be zoned in a way where dedicated spaces for collaboration exist within it, but include the proper sound control and lighting measures to function.

It is common to have larger group seminar spaces to accommodate a full grade level if necessary. These spaces are outfitted with proper presentation amenities, projection capabilities, sound control, and seating. They are typically designed to be more flexible than a traditional auditorium with fixed seating. There are no seminar spaces in the existing building.



21st C. Collaboration Space



Cohasset Collaboration in Corridors

Display & Visual Connections

The interior environment of the existing building does not foster any kind of school pride other than small posters on the walls. There are few areas for the display of work and no visual connections from corridors into learning spaces to promote the educational activity occurring within. Supporting a sense of community is important to the well being of students, especially at a middle school age. A student who feels comfortable at school will be more engaged in learning. The "cells and bells" organization of the existing school, with lockers lining windowless, monochromatic corridors, appears more institutional than welcoming.

Modern learning environments include enough transparency to feel open, without disrupting core academics, and offer views to the outdoors with access to natural daylight. There may be identifiers to promote grade-level academies or themes related to the curriculum. There are spaces where learning is on display with museum-like installations or informative graphics. There may be creative methods of way-finding so that students and/or visitors don't get lost.

The addition of numerous wings at differing floor levels within the existing building leaves the layout unorganized and confusing. The lack of connections to the outdoors further disorients the occupant. The delineation of middle school rooms versus high school rooms is not entirely clear, which is important because the schools operate very differently. Having features that are distinct to the schools will contribute to their developing identities.

Student Socialization

Middle school is a complex period for students socially; it requires navigating a lot of personal factors within a new environment in search of acceptance or companionship, all while feeling emotionally vulnerable at times. Spaces outside of the core classroom can feel overwhelming. At Cohasset Middle-High School, this factor is made worse by the inadequate size of the sole dining space, with an area of only 4,850 sf. The space is shared by all grades (6-12) across three seatings. This is nearly 20% smaller than MSBA guidelines and leaves lunch periods crowded. One-third of the gymnasium has been set up to accommodate the over spill of students during lunch periods and the lobby is permitted for seniors to dine to alleviate the strain. There are no alternative dining options for students who may need relief from the crowdedness.

Lunch is one example, but it isn't the only time student socialization is encouraged, or in this case, feared. A learning common or campus center have become the hub within the school. These allow for smaller group socialization within a larger group, or can at least accommodate an entire lunch sitting. This may be in the form of distributed spaces throughout the building, like the knuckles of academic neighborhoods, or as a singular space that dually functions for the community during hours outside of the school day. There may be flexible seating or a variety of dining service options. Cohasset has done a proper job of facilitating student socialization, but the building does not support the effort.

Indoor/Outdoor Spaces

A school campus not only includes the building interior, but its outdoor surroundings. The incorporation of the site into the curriculum, through local ecology or garden programs, has relevance for students today, who are growing up in a climate-conscious world. School environments today plan for outdoor learning spaces in conjunction with indoor ones.

Cohasset Middle-High School includes two courtyards as a result of its numerous addition projects. These are situated in a way where one could serve as outdoor classroom space for the middle school, and one for the high school. However, there is limited access into either courtyard and additionally, neither is ADA compliant. The courtyards are overgrown and not programmed to accommodate a class or small groups. This is a missed opportunity.

Greeting & Gate-keeping

A prominent entrance is important to a school for multiple reasons. It serves as the safe and secure entry point into the building, often involving a checkpoint for visitors. Conversely, it monitors those leaving the building to ensure students aren't departing without reason. An effective entrance is easy to spot for visitors and identifies where to go. It is the space that offers the first impression to students or to the community. Sometimes, separate entries make sense, but they should still be clearly identified and secured.

In Cohasset, the distinction between the middle school and the high school warrants separate entries, as is the case. However, neither is prominently understood to visitors. The high school entry exists at the front of the school, but is shifted to the corner and hidden behind a wall. One small sign identities it as the high school entry. What was once used as the main entry still appears to be, but it is not. The middle school entry is hidden on the opposite corner than the high school entry, and set back out of view of any approach. This is not only inconvenient for visitors, but students arriving via the bus must be let out near the high school entrance, since the bus cannot navigate the small parking lot in front of the middle school entrance.

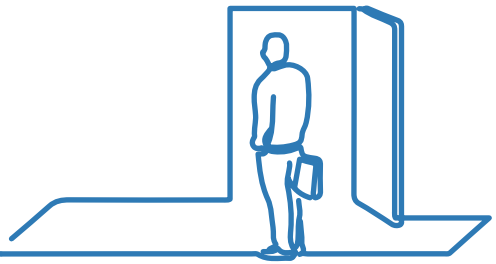
Community Resources

For a small community like Cohasset, the public schools play an important role. They typically provide space for committee meetings, performances, or gatherings that aren't necessarily linked to the individual schools, but to the community at large. The middle-high school currently includes the public school district offices with a community room. The Deer Hill and Joseph Osgood Schools have a community feel stronger than that of the Middle-High School with spaces that are more amenable to gathering. Other than its renovated media center, the Middle-High School lacks resources for the broader community.

The existing auditorium is outdated and inadequate for town use. It has a mildew smell, old lighting fixtures, limited acoustic control, and it isn't ADA compliant. The gymnasium, media center, learning commons, cafeteria, auditorium, and even project labs of modern schools often include the space needs or capabilities relevant for community use, with accessible technology, entrances, and amenities. An improvement to such spaces at Cohasset Middle-High School would be an asset for the whole community, not just the school department.

Former Cohasset High School Entry

21st C. Greeting & Gate-keeping Entry



Lifelong Health & Fitness

Health and fitness are strong lifestyles in Cohasset. Modern school design considers the mental/emotional well-being that informs physical health. The gym isn't only intended for organized sports, but may include space for dance, meditation, or yoga.

The gymnasium of the existing Middle-High School is adequate in terms of its finishes and space needs. Additionally, the multipurpose room and weight room allow for fitness opportunities outside of structured athletics. These rooms, however, are outdated and could benefit from updated finishes, ventilation, and equipment. According to administration, there is great interest in flexible fitness programs for students outside of school hours, but the current spaces cannot meet the demand.

Summary

The integration of Design Patterns into the Educational Program will enhance the experience of a student across all fronts: academically, collaboratively, emotionally, socially, and physically. The existing middle-high school building is not assisting the educators in delivering differentiated instruction. It is inhibitive of providing diverse experiences across a range of learning types and does not represent the academic standard typical of students and educators in Cohasset.

4.03 Educational Program Space Deficiencies

The following is a comparative look at the size of the spaces in Cohasset Middle-High School as compared to the space guidelines set forth by the Massachusetts School Building Authority (MSBA) in both plan diagram and spreadsheet forms.

Space Summary

A Space Summary is an analysis tool used by architects and planners to ensure that the net square feet (or usable area) required to accommodate the necessary programs fits within the existing or proposed gross square feet (or total area) of a building. A multiplier, known as the grossing factor, is used to account for spaces dedicated to services or those considered uninhabitable; such as toilet rooms, electric rooms or the space within walls and shafts. The grossing factor proves that, just because a building may contain the total square footage required per the Space Summary, the use of space isn't necessarily efficient or in line with the desired program use. This is true of the existing Cohasset Middle-High School Building.

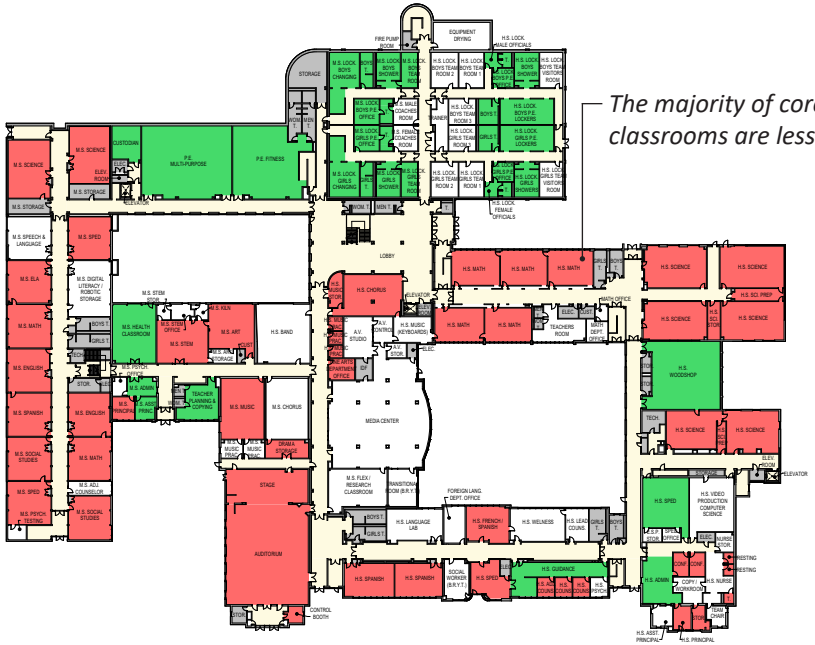
The following highlights spaces that are less than the MSBA guidelines recommend (by 5% or more, highlighted in red) and those that are greater the MSBA guidelines recommend (by 5% or more, highlighted in green). Spaces that are recommended by the MSBA, but not present in the existing building are noted in red text.

As described in the previous section, core academic classrooms are grossly undersized and lacking support spaces. Vocations and Technology spaces are lacking in quantity. Music spaces are not outfitted for the music program and are also undersized, including the Auditorium. Dining is undersized, along with the food service and custodial spaces required to operate it. There is "wasted space" in the amount of corridors and service rooms, due to inefficiencies in the layout, as reflected in the grossing factor of 1.63 (compared to the recommended 1.5). A larger building requires more resources to maintain on the part of the Facilities Department.

The gymnasium is adequately sized. The locker rooms and athletic support spaces are primarily greater than the recommended square footage, which is contributing to the oversized total building size. Space for district offices and programs is contributing to the total also.

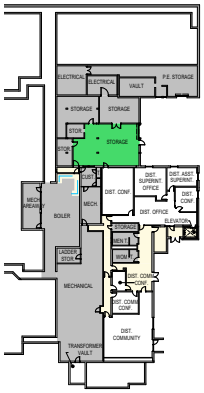
Note that the cafeteria is considered less than the guidelines because it does not accommodate the middle school

Floor 2 - Program



The majority of core academic classrooms are less than the guidelines

Floor 1 - Program



Floor 0 - Program

SIZE COMPARISON LEGEND
>5% Less than MSBA Guidelines
<5% Greater than MSBA Guidelines
Acceptable per MSBA Guidelines
Circulation
Space Accounted in Grossing Factor
Not in Existing Building Program (for space summary use)

Cohasset Middle-High School

The following is a plan diagram of the program sizes of the existing building as compared to MSBA guidelines

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			44,090			40,700	
Middle School							
Classroom - General				950	7	6,650	*850 SF min - 950 SF max*
Classroom - Grade 6 English	836	1	836				
Classroom - Grade 6 Spanish	776	1	776				
Classroom - Grade 6 French	797	1	797				
Classroom - Grade 6 ELA	794	1	794				
Classroom - Grade 6 Social Studies	783	1	783				
Classroom - Grade 7 English	791	1	791				
Classroom - Grade 7 Spanish	807	1	807				
Classroom - Grade 7 Math	791	1	791				
Classroom - Grade 7 Social Studies	807	1	807				
Classroom - Grade 8 English	795	1	795				
Classroom - Grade 8 Spanish	802	1	802				
Classroom - Grade 8 Math	810	1	810				
Classroom - Grade 8 Social Studies	841	1	841				
Classroom - Grade 8 ELA	789	1	789				
Small Group Seminar (20-30 seats) / Resource	0	0	0	500	1	500	
Science Classroom / Lab				1,200	2	2,400	*1 period / day / student*
Science Classroom - Grade 6	872	1	872				
Science Classroom - Grade 7	931	1	931				
Science Classroom - Grade 8	872	1	872				
Science Classroom - Grade 8	931	1	931				
Prep Room	182	1	182	80	2	160	
Health Classroom	1,154	1	1,154				

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Language Lab	1,023	1	1,023				
Teacher Collaboration (Grade 6)							
Teacher Collaboration (Grade 7/8)							
Grade 6: Project Innovation Lab (Life Science Lab)							
Grade 7: Project Innovation Lab (Aquaponics/Hydro-ponics)							
Grade 8: Project Innovation Lab (AR/VR Lab)							
High School							
Classroom - General				850	21	17,850	*825 SF min - 950 SF max*
Classroom - English	695	1	695				
Classroom - English	662	1	662				
Classroom - English	668	1	668				
Classroom - English	666	1	666				
Classroom - English	638	1	638				
Classroom - English	639	1	639				
Classroom - Spanish	667	1	667				
Classroom - Spanish	699	1	699				
Classroom - Spanish / French	645	1	645				
Classroom - Math	762	1	762				
Classroom - Math	717	1	717				
Classroom - Math	743	1	743				
Classroom - Math	695	1	695				
Classroom - Math	662	1	662				
Classroom - Math	743	1	743				
Classroom - Social Studies	792	1	792				
Classroom - Social Studies	1,102	1	1,102				
Classroom - Social Studies	985	1	985				

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Classroom - Social Studies	684	1	684				
Classroom - Social Studies	756	2	1,512				
Video Production - Computer Science	1,121	1	1,121				
English Dept. Office	198	1	198				
English Office	215	1	215				
Math Dept. Office	165	1	165				
Math Office	94	1	94				
Social Studies Dept. Office	179	1	179				
Social Studies Office	139	1	139				
Foreign Language Dept. Office	325	1	325				
ELL Office	132	1	132				
Small Group Seminar (20-30 seats)				500	2	1,000	
Science Classroom / Lab				1,440	6	8,640	*3 x85% ut=20 Seats-1 per / day/student*
Science Classroom	881	1	881				
Science Classroom	906	1	906				
Science Classroom	1,068	1	1,068				
Science Classroom	1,193	1	1,193				
Science Classroom	1,129	1	1,129				
Science Classroom	1,074	1	1,074				
Prep Room				200	6	1,200	
Prep Room	127	1	127				
Prep Room	146	1	146				
Central Chemical Storage Rm	75	1	75	200	1	200	
Wellness Classroom	583	1	583				
Wellness Classroom	771	1	771				
Language Lab	738	1	738				

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Teacher Collaboration (Grade 9/10)							
Teacher Collaboration (Grade 11/12)							
SPECIAL EDUCATION			12,318			12,080	
Middle School							
Self-Contained SPED				950	2	1,900	*825-950 SF equal to surrounding classrooms*
SPED Classroom - Grade 6	781	1	781				
SPED Classroom - Grade 7	805	1	805				
SPED Classroom - Grade 6-8	816	1	816				
SPED Classroom	797	2	1,594				
Self-Contained SPED Toilet				60	2	120	
Resource Room				500	1	500	*1/2 size Genl. Clrm.*
Small Group Room / Reading				500	1	500	*1/2 size Genl. Clrm.*
Reading Room	135	1	135				
Reading Specialist	783	1	783				
Book Storage	201	1	201				
Digital Literacy	1,067	1	1,067				
Speech and Language - Grades 6-8	800	1	800				
Psychologist Office	110	1	110				
Psychologist Office & Testing	125	1	125				
Adjustment Counselor - Grade 7	797	1	797				
Adjustment Counselor	258	1	258				
High School							
Self-Contained SPED				950	6	5,700	*825-950 SF equal to surrounding classrooms*
SPED Classroom	734	1	734				
SPED Classroom	558	1	558				
SPED Classroom	1,094	1	1,094				

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
SPED Office	113	1	113				
Self-Contained SPED Toilet				60	6	360	
Resource Room				500	3	1,500	*1/2 size Genl. Clrm.*
SPED Resource	332	1	332				
SPED Resource	240	1	240				
Small Group Room				500	3	1,500	*1/2 size Genl. Clrm.*
Book Storage	57	1	57				
MS HS Transitional Room (BRYT)	490	1	490				
MS HS Social Worker (BRYT)	428	1	428				
ART & MUSIC			11,855			10,250	
Middle School							
Art Classroom	923	1	923	1,200	1	1,200	*Assumed use - 50% population 2 times / week*
Art Storage	156	1	156	150	1	150	
Art Kiln Room	83	1	83				
Band / Chorus - 100 seats				1,500	1	1,500	*Assumed use - 50% population 2 times / week*
Music Classroom	1,206	1	1,206				
Chorus Classroom	1,181	1	1,181				
Music Practice / Ensemble	175	2	350	200	1	200	
High School							
Art Classroom - 25 seats				1,200	2	2,400	*Assumed use - 25% population - 5 times/week*
Art Classroom	1,077	1	1,077				
Art Classroom	1,205	1	1,205				
Photography Classroom	1,067	1	1,067				
Photography Darkroom	179	1	179				
Art Workroom w/ Storage & kiln	181	1	181	150	2	300	

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Art Storage	266	1	266				
Art Storage	227	1	227				
Art Storage	89	1	89				
Band - 50 - 100 seats	1,438	1	1,438	1,500	1	1,500	*Assumed use - 25% population - 5 times/week*
Chorus - 50 - 100 seats	1,136	1	1,136	1,500	1	1,500	
Music Keyboards	445	1	445				
Ensemble				200	1	200	
Music Practice	60	3	180	75	4	300	
Music Storage	214	1	214	500	1	500	
Fine Arts Department Office	252	1	252	500	1	500	
VOCATIONS & TECHNOLOGY			3,205			9,600	
Middle School							
STEM Lab	962	1	962	1,200	1	1,200	*Assumed use - 25% population - 5 times/week*
STEM Storage	82	1	82				
STEM Office	131	1	131				
Robotics Lab				2,000	1	2,000	*Assumed use - 25% population - 5 times/week*
High School							
Tech Classroom - Wood Shop	2,030	1	2,030	1,200	2	2,400	*Assumed use - 50% population - 5 times/week*
Tech Shop - (E.G. Consumer, Wood)				2,000	2	4,000	*Assumed use - 50% population - 5 times/week*
District Specific Vocational Space #1 (Marine?)							
District Specific Vocational Space #2 (Technology?)							
HEALTH & PHYSICAL EDUCATION			34,738			29,360	
Middle School							

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Gymnasium (Included in HS below)	0	1	0	6,000	1	6,000	
Gym Storeroom	1,201	1	1,201	150	1	150	
Health Instructor's Office w/ Shower & Toilet	293	2	586	250	1	250	
Locker Rooms - Boys / Girls w/ Toilets	3,480	1	3,480	1,000	2	2,000	
High School							
Gymnasium	12,000	1	12,000	12,000	1	12,000	
PE Alternatives	3,548	1	3,548	3,000	1	3,000	
Gym Storeroom	756	1	756	300	1	300	
Equipment Storage	715	1	715				
Locker Rooms - Boys / Girls w/ Toilets	5,090	1	5,090	4,760	1	4,760	*5.6 sf/student total*
Phys. Ed. Storage	628	1	628	500	1	500	
Athletic Director's Office	326	1	326	150	1	150	
Health Instructor's Office w/ Shower & Toilet	289	2	578	250	1	250	
Trainer's Office	322	1	322				
Concessions	97	1	97				
MS HS Fitness Room	2,453	1	2,453				
MS HS Multipurpose Room	2,958	1	2,958				
MEDIA CENTER			5,423			5,213	
Media Center / Reading Room	4,378	1	4,378	5,213	1	5,213	
Research Classroom (MS)	1,045	1	1,045				
AUDITORIUM / DRAMA			5,456			8,529	
Auditorium (HS)	3,637	1	3,637	5,667	1	5,667	*2/3 Enrollment @ 10 SF/ Seat - 750 seats MAX*
Stage	1,387	1	1,387	1,600	1	1,600	
Auditorium Storage	319	1	319	463	1	463	
Make-up / Dressing Rooms				300	2	600	

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Controls / Lighting / Projection	113	1	113	200	1	200	
Blackbox / Lecture Hall / Multipurpose Presentation Space							
DINING & FOOD SERVICE			7,825			10,082	
Alternative Dining Room (former Faculty Dining)	506	1	506				
Middle School							
Cafetorium / Dining (Included in HS below)				1,650	1	1,650	*2 seatings - 15SF per seat*
Stage				1,600	0	-	
Chair / Table / Equipment Storage				375	1	375	
Kitchen (Included in HS below)				1,600	0	-	*1600 SF for first 300 + 1 SF/ student Add'l*
Staff Lunch Room				231	1	231	*20 SF/Occupant*
High School							
Cafeteria / Student Lounge / Break-out	4,850	1	4,850	4,250	1	4,250	*3 seatings - 15SF per seat*
Senior Dining (Currently Secondary Lobby Area)	500	1	500				
Chair / Table Storage				363	1	363	
Scramble Serving Area	558	1	558	600	1	600	
Kitchen	847	1	847	2,150	1	2,150	*1600 SF for first 300 + 1 SF/ student additional*
Walk in Cooler/Refrigerators	190	1	190				
Staff Lunch Room				463	1	463	*20 SF/Occupant*
Dry Food Storage	205	1	205				
Food Service Director Office	169	1	169				
MEDICAL			1,200			1,320	
Middle School							
Medical Suite Toilet	50	2	100	60	1	60	
Nurses' Office / Waiting Room	333	1	333	250	1	250	
Examination Room / Resting				100	1	100	

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
High School							
Medical Suite Toilet	46	1	46	60	1	60	
Nurses' Office / Waiting Room	460	1	460	250	1	250	
Interview Room				100	2	200	
Storage	161	1	161				
Examination Room / Resting	50	2	100	100	4	400	
ADMINISTRATION & GUIDANCE			5,830			6,564	
Middle School							
General Office / Waiting Room / Toilet				300	1	300	
Teachers' Mail and Time Room				100	1	100	
Duplicating Room				200	1	200	
Records Room				200	1	200	
Principal's Office w/ Conference Area	228	1	228	375	1	375	
Principal's Secretary / Waiting	243	1	243	125	1	125	
Assistant Principal's Office - AP1	211	1	211	150	1	150	
Assistant Principal's Office - AP2				150	0	-	
Supervisory / Spare Office				150	1	150	
Conference Room				350	1	350	
Guidance Office				150	1	150	
Guidance Waiting Room				100	1	100	
Guidance Storeroom				50	1	50	
Teachers' Work Room	550	1	550	300	1	300	
High School							
General Office / Waiting Room / Toilet	1,056	1	1,056	425	1	425	
Teachers' Mail and Time Room				100	1	100	
Duplicating Room	227	1	227	200	1	200	
Records Room	144	1	144	200	1	200	

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Principal's Office w/ Conference Area	198	1	198	375	1	375	
Principal's Secretary / Waiting				125	1	125	
Assistant Principal's Office - AP1	176	1	176	150	1	150	
Assistant Principal's Office - AP2				150	0	-	
Supervisory / Spare Office				120	1	120	
Conference Room	169	2	338	450	1	450	
Guidance Office	146	3	438	150	5	750	
Guidance Office (Lead Counselor)	323	1	323				
Guidance Waiting Room	872	1	872	100	1	100	
Psychologist Office	150	1	150				
Guidance Storeroom				100	1	100	
Career Center				363	1	363	
Records Room				131	1	131	
Security Resource Officer (SRO) Office	212	1	212				
Teachers' Work Room	464	1	464	425	1	425	
CUSTODIAL & MAINTENANCE			3,810			2,263	
Custodian's Office				150	1	150	
Custodian's Workshop				250	1	250	
Custodian's Storage	454	1	454	375	1	375	
Recycling Room / Trash				400	1	400	
Receiving and General Supply	217	1	217	363	1	363	
Storeroom	2,345	1	2,345	525	1	525	
Network / Telecom Room	181	1	181	200	1	200	
IDF	162	1	162				
MS Storage	271	1	271				
MS Storage	180	1	180				
OTHER			4,705			0	
District Technology Office	265	1	265				

COHASSET MIDDLE-HIGH SCHOOL W/ PUBLIC SCHOOL DISTRICT OFFICES	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
District Technology Storage	96	1	96				
Cohasset TV: Studio	538	1	538				
Cohasset TV: Control Room	229	1	229				
Cohasset TV: Storage	128	1	128				
Central Offices: Superintendent's Office	243	1	243				
Central Offices: Secretary Area	583	1	583				
Central Offices: Conference/Breakroom	698	1	698				
Central Offices: Office	455	1	455				
Central Offices: Office	180	1	180				
Community Space: Meeting Room	916	1	916				
Community Space: Conference Room	256	1	256				
Community Space: Meeting Room	118	1	118				
Total Building Net Floor Area (NFA)			140,455			135,960	
Proposed Student Capacity / Enrollment			757		Combined MS & HS	850	*(MS = 222) + (HS = 628)*
Total Building Gross Floor Area (GFA)			**228,837**			**203,940**	
Grossing factor (GFA/NFA)			**1.63**			**1.50**	

Summary

There is an uneven allocation of space, resulting in a larger building that is inefficient in organization and lacking in critical program areas. The current total building gross square footage is 228,837 GFA, which is nearly 13% greater than a proposed, more efficient building of 203,940 GFA to accommodate an enrollment of 850 across grades 6-12.

Deer Hill Elementary School

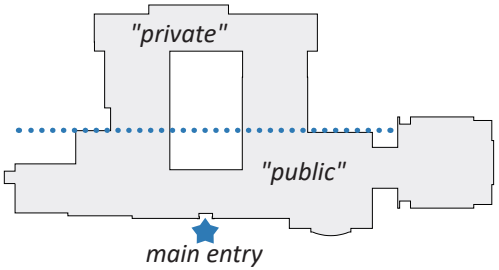
4.04 Overview

There is a community feel to Deer Hill Elementary School that is not present at the middle-high school. The building's existing organization is a contributor to its success because there is a simplicity to its organization. From the exterior, the entrance is easy to understand and the administration is the immediate program inside, so there is no confusion for visitors. The entry experience is welcoming, with a vaulted ceiling and view into the courtyard from within the lobby. The axial nature of the corridors makes navigating the building easy with the views into the courtyard aiding orientation.

The entry exists at the center point of the main corridor, which could easily be identified as the "public" realm, or community wing, of the school. This wing houses the cafeteria and music spaces on one end; the media center, art classroom, and STE classroom in the center; and the gymnasium anchoring the other end. The exception to this organization is the classrooms that exist as part of the 2001 construction. These may be better suited as shared programs rather than general classrooms in the future.

In contrast, general classrooms compose the wings that enclose the courtyard. Providing more access into the courtyard from its surrounding classrooms may be beneficial to the educational program in the future, which could act as an outdoor classroom or provide space for gatherings/activities. The separation of the academic classrooms from the shared spaces is helpful in controlling sound transmission from the louder spaces.

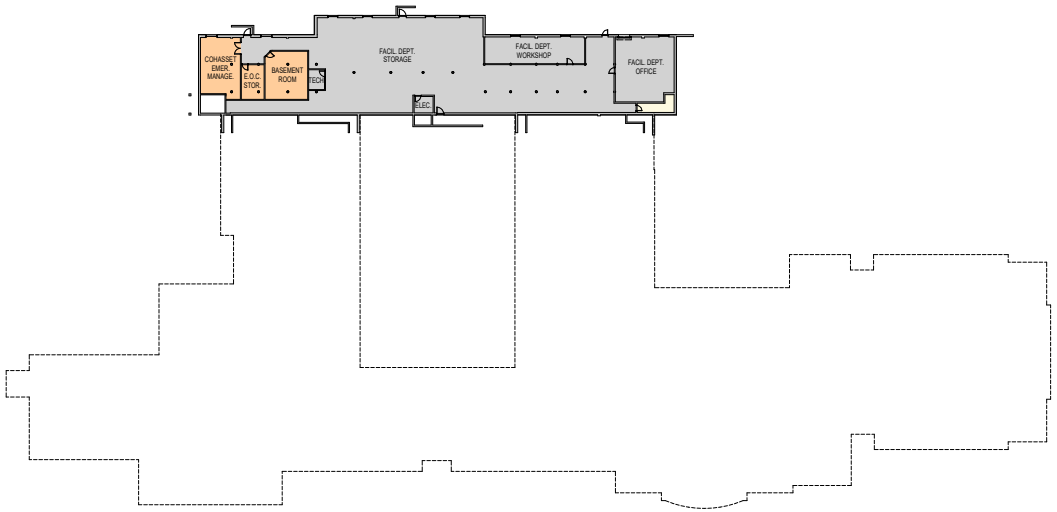
Modifications could be undertaken to improve the educational environment, like greater integration of small group spaces, but the overall layout has great potential for these improvements. The updates to the finishes described in the physical building evaluations would additionally enhance the educational environment.



Unofficial Delineation of Spaces

PROGRAM LEGEND
Core Academic Spaces
Special Education
Art & Music
Vocations & Technology
Media Center
Health & Physical Education
Medical
Administration & Guidance
District Programs
Dining & Food Service
Circulation
Custodial / Service / Toilet

Floor 1 - Program



Basement - Program

Deer Hill Elementary School

The following is a plan diagram of the organization of the existing building, with colors indicating the different program types

4.05 Educational Program Evaluations

Deer Hill Elementary School includes many positive atrributes that can contibute to a successful educational program. The following takes some of the design patterns and considers their integration into the existing environment.

Academic Neighborhoods

The organization of the building is well suited for academic neighborhood distribution, with the option to organize each of the three grades within one of the three academic wings, for example. Furthermore, the central courtyard provides a multi-purpose space for gathering or active learning projects. The wing with the shared spaces is considered a community wing.

Project-Based Learning Labs

There is a greater number of classrooms than required. One consideration is to morph one or two classrooms per academic neighborhood into a learning lab. Alternatively, the art room and its adjacent classroom could be comined into a larger learning lab space that exists along the community wing of the school. The existing STE classroom proves that these programs have a place within the school and their expansion is possible.

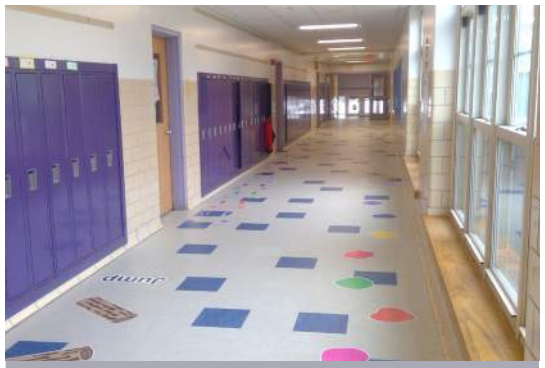
Display & Visual Connections

The corridors could benefit from more transparency into the learning spaces, however the handmade tile artwork that exists throughout, along with the consistent views to the courtyard, contribute to a welcoming and connected environment.

Socialization Space

The cafeteria, media center, art, music, gym, and STE classroom are all spaces where students can engage outside of their general classrooms. The organization of these along a community wing is well designed, creating a sort of public/private distribution to the program that helps to control sound.

Entry lobby experience with high ceiling



Axial corridor with view into courtyard

4.06 Educational Program Space Deficiencies

The following is a comparative look at the size of the spaces in Deer Hill Elementary School as compared to the space guidelines set forth by the Massachusetts School Building Authority (MSBA) in both plan diagram and spreadsheet forms.

Space Summary

The same space summary tool was used to analyze the program sizes at Deer Hill, but for grade levels 3-5. The existing enrollment (317) was compared to a future enrollment of 356 by 2034 (informed by the 2019 NESDEC projections with a factor based on the actual enrollment between 2019-2022).

Summary

The current school and its associated program spaces are adequately sized for continued use. Though the sizes of the general classrooms are slightly below the recommended area, they are greater in number than required, according to the guidelines. Therefore, overcrowding (if any) could be alleviated by having more classrooms in use with less students in each. There are no small group spaces available for use within the classroom wings. Small additions from the classrooms into the courtyard may be a future development project to consider.

The cafetorium platform is less than the guidelines recommend for a stage, however this is the second stage in the school when considering the formal platform in the gym, so this isn't considered a critical issue. If this space were returned to the cafeteria at large, the kitchen could be expanded instead.

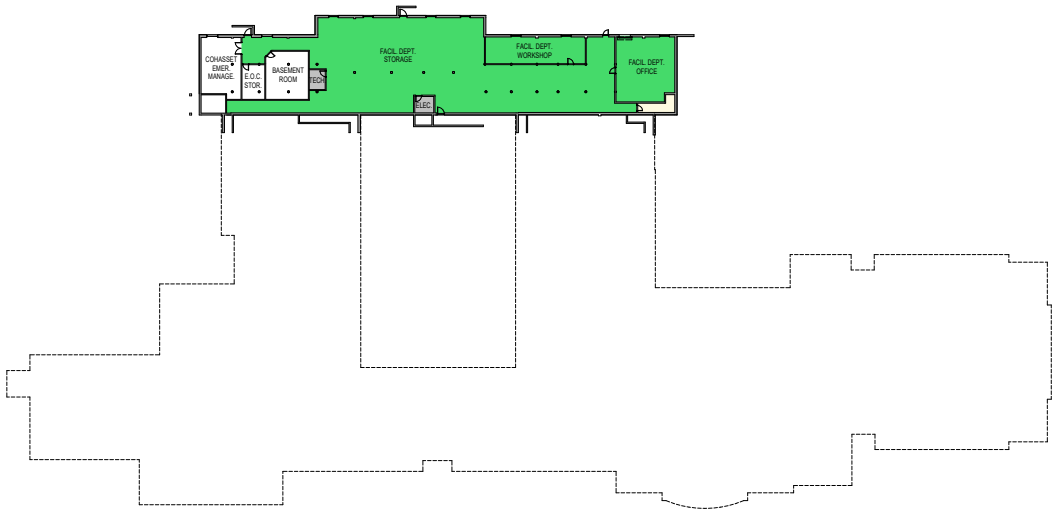
Many of the shared spaces such as the media center, gymnasium, and art classroom are larger than recommended, which is a positive attribute for community use. Additionally, there are double the amount of music spaces and STE spaces (including the computer lab) that enhance the educational program.

The grossing factor of 1.47 for the existing building is highly efficient. This is because the basement is considered program use for the district's Facility Department and Cohasset Emergency Management. Were these to move elsewhere, the building would be considered slightly oversized.

The majority of core academic classroom sizes are acceptable

Floor 1 - Program

The majority of shared spaces exceed the recommended sizes



Basement - Program

SIZE COMPARISON LEGEND
>5% Less than MSBA Guidelines
<5% Greater than MSBA Guidelines
Acceptable per MSBA Guidelines
Circulation
Space Accounted in Grossing Factor
Not in Existing Building Program (for space summary use)

Deer Hill Elementary School

The following is a plan diagram of the program sizes of the existing building as compared to MSBA guidelines

DEER HILL ELEMENTARY SCHOOL (3-5)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			19,223			15,330	
General Classrooms - Grades 3-5	850	17	14,450	950	15	14,250	*900 SF min - 1,000 SF max*
Math Classroom	852	1	852				
Reading Classroom	869	1	869				
Health Classroom	829	1	829				
STE Classroom	1,176	1	1,176	1,080	1	1,080	
Computer Lab	1,047	1	1,047				
SPECIAL EDUCATION			4,149			4,530	
Self-Contained SPED				950	3	2,850	*8% of population*
SPED	683	1	683				
SPED	993	1	993				
Self-Contained SPED - toilet				60	3	180	
Resource Room				500	2	1,000	*1/2 size Genl. Clrm.*
SPED Resource	194	1	194				
SPED Resource	210	1	210				
Small Group Room / Reading	297	1	297	500	1	500	*1/2 size Genl. Clrm.*
OT/PT	836	1	836				
Speech	177	1	177				
Speech	306	1	306				
Title I	195	1	195				
SPED Office	126	1	126				
Adjustment Counselor	132	1	132				
ART & MUSIC			3,853			2,500	
Art Classroom - 25 seats	1,255	1	1,255	1,000	1	1,000	*assumed sched. 2x/wk/stu.*
Art Workroom w/ Storage & Kiln	216	1	216	150	1	150	

DEER HILL ELEMENTARY SCHOOL (3-5)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Music Classroom / Large Group - 25-50 seats	1,206	1	1,206	1,200	1	1,200	*assumed sched. 2x/wk/stu.*
Music Practice / Ensemble				75	2	150	
Choral Classroom	952	1	952				
Music Storage	224	1	224				
HEALTH & PHYSICAL EDUCATION			**7,724**			**6,300**	
Gymnasium	6,395	1	6,395	6,000	1	6,000	*6,000 SF min*
Gym Storeroom	450	1	450	150	1	150	
Health Instructor's Office	163	1	163	150	1	150	
Platform	716	1	716				
MEDIA CENTER			**3,797**			**2,272**	
Media Center/Reading Room	3,122	1	3,122	2,272	1	2,272	
Media Center Office	356	1	356				
Audio Visual	319	1	319				
DINING & FOOD SERVICE			**5,006**			**5,845**	
Cafeteria/Dining	2,794	1	2,794	2,670	1	2,670	*2 seatings - 15 SF per seat*
Stage	714	1	714	1,000	1	1,000	
Chair/Table/Equipment Storage	185	1	185	319	1	319	
Kitchen	800	1	800	1,656	1	1,656	
Staff Lunch Room	513	1	513	200	1	200	
MEDICAL			**847**			**510**	
Medical Suite Toilet	71	1	71	60	1	60	
Nurses' Office/Waiting Room	404	1	404	250	1	250	
Examination Room/Resting	372	1	372	100	2	200	
ADMINISTRATION & GUIDANCE			**1,892**			**2,071**	
General Office/Waiting Room/Toilet	501	1	501	328	1	328	
Teachers' Mail and Time Room	100	1	100	100	1	100	
Duplicating Room	239	1	239	150	1	150	

DEER HILL ELEMENTARY SCHOOL (3-5)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Records Room	165	1	165	110	1	110	
Principal's Office w/ Conference Area	268	1	268	375	1	375	
Principal's Secretary/Waiting	125	1	125	125	1	125	
Assistant Principal's Office							
Supervisory/Spare Office				120	1		
Conference Room	200	1	200	250	1	250	
Guidance Office				150	1	150	
Guidance Storeroom				35	1	35	
Teachers' Work Room	294	1	294	328	1	328	
CUSTODIAL & MAINTENANCE			9,050			1,956	
Custodian's Office	1,007	1	1,007	150	1	150	
Custodian's Workshop	722	1	722	375	1	375	
Custodian's Storage	6,800	1	6,800	375	1	375	
Recycling Room/Trash				400	1	400	
Receiving and General Supply	111	1	111	219	1	219	
Storeroom	221	1	221	237	1	237	
Network/Telecom Room	189	1	189	200	1	200	
OTHER			1,027			0	
Cohasset Emergency Management	843	1	843				
Concessions	184	1	184				
Total Building Net Floor Area (NFA)			56,568			41,314	
Proposed Student Capacity / Enrollment			317			356	
Total Building Gross Floor Area (GFA)			**83,363**			**61,754**	
Grossing factor (GFA/NFA)			**1.47**			**1.49**	

Joseph Osgood Elementary School

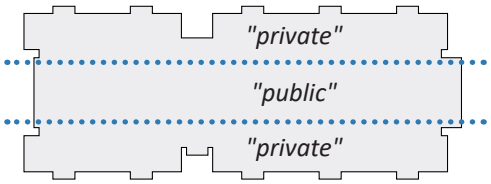
4.07 Overview

Much like the Deer Hill Elementary School, the Joseph Osgood Elementary School includes an inherent community feel. The building's existing organization is a contributor to its success because there is a simplicity to its organization. From the exterior, the entrance is easy to understand and the administration is the immediate program inside, so there is no confusion for visitors. The entry experience is exciting, as the double-height forum with colorful ceiling treatment is the first visible space. The axial nature of the corridors makes navigating the building easy.

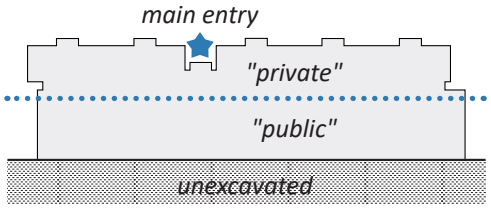
The layout of the building can be defined as a "public" realm, or community wing, sandwiched between two "private" realms, or academic wings. This organization is effective because it pushes the individual classrooms along the quieter exterior, providing access to daylight and nature. Consequently, the more active, shared spaces exist in the center, providing areas for different groups to come together and engage in learning outside of the classroom.

According to administration, a high percentage of parents are satisfied with the Osgood School as a place of education for their children. From an architectural standpoint, this is not contested. The building is logical and amenable, with impactful modifications to the previous industrial learning model that dominated schools of its senior. These modifications being the forum, or learning commons, the vaulted ceilings in classrooms, the large media center, the appropriately sized art and music rooms, the open cafeteria with a strong connection to the outdoors, and the integration of small group spaces within academic classrooms.

As stated in the physical building evaluations, investments for the school are most necessary on the exterior rather than the interior. The roof includes a large open space that, when replaced, could perhaps be designed as an inhabitable outdoor space for student/staff use, like a roof garden or play area, with the necessary guards. This would reinforce the connection with its natural surroundings that the school was based off of as well as enhance the curriculum around environmental stewardship.



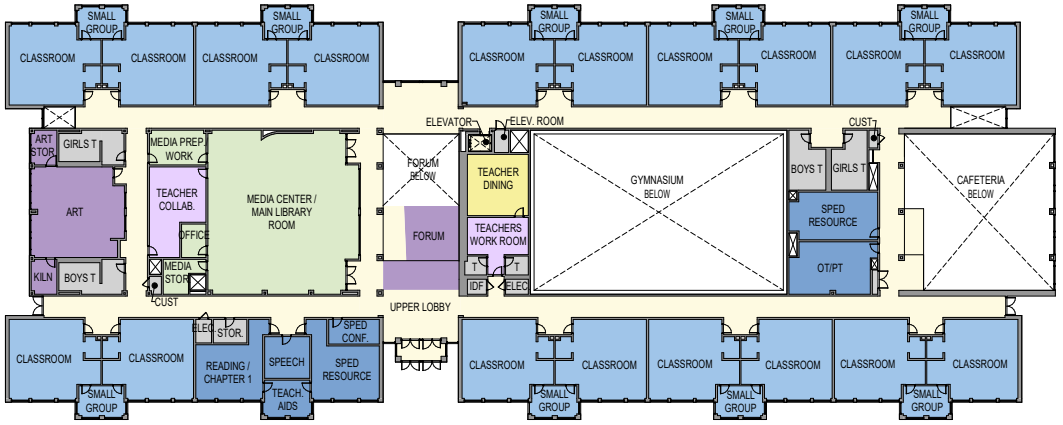
floor 2



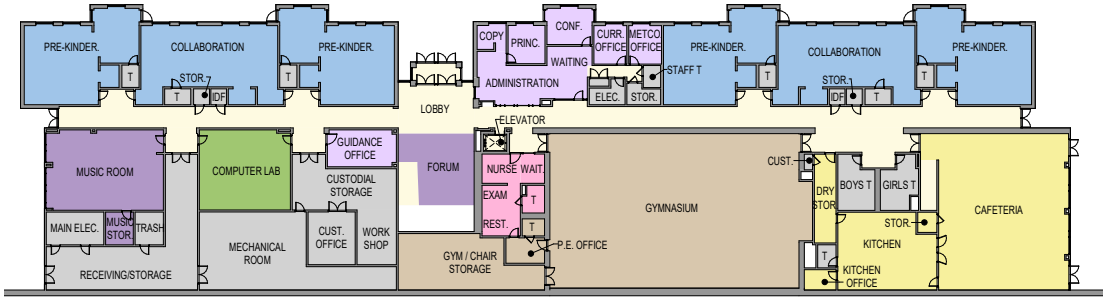
floor 1

Unofficial Delineation of Spaces

PROGRAM LEGEND
Core Academic Spaces
Special Education
Art & Music
Vocations & Technology
Media Center
Health & Physical Education
Medical
Administration & Guidance
District Programs
Dining & Food Service
Circulation
Custodial / Service / Toilet



Floor 2 - Program



Floor 1 - Program

Joseph Osgood Elementary School

The following is a plan diagram of the organization of the existing building, with colors indicating the different program types

4.08 Educational Program Evaluations

The design of the Joseph Osgood Elementary School was advanced for its time, in terms of the interior orgranization. It includes unique features, like the central forum and vaulted wood ceilings. Its layout is simple but effective. The following takes some of the design patterns and expands upon their integration within the existing environment.

Classroom Size & Academic Neighborhoods

The classrooms are organized in pairs with shared small group spaces in between. These are efficiently organized and the integration of the small group, cubbies, and sink areas are modern additions for its time of construction. Given its simple, linear layout, academic neighborhoods could be defined in multiple ways, either per classroom pair, per corridor, or per school half, with the forum serving as the central point.

Project-Based Learning Labs

The original plan included two classrooms of nearly 1,200 square feet specifically for collaboration. With additional storage and open work space, these rooms are akin to modern project based learning labs. They are submersed into the academic wing on the first floor and are resourceful spaces for the school.

Display & Visual Connections

There is a constant connection to the outdoors from within the building. Entering into the forum is airy and draws the eye upward to the woods behind the school. Plus, the axial corridors terminate with large windows. Despite much of the program being landlocked in the center spine, visual connections through the spaces maintain an open and connected feel.

Socialization Space

Because the classrooms line the exterior walls, the center of the school is freed up for shared spaces, like the forum, media center, art room, music room, gym, and cafeteria. This organization is well-suited for socialization, as everyone must commune in the center to utilize shared resources. This organization is much like a modern learning commons.

View from the top of the Forum

Typical classroom with vaulted ceiling

4.09 Educational Program Space Deficiencies

The following is a comparative look at the size of the spaces in Joseph Osgood Elementary School as compared to the space guidelines set forth by the Massachusetts School Building Authority (MSBA) in both plan diagram and spreadsheet forms.

Space Summary

The same space summary tool was used to analyze the program sizes at the Joseph Osgood School, but for grade levels PK-2. The existing enrollment (397) was compared to a future enrollment of 446 by 2034 (informed by the 2019 NESDEC projections with a factor based on the actual enrollment between 2019-2022).

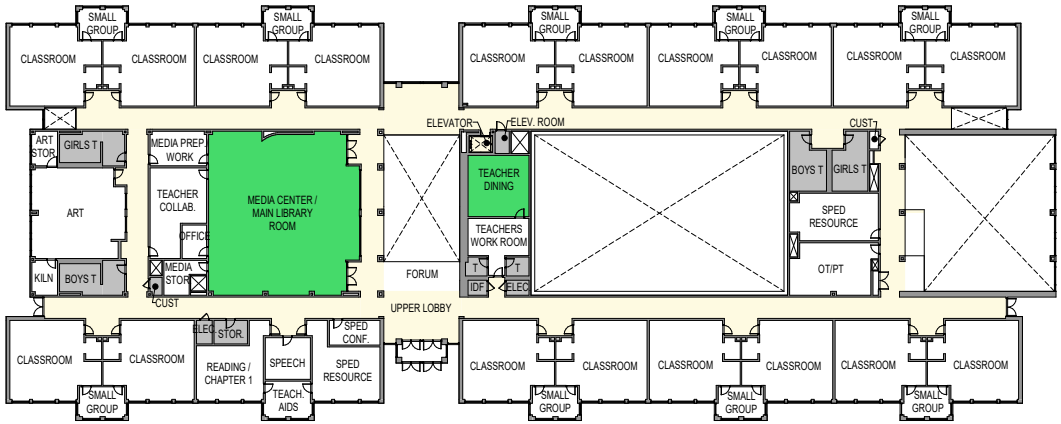
Summary

According to the MSBA guidelines, the classrooms are undersized. However, the K-2 enrollment divided by the number of classrooms averages only 15 students per classroom at present; therefore, these have not been identified as being undersized.

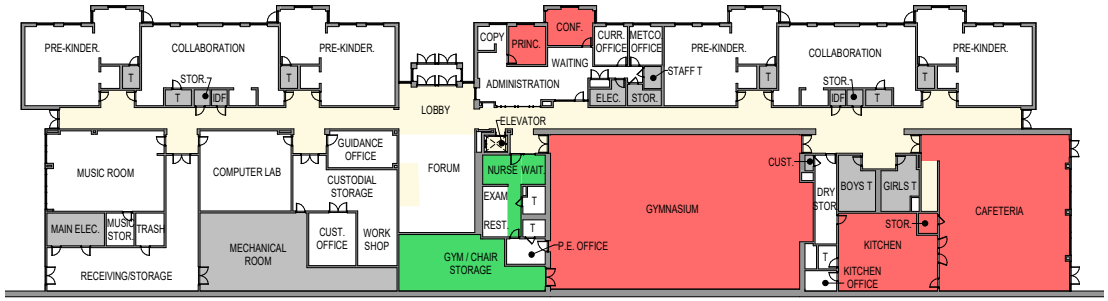
The gymnasium and cafeteria are identified as undersized according to the guidelines, however these assume use by pre-k through grade 2 in total for all day, without consideration of half-day classes or the knowledge of whether pre-k and kindergarten use these spaces regularly. The same assumptions were made for the space evaluation of the shared spaces.

The forum and media center provide extra outlet space, as these are oversized per the guidelines.

Special education space is undersized or missing per the guidelines. Additional space for administration and guidance/student support are recommended as well. The corridors included temporary hooks for coat storage and laundry hampers for student items. Permanent solutions to remediate a lack of student storage are recommended repair projects (but it was not clear if the classroom storage is too small to store all personal items, or if this was simply a consequence of pandemic management).



Floor 2 - Program



Floor 1 - Program

SIZE COMPARISON LEGEND
>5% Less than MSBA Guidelines
<5% Greater than MSBA Guidelines
Acceptable per MSBA Guidelines
Circulation
Space Accounted in Grossing Factor
Not in Existing Building Program (for space summary use)

Joseph Osgood Elementary School

The following is a plan diagram of the program sizes of the existing building as compared to MSBA guidelines

JOSEPH OSGOOD ELEMENTARY SCHOOL (PK-2)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			21,962			19,050	
Pre-Kindergarten w/ toilet	1,028	4	4,112	1,200	-	-	*1,100 SF min - 1,300 SF max*
Kindergarten	780	8	6,240	1,200	4	4,800	*1,100 SF min - 1,300 SF max*
General Classrooms - Grades 1-2	780	10	7,800	950	15	14,250	*900 SF min - 1,000 SF max*
Collaboration Room	1,176	2	2,352				
Small Group	162	9	1,458				
Computer Lab	874	1	874				
SPECIAL EDUCATION			2,539			4,530	
Self-Contained SPED				950	3	2,850	*8% of population*
Self-Contained SPED - toilet				60	3	180	
Resource Room	488	2	976	500	2	1,000	*1/2 size Genl. Clrm.*
Small Group Room / Reading	485	1	485	500	1	500	*1/2 size Genl. Clrm.*
OT/PT	508	1	508				
Speech	227	1	227				
SPED Teaching Aids	193	1	193				
SPED Conference	150	1	150				
ART & MUSIC			2,959			2,575	
Art Classroom - 25 seats	968	1	968	1,000	1	1,000	*assumed sched. 2x/wk/stu.*
Art Workroom w/ Storage & Kiln	106	2	212	150	1	150	
Music Classroom / Large Group - 25-50 seats	1,120	1	1,120	1,200	1	1,200	
Music Practice/Ensemble				75	3	225	
Music Storage	109	1	109				
Forum	550	1	550				
HEALTH & PHYSICAL EDUCATION			5,735			6,300	
Gymnasium	4,737	1	4,737	6,000	1	6,000	*6,000 SF min*
Gym Storeroom	832	1	832	150	1	150	
Health Instructor's Office w/ toilet	166	1	166				

JOSEPH OSGOOD ELEMENTARY SCHOOL (PK-2)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
MEDIA CENTER			**3,304**			**2,677**	
Media Center/Reading Room	2,836	1	2,836	2,677	1	2,677	
Media Center Office	98	1	98				
Media Prep/Workroom	235	1	235				
Media Storage	135	1	135				
DINING & FOOD SERVICE			**4,172**			**6,651**	
Cafeteria/Dining	2,497	1	2,497	3,345	1	3,345	*2 seatings @ 15 SF per seat*
Stage				1,000	1	1,000	
Chair/Table/Equipment Storage	46	1	46	349	1	349	
Kitchen	871	1	871	1,746	1	1,746	*1,600 SF for first 300 +1/add*
Staff Lunch Room	450	1	450	212	1	212	*20 SF/occupant*
Dry Storage	231	1	231				
Kitchen Office	77	1	77				
MEDICAL			**526**			**510**	
Medical Suite Toilet	68	1	68	60	1	60	
Nurses' Office/Waiting Room	306	1	306	250	1	250	
Examination Room/Resting	152	1	152	100	2	100	
ADMINISTRATION & GUIDANCE			**2,503**			**2,161**	
General Office/Waiting Room/Toilet	429	1	429	373	1	373	
Teachers' Mail and Time Room	100	1	100	100	1	100	
Duplicating Room	85	1	85	150	1	150	
Records Room				110	1	110	
Principal's Office w/ Conference Area	170	1	170	375	1	375	
Principal's Secretary/Waiting	100	1	100	125	1	125	
Supervisory/Spare Office	152	2	304	120	1	120	
Conference Room	196	1	196	250	1	250	
Guidance Office	302	1	302	150	1	150	
Guidance Storeroom				35	1	35	

JOSEPH OSGOOD ELEMENTARY SCHOOL (PK-2)	Existing Conditions			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA	# OF RMS	area totals	ROOM NFA	# OF RMS	area totals	Comments
Teachers' Work Room	311	1	311	373	1	373	
Teacher Collaboration	506	1	506				
CUSTODIAL & MAINTENANCE			2,391			2,046	
Custodian's Office	299	1	299	150	1	150	
Custodian's Workshop	259	1	259	375	1	375	
Custodian's Storage	575	1	575	375	1	375	
Recycling Room/Trash	111	1	111	400	1	400	
Receiving and General Supply	1,147	1	1,147	249	1	249	
Storeroom				297	1	297	
Network/Telecom Room				200	1	200	
Total Building Net Floor Area (NFA)			46,965			46,500	
Proposed Student Capacity / Enrollment			397			446	
Total Building Gross Floor Area (GFA)			**70,075**			**72,683**	
Grossing factor (GFA/NFA)			**1.49**			**1.56**	

Appendix

A1. 2019 NESDEC Projections

Cohasset, MA Historical Enrollment
Cohasset, MA Projected Enrollment

Cohasset, MA Historical Enrollment

School District: **Cohasset, MA** **12/9/2019**

Historical Enrollment By Grade

Birth Year	Births	School Year	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	UNGR	K-12	PK-12
2004	102	**2009-10**	39	129	139	118	147	108	124	121	100	106	87	97	89	91	0	1456	1495
2005	80	**2010-11**	35	123	134	144	124	148	109	125	121	100	97	88	96	91	0	1500	1535
2006	74	**2011-12**	39	103	127	136	144	126	144	110	116	121	84	98	87	95	0	1491	1530
2007	76	**2012-13**	46	119	114	126	145	151	133	142	116	114	118	81	100	89	0	1548	1594
2008	69	**2013-14**	42	130	122	119	138	149	153	136	139	112	95	113	89	101	0	1596	1638
2009	57	**2014-15**	34	111	133	123	118	140	143	148	133	133	99	95	113	85	0	1574	1608
2010	60	**2015-16**	34	108	124	138	128	126	140	142	145	135	120	97	97	112	0	1612	1646
2011	66	**2016-17**	24	105	110	127	136	127	120	143	128	134	127	116	97	92	0	1562	1586
2012	50	**2017-18**	24	95	119	108	127	141	122	119	133	125	129	127	119	94	0	1558	1582
2013	63	**2018-19**	24	101	106	118	113	123	139	120	105	127	111	130	121	119	0	1533	1557
2014	61	**2019-20**	24	103	105	103	118	109	122	134	116	97	117	106	129	117	0	1476	1500

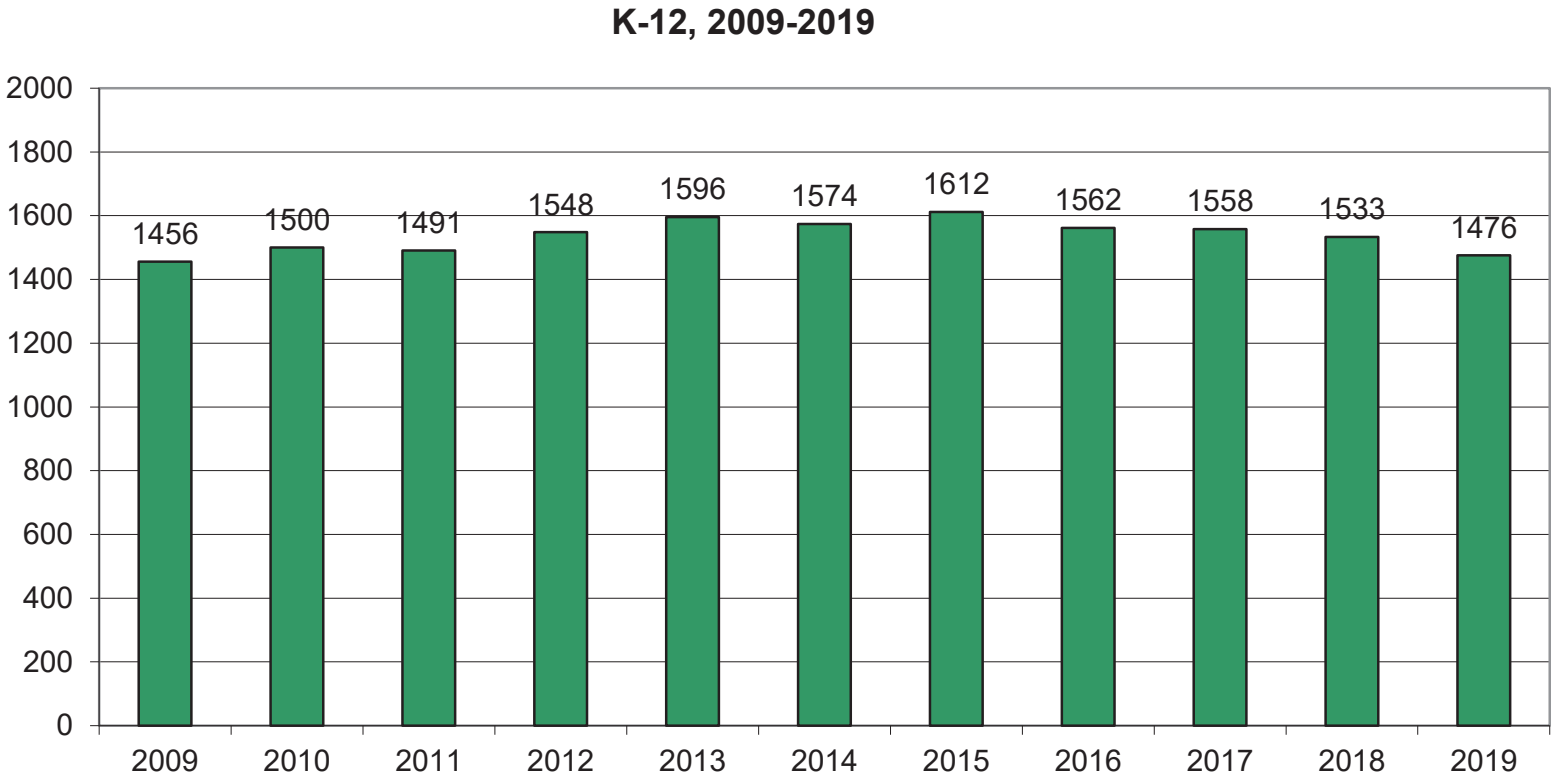
Historical Enrollment in Grade Combinations

Year	K-2	3-5	K-5	K-8	5-8	6-8	6-12	7-12	9-12
2009-10	386	379	765	1092	451	327	691	570	364
2010-11	401	381	782	1128	455	346	718	593	372
2011-12	366	414	780	1127	491	347	711	601	364
2012-13	359	429	788	1160	505	372	760	618	388
2013-14	371	440	811	1198	540	387	785	649	398
2014-15	367	401	768	1182	557	414	806	658	392
2015-16	370	394	764	1186	562	422	848	706	426
2016-17	342	383	725	1130	525	405	837	694	432
2017-18	322	390	712	1089	499	377	846	727	469
2018-19	325	375	700	1052	491	352	833	713	481
2019-20	311	349	660	1007	469	347	816	682	469

Historical Percentage Changes

Year	K-12	Diff.	%
2009-10	1456	0	0.0%
2010-11	1500	44	3.0%
2011-12	1491	-9	-0.6%
2012-13	1548	57	3.8%
2013-14	1596	48	3.1%
2014-15	1574	-22	-1.4%
2015-16	1612	38	2.4%
2016-17	1562	-50	-3.1%
2017-18	1558	-4	-0.3%
2018-19	1533	-25	-1.6%
2019-20	1476	-57	-3.7%
Change		**20**	**1.4%**

Cohasset, MA Historical Enrollment



Cohasset, MA Projected Enrollment

School District: Cohasset, MA **12/9/2019**

Enrollment Projections By Grade*

Birth Year	Births		School Year	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	UNGR	K-12	PK-12
2014	61		2019-20	24	103	105	103	118	109	122	134	116	97	117	106	129	117	0	1476	1500
2015	77		2020-21	24	132	111	103	105	117	107	120	124	110	90	116	105	126	0	1466	1490
2016	73		2021-22	25	125	143	109	105	104	115	105	111	118	102	89	115	103	0	1444	1469
2017	78	0	2022-23	25	133	135	140	111	104	102	113	97	106	109	101	88	113	0	1452	1477
2018	88	(prov.)	2023-24	26	150	144	133	142	110	102	100	105	92	98	108	100	86	0	1470	1496
2019	75	(est.)	2024-25	26	129	162	141	135	141	108	100	93	100	85	97	107	98	0	1496	1522
2020	78	(est.)	2025-26	27	134	139	159	143	134	138	106	93	89	92	84	96	105	0	1512	1539
2021	79	(est.)	2026-27	27	134	145	136	161	142	131	135	98	89	82	91	83	94	0	1521	1548
2022	80	(est.)	2027-28	28	136	145	142	138	159	139	128	125	93	82	81	90	81	0	1539	1567
2023	80	(est.)	2028-29	28	137	147	142	144	137	156	136	119	119	86	81	80	88	0	1572	1600
2024	78	(est.)	2029-30	29	134	148	144	144	143	134	153	126	113	110	85	80	78	0	1592	1621

Note: Ungraded students (UNGR) often are high school students whose anticipated years of graduation are unknown, or students with special needs - UNGR not included in Grade Combinations for 7-12, 9-12, etc.

Based on an estimate of births | Based on children already born | Based on students already enrolled

Projected Enrollment in Grade Combinations*

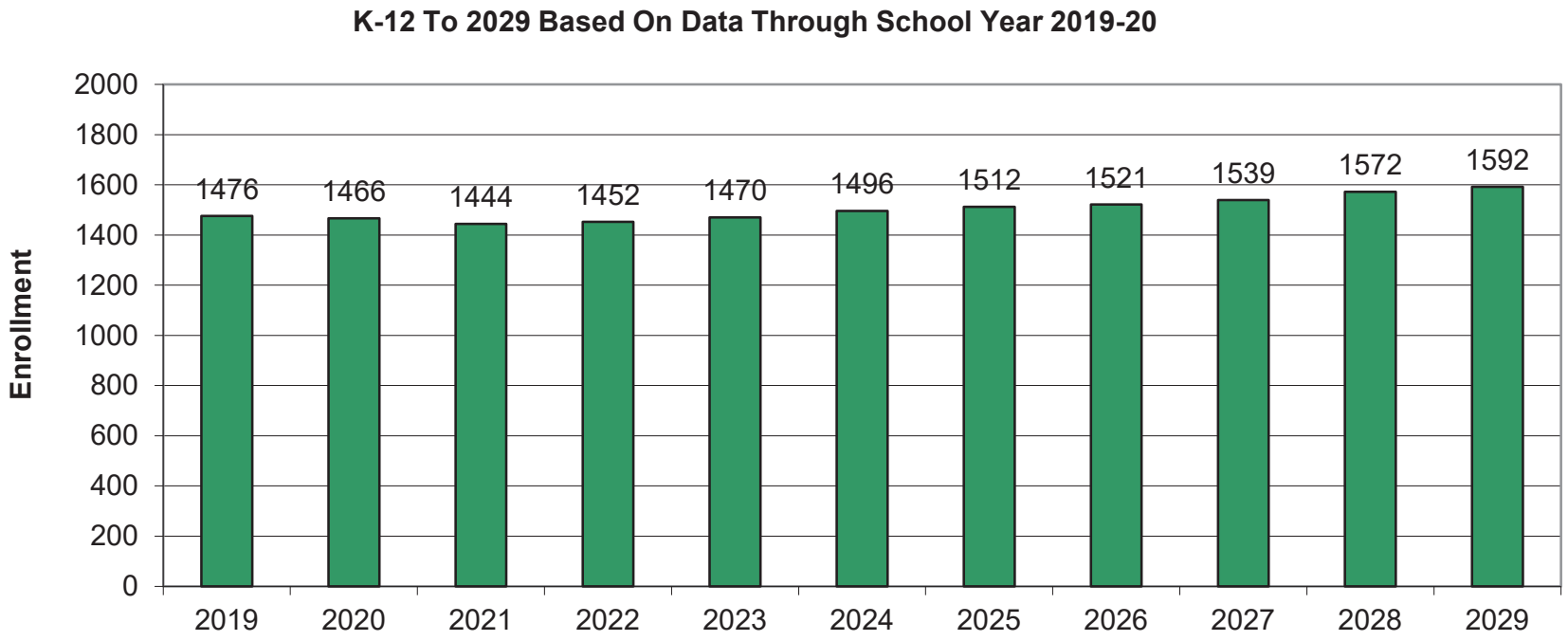
Year	K-2	3-5	K-5	K-8	5-8	6-8	6-12	7-12	9-12
2019-20	311	349	660	1007	469	347	816	682	469
2020-21	346	329	675	1029	461	354	791	671	437
2021-22	377	324	701	1035	449	334	743	638	409
2022-23	408	317	725	1041	418	316	727	614	411
2023-24	427	354	781	1078	399	297	689	589	392
2024-25	432	384	816	1109	401	293	680	580	387
2025-26	432	415	847	1135	426	288	665	559	377
2026-27	415	434	849	1171	453	322	672	537	350
2027-28	423	436	859	1205	485	346	680	552	334
2028-29	426	437	863	1237	530	374	709	573	335
2029-30	426	421	847	1239	526	392	745	592	353

Projected Percentage Changes

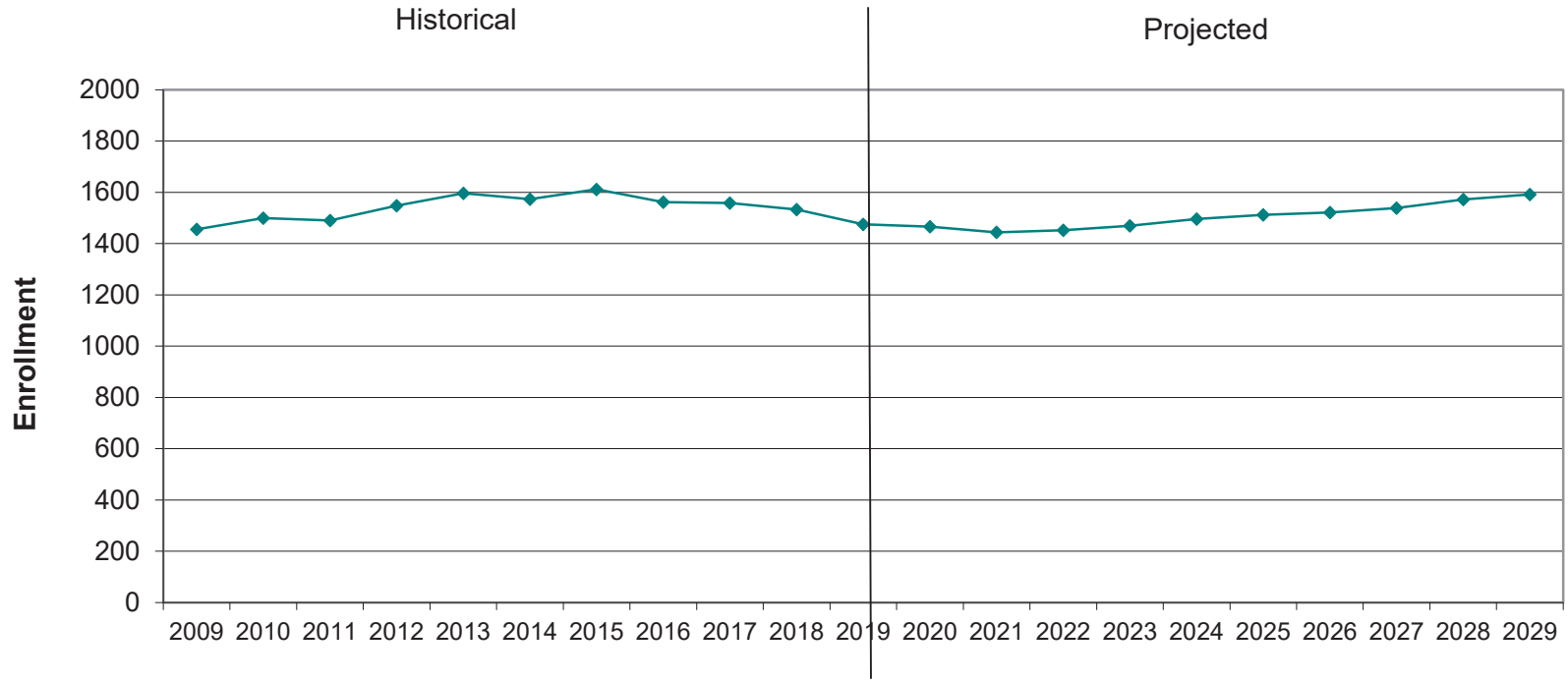
Year	K-12	Diff.	%
2019-20	1476	0	0.0%
2020-21	1466	-10	-0.7%
2021-22	1444	-22	-1.5%
2022-23	1452	8	0.6%
2023-24	1470	18	1.2%
2024-25	1496	26	1.8%
2025-26	1512	16	1.1%
2026-27	1521	9	0.6%
2027-28	1539	18	1.2%
2028-29	1572	33	2.1%
2029-30	1592	20	1.3%
Change		116	7.9%

*Projections should be updated annually to reflect changes in in/out-migration of families, real estate sales, residential construction, births, and similar factors.

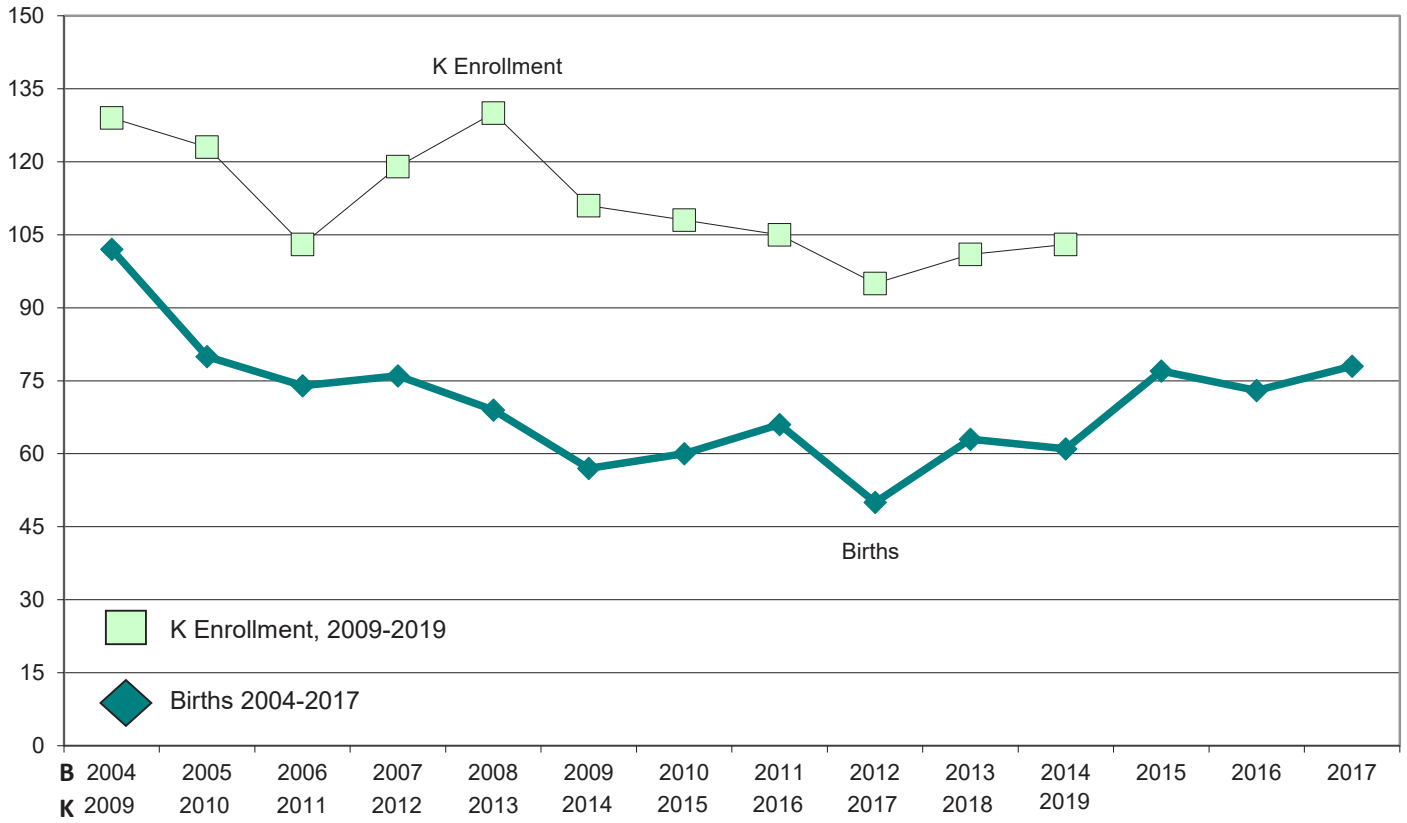
Cohasset, MA Projected Enrollment



Cohasset, MA Historical & Projected Enrollment



Cohasset, MA Birth-to-Kindergarten Relationship



Cohasset, MA Additional Data

Building Permits Issued		
Year	Single-Family	Multi-Units
2005	22	0
2015	29	0
2016	29	0
2017	12	0
2018	14	0
2019	1 to date	0 to date

Source: HUD and Building Department

Enrollment History		
Year	Career-Tech 9-12 Total	Non-Public K-12 Total
2005-06	2	n/a
2015-16	6	242
2016-17	5	259
2017-18	3	232
2018-19	n/a	248
2019-20	8	237

Residents in Non-Public Independent and Parochial Schools (General Education)														
Enrollments as of Oct. 1	K	1	2	3	4	5	6	7	8	9	10	11	12	K-12 TOTAL
	10	6	5	12	10	15	12	18	40	29	33	25	22	237

K-12 Home-Schooled Students	
2019	11

K-12 Residents in Charter or Magnet Schools, or "Choiced-out"	
2019	7

K-12 Special Education Outplaced Students	
2019	17

K-12 Tuitioned-In, Choiced-In, & Other Non-Residents	
2019	0

The above data were used to assist in the preparation of the enrollment projections. If additional demographic work is needed, please contact our office.

Prepared for:

The Town of
Cohasset, MA
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Prepared by:

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