



Neary Elementary School
53 Parkerville Road
Southborough, Massachusetts 01772

Facility Condition Assessment

April 2, 2021

PREPARED FOR:

Northborough & Southborough Public Schools
53 Parkerville Road
Southborough, Massachusetts 01772

PREPARED BY:

The Vertex Companies, Inc.
2501 Seaport Dr., Suite BH 110
Chester, Pennsylvania 19013

PHONE 610.558.8902

VERTEX Project No: 69604



April 2, 2021

Northborough & Southborough Public Schools
53 Parkerville Road
Southborough, Massachusetts 01772
Attn: Keith Lavoie

Re: Facility Condition Assessment
Neary Elementary School
53 Parkerville Road
Southborough, Massachusetts 01772
VERTEX Project No. 69604

Dear Mr. Lavoie:

The Vertex Companies, Inc. (VERTEX) is pleased to submit this Facility Condition Assessment (FCA) report for the above referenced property (the site).

Our work was conducted in general conformance with proposal P.0300.21, dated February 1, 2021, and in general accordance with the provisions of ASTM E2018-15 (Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process) for commercial real estate.

Please do not hesitate to contact us at your convenience should you have any questions or comments regarding this report.

Sincerely,

The Vertex Companies, Inc.

A blue ink signature of Philip Russo.

Philip Russo, R.A.
Field Observer & Report Author
Project Manager

A blue ink signature of Erik D Eichenlaub.

Erik D Eichenlaub, CEM, LEED Green Assoc.
Report Reviewer
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1. Table 1: Immediate Repairs, Short-Term Repairs & Summary of Capital Needs
2. Table 2: General ADA Improvements

APPENDICES

- A Photographic Documentation
- B Pre-Survey Questionnaire
- C Relevant Documents
- D Staff Statements of Qualifications

1.0 EXECUTIVE SUMMARY

The VERTEX Companies, Inc. (VERTEX) performed a Facility Condition Assessment (FCA) of Neary Elementary School located at 53 Parkerville Road in Southborough, Massachusetts, on March 17, 2021. Overall, the property and improvements appeared to be in good to fair condition with respect to age, use and location.

A table of salient information associated with the project is presented below and utilized throughout this report.

SALIENT PROPERTY INFORMATION	
Property Name:	Neary Elementary School
Location/Address:	53 Parkerville Road Southborough, Massachusetts 01772
Construction Year(s):	1970
Property Type:	Education
Number of Units:	Not Applicable
Number of Stories:	Single
Reported/provided Building Area (SF):	63,000 (Client Provided)
Reported/provided Site Acreage:	80.7 (Property Record Card)
Surrounding Property Usage:	Vacant land, residential, recreational
Utility Service:	Gas: Eversource Electric: National Grid Water: Town of Southborough Sanitary: Onsite septic Storm: Town of Southborough

The “Quick Look Summary Checklist” presented on the following page, is intended to provide a general, objective* evaluation based on the issues identified at the property and their associated projected costs. Recognizing that the evaluation is general in nature, and subject to the limitations of the assessment as well as cost estimating accuracies, the Summary is simply calculated utilizing a modification of the recognized Facility Condition Index (FCI) utilized by many

professionals to evaluate the condition of buildings or groups of buildings. For this assessment, issues identified (both Immediate and Capital Needs) were categorized by building system in appropriate sections of the report and Cost Table 1. The sum of dollar values for these issues was then divided by an estimated value for building replacement costs, weighted for each building category. The following definitions were utilized for these ratings.

- **Good:** Aggregate of identified issues is less than 5% of total replacement costs estimated for the associated system.
- **Fair:** Aggregate of identified issues is greater than 5% and less than 10% of total replacement costs estimated for the associated system.
- **Poor:** Aggregate of identified issues is greater than 10% of total replacement costs estimated for the associated system.

**It is important to note that the ratings assigned in the Quick Look Summary are objective measures based solely on projected dollar amounts relative to total system replacement costs. These ratings may differ from our overall subjective opinion of the condition of the same system or category identified in the text descriptions and discussions in Section 5 of this report.*

"QUICK LOOK" PROJECT SUMMARY AND ESTIMATE OF PROJECTED COSTS

Site Name:	Neary Elementary School	# Buildings:	2
Site Location:	Southborough, Massachusetts	Est. Bldg Area, SF:	63,000
Building Age, yrs:	51	Eval. Term, Yrs:	10
Building Type:	Educational		

GENERAL CATEGORY	SUMMARY RATING				# Items	Immediate Needs Estimate	# Items	Capital Needs Est., Uninflated
	G	F	P	NA				
SITE DEVELOPMENT	X				1	\$5,000	5	\$122,564
BUILDING STRUCTURE	X				0	\$0	0	\$0
BUILDING EXTERIOR			X		1	\$5,000	6	\$314,510
ROOF			X		0	\$0	2	\$1,406,021
BUILDING INTERIOR			X		0	\$0	10	\$1,522,737
MECHANICAL SYSTEMS		X			0	\$0	4	\$157,528
ELECTRICAL SYSTEMS		X			0	\$0	1	\$150,000
PLUMBING SYSTEMS	X				0	\$0	1	\$4,112
CONVEYANCE				X	0	\$0	0	\$0
LIFE SAFETY / FIRE PROTECT	X				0	\$0	0	\$0
ANCILLARY STRUCTURES	X				0	\$0	0	\$0
OVERALL RATING / TOTALS			X		2	\$10,000	29	\$3,677,472
ADA IMPROVEMENTS					5	\$178,089		

This "Quick Look" Summary is intended to provide an overall picture of the number of identified and quantified issues at the subject property. The summary ratings above are objective, and are based on the aggregate estimated dollar amount for identified repairs associated with each category. The definitions used for these summary ratings are based on a modified Facility Condition Index (FCI) which is calculated by dividing combined costs for Immediate and Short Term Needs by a simply modeled replacement cost value weighted for each category and based on building.

FCI = $\frac{(\text{Immediate Needs} + \text{Short Term Needs}^*)}{\text{Replacement Cost}^{**}}$

* Capital Needs identified in Years 1 and 2
** For each individual building category

GOOD: 0 to 5%
FAIR: 5 to 10%
POOR: >10%

2.0 PURPOSE AND SCOPE OF SERVICES

2.1 PURPOSE

The purpose of the Facility Condition Assessment (FCA) was to observe and document readily visible material and building system defects that might significantly affect the value of the property. The FCA also assessed existing conditions that might have a significant impact on the continued operation of the facility during the requested term of assessment. The requested term of assessment for this report was 10 years.

The report will be utilized to assist the Client with decisions related to future capital planning.

Observations performed during the FCA were made without operational testing and/or removing or damaging components of the building systems. Consequently, some system specific assumptions were made regarding the existing conditions and operating performance of each system. Furthermore, recommendations developed for this report were based on information discovered during the FCA. If additional information is discovered concerning the facility, the assumptions, conclusions, and recommendations presented herein may require re-assessment.

The recommendations and opinions of cost provided in this report were also based on the understanding that the facility will continue to operate under similar use and occupancy as observed on the date of the site reconnaissance.

2.2 SCOPE OF SERVICES

The FCA included the following: site reconnaissance; limited interviews with property management and maintenance personnel; inquiries or attempted inquiries with appropriate local government authorities (e.g., building department and fire department) and a review of available construction documents as provided by the building management. Operational testing of building systems or components was not conducted. The FCA does not confirm the presence or absence of asbestos, polychlorinated biphenyls (PCBs), mold, or contaminated soils or groundwater on the property.

During the FCA, unless noted otherwise, VERTEX made visual observations of the following facility features: site development systems; building structure systems; building exterior systems; building interior systems; roof systems; mechanical systems; electrical systems; plumbing systems; conveyance systems; and life and fire safety systems.

2.3 REPORT RELIANCE

This report is intended for review as a complete document. Therefore, interpretations and conclusions drawn from the review of any individual section are the sole responsibility of the user.

This report was prepared exclusively for the Client(s) identified on the report cover in accordance with our project specific proposal and the associated terms and conditions. Reliance granted in writing by VERTEX to any party is subject to the terms and conditions associated with this job specific proposal. It should be noted that this report was prepared based on observations made during a specific site visit, and the report is time dependent. Conditions present at any time following the site visit date are subject to change, and as such the report is considered to have a limited shelf life. In any case, use or reliance upon the report shall not occur after six (6) months from the date of the site visit without VERTEX's prior written authorization. In the event that future use or reliance is desired, an update of this report may be requested for an additional fee.

2.4 DEVIATIONS FROM THE GUIDE

ASTM E2018-15 "Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process," was utilized as a guideline for the site visit and associated report preparation. ASTM requires that deviations from the guidelines be stated in the report.

The following items were not required by the ASTM standard but were provided as part of this FCA at the request of the client or as value added considerations.

- ★ The field observations were performed by a registered architect
- ★ Determination of USGS Seismic Hazard and IRC Termite Zone
- ★ A Capital Needs Assessment with a term length of 10-years was performed
- ★ A visual review of specific ADA related issues and general compliance was performed

2.5 INACCESSIBLE AREAS / OBSERVATION LIMITATIONS

Representative observations were made at the facility in accordance with ASTM E2018-15. The entire facility was available for review and inaccessible areas were not encountered during the on-site portion of the FCA.

2.6 AREAS REVIEWED

Observations of the various systems, materials and building areas were performed as part of the site walk-through. Site observations of similar portions of the building or similar systems or materials were performed until, in VERTEX's professional opinion, a representative sampling was adequate for extrapolation to the remainder of the building.

3.0 REPORT INFORMATION

3.1 ASSESSMENT DEFINITIONS

- GOOD:** Material or building system was in average to above-average condition. Opinion is rendered with consideration to the item's type, age, design, and location. Generally, other than normal maintenance, no work is recommended or required.
- FAIR:** Material or building system was in average condition. Some work is required or recommended, primarily due to normal aging and wear of the building system, to return the system or material to a good condition.
- POOR:** Material or building system was in below average condition. Significant work is anticipated to return the building system or material to an acceptable condition.

Unless stated otherwise in this report, the material and building systems reviewed were considered to be in good condition and their performance appeared to be satisfactory.

3.2 COMMON ABBREVIATIONS/ACRONYMS

ALEC	Aluminized Emulsion Coating	HP	Horse Power
AC	Alternating Current	HVAC	Heating Ventilation & Air Conditioning
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers	IN	Inches
A/V	Audio Visual Device	IRMA	Inverted Roof Membrane Assembly
BLDG	Building	KVA	Kilo-volt Amp
BOCA	Building Officials & Code Administrators (Building Code)	KW	Kilowatt
BTU	British Thermal Unit (HVAC / MEP)	LF	Linear Feet
BUR	Built-Up-Roof	LS	Lump Sum
CF	Cubic Feet	MBH	1,000 BTUs per Hour
CIP	Cast Iron Pipe	MEP	Mechanical, Electrical, Plumbing
CMP	Corrugated Metal Pipe	MIL	1/1000 th of an inch
CMU	Concrete Masonry Unit	MP	Manual Pull Station (fire alarm)
CY	Cubic Yard	PSI	Pounds per square inch
DC	Direct Current	PVC	Poly-Vinyl-Chloride (pipe)
DIP	Ductile Iron Pipe	QA/QC	Quality Assurance/Quality Control
DM	Deferred Maintenance	RCP	Reinforced Concrete Pipe
DX	Direct Expansion (air conditioning)	RUL	Remaining Useful Life
EIFS	Exterior Insulation & Finish System	SOG	Slab-on-grade
EMS	Energy Management System	SF	Square feet
EPDM	Ethylene-Propylene-Diene-polymer-Monomer ("rubber" roofing)	SY	Square Yard
EUL	Estimated Useful life	TN	Ton (12,000 BTU cooling, HVAC)
FT	Feet	UBC	Uniform Building Code
HID	High Intensity Discharge (lighting)	VAT	Vinyl Asbestos Tile
		VAV	Variable Air Volume (HVAC)
		VCT	Vinyl Composition Tile
		VWC	Vinyl Wall Covering

3.3 REPORT TENSE

This report was prepared in the past tense as it is intended to only describe observed conditions at the time of the site reconnaissance.

3.4 OPINIONS OF COST

The cost tables associated with the FCA include total amounts for *Immediate Repair* items, *Short-Term Repair* items, and *Capital Needs*. Immediate Repair items are defined as physical deficiencies that cannot be remedied with routine maintenance, normal operating maintenance, etc., excluding de minimis conditions that generally do not present a material physical deficiency to the subject property. Immediate Repair items are typically considered to be: (1) material existing or potential unsafe conditions resultant from damage or deterioration (2) material building or fire code violations as revealed by municipal agencies; or (3) conditions that if left unremedied, have the potential to result in or contribute to critical element or system failure within one year, or will result most probably in a significant escalation of its remedial cost. Short-Term Repairs are defined as physical deficiencies, such as deferred maintenance, that may not warrant immediate attention, but require repairs or replacements that should be undertaken on a priority basis in addition to routine preventative maintenance. In some cases, Short-Term repairs may include recommendations for testing, exploratory probing, and/or further analysis. Generally, the expected time frame for Short-Term Repairs is within one to two years. Capital Needs are those items of a capital nature which are expected to require repair, renovation or replacement during the requested evaluation term, in this case 10 years.

The opinions of cost presented herein were based on readily visible material and building system defects that might significantly affect the value of the property during the requested assessment term. These opinions were based on approximate quantities and values, and do not constitute a warranty or guarantee that all item(s) requiring repair were included. The estimated costs developed in this report were for identified Immediate Repair items, Short-Term Repair items, and Capital Needs items. Items not incorporated into the cost tables include operational costs, such as landscaping maintenance and utility (gas or electricity) usage, unpredictable (aesthetic) upgrades, or normal operation and maintenance. The availability of parts or qualified personnel for repairs or renovations may be limited and is not factored into cost estimates unless specifically stated. Unless specified otherwise, anticipated costs do not consider the presence of hazardous materials with regard to escalation in unit costs for repairs or replacements.

Estimated costs were developed with published unit price data and industry experience. These opinions should not be interpreted as a bid or offer to perform the work. The primary source of cost data was *Commercial Renovation Costs with RS Means Data (2020)* as published by R.S. Means and Company. Costs for selected items were estimated based on provided documentation, and VERTEX's experience with buildings of similar size, construction and geographic location.

It is important to understand that actual costs will vary depending on such factors as contractor expertise, previous contractor commitment, seasonal workload, insurance and bonding, and local labor conditions. These factors may cause wide variations in the actual costs as estimated by different bidders. In addition, the costs presented in the tables do not generally include soft costs, design, permits, OPM or contingencies which may need to be added for some work items. In view of these limitations, the costs presented herein should be considered "order of magnitude" estimates and used for preliminary budgeting purposes only. **Preparation of scopes of work and contractor bidding are recommended to forecast the actual costs.**

3.5 ACTIVE CONSTRUCTION

The building was complete, and areas of active construction were not observed during the on-site visit.

4.0 ASSESSMENT INFORMATION

4.1 GENERAL SUMMARY

The VERTEX Companies, Inc. (VERTEX) performed a Facility Condition Assessment (FCA) of Neary Elementary School located at 53 Parkerville Road in Southborough, Massachusetts, on March 17, 2021. Overall, the property and improvements appeared to be in good to fair condition with respect to age, use and location.

Maintenance issues reportedly were handled by a full-time, off-site maintenance person who services this building and a number of other buildings within the area, with assistance provided by outside specialty contractors. In our opinion, the Site Contact (Owner's Representative) was fully familiar with the building's operation, condition and associated systems. Our conclusions are based on our visual observations, statements by on-site personnel, review of available records, and limited documentation obtained during the course of follow-up research.

4.2 SITE RECONNAISSANCE

The site reconnaissance portion of the FCA was performed on March 17, 2021, by Philip Russo, R.A. of VERTEX. Weather conditions during the site reconnaissance were as follows:

On-site Date	Weather Description	Average Temp.
March 17, 2021	Sunny	55° F

The following building features were assessed, if applicable.

- Exterior Site Elements
- Building Structure System
- Building Exterior System
- Roof System
- Mechanical System
- Electrical System
- Plumbing System
- Building Interior System
- Life & Fire Safety System
- Conveyance System

4.3 BUILDING HISTORY

According to the Site Contact, the facility has functioned as an elementary school building since construction in 1970.

It is our understanding that significant capital improvements and/or major repairs at the site have not been performed in recent years.

The building was occupied by a single tenant – Northborough & Southborough Public Schools. There were no vacant spaces observed during our on-site visit.

4.4 INTERVIEWS

Interviews were conducted with personnel familiar with the facility to obtain information relative to the condition of the various building systems. Information obtained during the interviews has been incorporated into this report in the applicable sections. The following individuals or agencies were interviewed or contacted.

- Keith Lavoie, Assistant Superintendent of Operations, Northborough & Southborough Public Schools (Site Contact)
- Bryan Fantony, Facilities Manager, Northborough & Southborough Public Schools
- Mike Dagle, Head Custodian, Northborough & Southborough Public Schools
- Building, Zoning and Fire Departments, Town of Southborough

4.5 PRE-SURVEY QUESTIONNAIRE AND REQUEST FOR DOCUMENTATION

VERTEX requested additional documentation from the Site Contact by sending a Pre-Survey Questionnaire and Request for Documentation (PSQ). In lieu of the questionnaire, and in additional verbal information provided before, during and after the on-site visit, School Officials forwarded significant documentation, which is listed below in Section 4.6 Documents, and is discussed in applicable sections within this report.

4.6 DOCUMENTS

The following documents were provided or discovered during VERTEX's research of the property history.

Description	Author	Date	Reviewed	
			No copy obtained	Copy obtained*
Flood Insurance Rate Map (Community Panel # 25027C0666F)	Federal Emergency Management Agency	July 16, 2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Description	Author	Date	Reviewed	
			No copy obtained	Copy obtained*
Property Record Card	Town of Southborough	March 21, 2021	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Report of the Neary School Renovation Project	Southborough School Board	June 8, 2006	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Roof Report	The Garland Company, Inc.	February 13, 2020	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AHERA Reports	Hub Testing Laboratory, Inc.	June 2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Neary Floor Plan	Unknown	Not Dated	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Neary Honeywell Energy Audit	Honeywell	Not Dated	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Expired Roof Warranty	Carlisle	December 11, 1990	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Neary Roof (Description of roof system)	Unknown	Not Dated	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>*We have included copies of selected documents in Appendix C; however, larger documents we obtained may simply be referenced here and can be provided upon request.</i>				

4.7 MUNICIPAL RESEARCH & CODE COMPLIANCE

A detailed analysis of the building to determine compliance with current codes was not performed as part of this assessment. Code compliance research and evaluation was limited to the following.

- a) Visual observation of materials, components or systems that due to obvious deterioration or damage have resulted in an unsafe condition. Such conditions must have been visible without probing, dismantling or uncovering or unblocking access, and must not have required specialized knowledge of any particular code or any measurement or calculation for dimensional, clearance, or other compliance.
- b) Written inquiry or verbal interview with local building officials to determine if there were open or unresolved building, zoning or fire code issues on file with the local government related to the subject property.
- c) An attempt to determine whether or not there were specific “non-grandfathered” items listed with the local government that an owner may be forced to upgrade or replace even if no building renovations are performed.

- d) A written inquiry or verbal attempt to obtain the most recent “base-building” Certificate of Occupancy for the property.

Issues of unsafe conditions related to visual deterioration or damage, if observed, are identified and discussed in the various sections of this report specific to the material, component or system.

VERTEX sent written requests for information to the local municipal offices with jurisdiction over the property with respect to building, zoning and fire code compliance. The requests referenced the Freedom of Information Act and inquired about the existence of any material code violations or safety related issues on file with the municipality.

At the time of this report, responses from the appropriate authorities had not been received. VERTEX will forward significant information upon receipt and review. Copies of the written requests for information are provided in Appendix C.

4.8 SITE CHARACTERISTICS

General site characteristics including site topography, flood zone, seismic considerations, and termite considerations are tabulated and discussed below.

Topography

In general, the property sloped downward from the west to the east. Retaining walls and grass covered slopes defined grade changes in selected locations.

Flood Zone

VERTEX visually plotted the general property location on FEMA Flood Insurance Rate Map. This should not be considered a flood zone certification. Actual determination of flood zones should be performed by a registered surveyor.

Subject Property Flood Zone: Zone X (non-shaded area), defined as areas outside the 500-year flood plain.

Seismic Considerations

The probability of ground damaging motion within each Seismic Zone is defined below based on the Seismic Zone Map in Figure A, (1997 Uniform Building Code).



- (0 or 1) low probability
- (2A) low to moderate probability
- (2B) moderate probability
- (3) moderate to high probability
- (4) high probability

While there are more recent seismic risk maps, they generally require specific information on the seismic response characteristics of the site and structure. For

ease and consistency, and comparison with previous standards, the ASTM standards associated with Probable Maximum Loss (PML) seismic studies, rely on this 1997 map.

The subject property for this evaluation was in Seismic Zone:

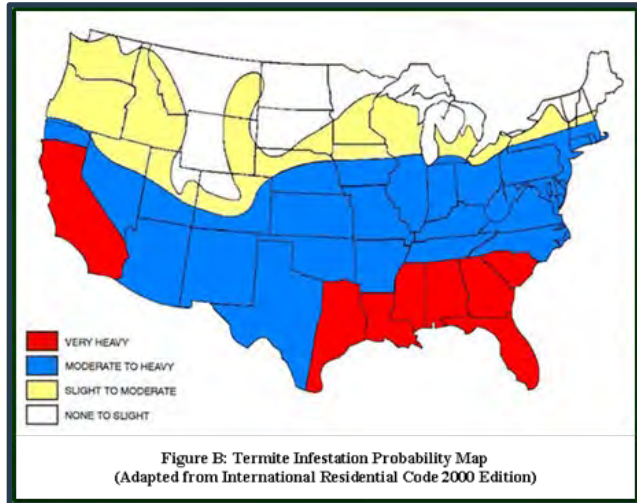
2A

In general terms, those properties located in Zones 3 and 4 have a greater risk of ground damaging motion, and PML studies are typically recommended in these zones. Based on the property location, a PML is not recommended for this site.

Termite Considerations

Termite Zones identified in the 2000 International Residential Code (IRC) are shown in Figure B. Based on the general location, the subject property is located in the following Termite Infestation Region:

Moderate to Heavy



The foundation and exterior walls of the building are constructed with concrete, steel, masonry and glass, which may serve to minimize the risk of building damage due to wood destroying insects.

We did not observe evidence of wood destroying insect activity, and none was reported; however, in the event that certification of the absence or present of termite activity is required, a licensed pest inspection professional should be engaged to

perform a formal survey.

4.9 CLIENT SPECIFIC INFORMATION

This assessment was performed in accordance with ASTM E2018-15 and no specific client concerns or protocols were addressed that are not already discussed elsewhere in this report.

5.0 SYSTEM DESCRIPTION AND CONDITION

The following sub-sections describe the major building systems as observed during the FCA. Comments and/or recommendations offered by VERTEX regarding each system are presented immediately after each description in italic print. Each deficiency is assigned an item number and is cross-referenced in Table 1. Numbered photographs are presented in Appendix A and cross-referenced in Table 1.

5.1 SITE IMPROVEMENTS

Site development systems are those that relate to geographic features of the property and surrounding area, and improvements that serve ancillary roles for the facility. Components of the observed site development systems included paving and parking, sidewalks, retaining walls and fencing, signage, loading docks and dumpster areas, irrigation systems, site lighting and utilities, landscaping, and surface drainage. Operational testing of site development components was not conducted. Clear lines of property demarcation were not provided and as such, our observations relating to the site grounds and surrounding amenities are to be considered approximate.

SITE IMPROVEMENTS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Site Access	The site was accessed from west side of Parkerville Road. The site was easily accessible from major area roadways. The site was located within one mile of Route 9 and five miles of Interstate 90.	G	
Parking	Parking was provided on open surface lots on the east, south and west sides of the building. Painted striping was provided to delineate parking stalls and directional markings. The site had a reported total of 192 surface parking spaces, four of which were specifically designated for handicapped use.	G to F	
Asphalt Pavements	The parking lots, driving lanes and access roads serving the property were constructed with asphalt. Information relating to the materials and thicknesses utilized in the construction of the pavement section was not available.	G to F	

SITE IMPROVEMENTS																																																	
Item	Description of System or Component					Overall G, F, P	Cost Item #																																										
	<p><i>In general terms, the asphalt pavement areas appeared to be in good to fair condition. We observed the following types of deterioration in relation to <u>asphalt pavement conditions</u>.</i></p> <table><tr><th colspan="6">Observed ASPHALT Pavement Deficiencies</th></tr><tr><td>X</td><td>Surface Weathering</td><td>X</td><td>Potholes</td><td>X</td><td>Transverse Cracks</td></tr><tr><td>X</td><td>Loss of Aggregate</td><td></td><td>Rutting</td><td>X</td><td>Longitudinal Cracks</td></tr><tr><td></td><td>Map Cracking</td><td></td><td>Alligator Cracking</td><td>X</td><td>Random Cracks</td></tr><tr><td></td><td>Birdbaths</td><td>X</td><td>Ponding</td><td></td><td>Vegetation Growth</td></tr><tr><td colspan="6">Conditions Observed were: Minor to Moderate</td></tr><tr><td colspan="6">Extent of observed deficiencies: Various Locations</td></tr></table> <p><i>We did not observe any asphalt conditions that appeared to require immediate repairs; however, short- and longer-term repairs and asphalt pavement renovations should be expected during the evaluation term. Budgetary allowances and forecasts for implementation are included in Table 1.</i></p>					Observed ASPHALT Pavement Deficiencies						X	Surface Weathering	X	Potholes	X	Transverse Cracks	X	Loss of Aggregate		Rutting	X	Longitudinal Cracks		Map Cracking		Alligator Cracking	X	Random Cracks		Birdbaths	X	Ponding		Vegetation Growth	Conditions Observed were: Minor to Moderate						Extent of observed deficiencies: Various Locations							1, 2
Observed ASPHALT Pavement Deficiencies																																																	
X	Surface Weathering	X	Potholes	X	Transverse Cracks																																												
X	Loss of Aggregate		Rutting	X	Longitudinal Cracks																																												
	Map Cracking		Alligator Cracking	X	Random Cracks																																												
	Birdbaths	X	Ponding		Vegetation Growth																																												
Conditions Observed were: Minor to Moderate																																																	
Extent of observed deficiencies: Various Locations																																																	
Concrete Pavements	Not Applicable.					N/A																																											
Sidewalks	<p>There were sidewalks leading from the paved parking areas and access areas to the front entrance of the building and to exits located along the perimeter of the building. The sidewalks were constructed with cast-in-place concrete. There was a limited amount of asphalt sidewalk on the south side of the building.</p> <p><i>The observed concrete sidewalks appeared to be in good to fair overall condition with some evidence of cracking, scaling and</i></p>					G to F	3																																										

SITE IMPROVEMENTS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>surface deterioration observed. The asphalt sidewalks appeared uneven with cracking. Based on the estimated RUL of the concrete sidewalks, some sectional replacement should be anticipated during the evaluation term. A budgetary estimate of cost for such repairs is included in Table 1. Due to the minimal aggregate quantity and associated cost for repair of the asphalt sidewalk, repair of this item is considered to be routine maintenance.</i>		
Curbs	<p>Concrete curbing was installed around the perimeter of the parking lots and sidewalk/parking lot interface surrounding the building.</p> <p><i>Curbing appeared to be in good to fair overall condition with some evidence of cracking and displacement observed. Due to the observed damage and the estimated RUL of the curbing, some sectional replacements are expected during the evaluation term. A budgetary estimate for this item is included in Table 1.</i></p>	G to F	4
Fencing	<p>A chain link fence was observed at the north, east and south sides of the property. The fence provided security for the site.</p> <p><i>Observed fencing appeared to be in good condition requiring routine inspection, repairs and maintenance during the evaluation term.</i></p>	G	
Retaining Walls	<p>A concrete retaining wall was observed at the southwest corner of the site.</p> <p><i>The retaining wall appeared to be in good condition. Regular inspections of the retaining structure should be performed to monitor potential movement. This is considered a routine maintenance item.</i></p>	G	
Drainage	The building roof areas, landscaped areas and open parking surfaces drained to an underground, on-site storm drainage collection system that discharged to the municipal storm water management system.	G to F	

SITE IMPROVEMENTS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>The southwest corner of the site, adjacent to the garage and septic system, was observed to be overwhelmed with ponded water and some deteriorated asphalt paving. This appeared to be from uphill drainage. Installation of a swale with drain tile to divert the water from the paved areas is recommended, and estimated costs are included in Table 1 as an item of Immediate Repair. It is also recommended that a formal scope of work and repair estimate be obtained from a qualified stormwater management professional.</i>		5
Utilities	<p>Electric, natural gas, water, sanitary, and storm sewer services were provided to the site.</p> <ul style="list-style-type: none"> • Water provider: Town of Southborough • Electric provider: National Grid • Natural gas provider: Eversource • Sanitary sewer provider: On-site septic system at the southwest corner of the site • Storm sewer provider: Town of Southborough 	G	
Exterior Lighting	<p>The facility parking areas were illuminated with metal pole-mounted light fixtures located throughout the parking area. Additional lighting was provided at the sides and rear of the building. Observed fixtures consisted of wall-mounted units located at regular intervals of the building perimeter and above the secondary entrance doors.</p> <p><i>VERTEX did not visit the site at night to witness the operation of the exterior lighting; however, the site lighting fixtures appeared to be in good overall condition.</i></p>	G	
Landscaping	The landscaping at the site consisted of trees, shrubs, grass areas, and flowerbeds at selected locations. The parking lot included islands with landscaping features. Planted materials were located at the perimeter of the building and at regular locations around the site. The property included a landscaped courtyard located adjacent	G	

SITE IMPROVEMENTS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>to the main building entrance. The courtyard was landscaped with small trees, shrubs and mulched flower beds and included site furniture.</p> <p><i>The observed landscaping elements appeared to be in good overall condition and were well-maintained.</i></p>		
Recreational Facilities	<p>The school included playground equipment at the north side of the site.</p> <p><i>The recreational areas and associated equipment appeared to be in good to fair overall condition with some evidence of weathering and deterioration. Based on these observations and the estimated RUL of the equipment, renovations should be expected during the evaluation term. A budgetary allowance for these actions is included in Table 1.</i></p>	G to F	6

5.2 BUILDING STRUCTURE

Structural issues are related to those building components that transfer loads within a building and to the underlying ground. Loads may be the result of constant forces such as the weight of the building or other stationary objects within the building (dead loads), or variable forces such as people, operational equipment, vehicular activity or wind (live loads). The building structure assessment included the review of available geotechnical reports and drawings depicting the foundation, floor slab, and framing systems. Visual observations of exposed features were also performed when possible.

BUILDING STRUCTURE & SHELL			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Foundations	<p>Foundation drawings or information relating to the building foundations were not provided for our review. Based on our experience with buildings of similar type, size and geographical locations, it is assumed that the building was founded on conventional spread and continuous wall footings. The building did not contain a basement, or other significant below grade areas.</p> <p><i>No visual indications of significant foundation failure or visual evidence of significant settlement were observed. No evidence of past water intrusion or evidence of significant water damage was identified during VERTEX's on-site visit.</i></p>	G	
Floors	<p>The building was constructed with a cast-in-place concrete floor slab at the grade level. The mechanical mezzanine consisted of plywood on open web steel bar joists.</p> <p><i>The mezzanine floor appeared to be in good condition with no evidence of significant deterioration or failure. In most areas, the floor slab surfaces were concealed by flooring finishes; however, floors appeared to be level and stable in observed locations.</i></p>	G	
Super-structure	<p>Based on our limited observation of exposed structural elements, the building structure consisted of a mixture of concrete, masonry and structural steel framing, with a cast-in-place concrete floor slab at the lowest level.</p> <p>The majority of the roof deck consisted of gypsum board panels and was supported by open web steel joists on load bearing CMU walls. The Boiler Room roof consisted of cast-in-place concrete deck supported by CMU walls.</p> <p><i>Visible portions of the building slabs and superstructure appeared to be in good condition. Observed floors appeared to be level and stable with no obvious evidence of structural failure. Observed columns appeared to be plumb and free from visible impact damage.</i></p>	G	

5.3 BUILDING EXTERIOR

Building exteriors are typically composed of various systems and materials intended to serve three main purposes: (1) aesthetic appeal; (2) weather resistance; and (3) structural support. Items included in the building exterior assessment include wall assembly, glass and glazing, doors, and sealant.

BUILDING EXTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Wall Assembly	<p>The building was clad primarily with brick veneer. Exterior wall detailing included cast stone fins flanking each window with an aggregate faced panel below. A band of cast stone trim located at the top of the walls, surrounded the building and visually tied the different portions of the building together.</p> <p>The building included two pop up sections of roof, housing the gymnasium and auditorium/library. These areas were clad with painted stucco and composite wall panels.</p> <p>A prior Energy Audit Report prepared by Honeywell (undated, assumed to be prepared in 2017-2018) notes the exterior walls are of solid brick and CMU with no cavity for retrofitting of insulation. The report recommends air sealing at the intersection of the roof with the exterior walls to improve the building's energy efficiency. Refer to the Section 5.4 Roof Covering for air sealing.</p> <p><i>The observed wall assemblies and trim elements appeared to be in good to fair condition. We did not observe significant areas of damage or deterioration and evidence of wall leakage was not reported or observed at the interior. However, the stucco at the high roof areas was observed to be cracked and weathered. Repair and repainting of the stucco are recommended and budgetary estimates of cost are provided in Table 1.</i></p> <p><i>Wasps-bees nest were observed on the high walls. Removal of the nest and cleaning of the walls is recommended. Due to the minimal</i></p>	G to F	7, 8

BUILDING EXTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>aggregate quantity and associated cost, this item is considered to be routine maintenance.</i>		
Sealants	<p>Caulking was observed at exterior wall joints, at material interfaces and around window and door penetrations.</p> <p><i>Observed caulk joints at wall penetrations (window and door openings) and wall joints appeared to be cracked and brittle with significant deterioration and failure. Replacement will be required early in the evaluation term, with another round later in the term based on the estimated useful life of sealants. Budgetary estimates of cost are provided in Table 1.</i></p>	F to P	9, 10
Windows	<p>The building windows typically were a combination of fixed and operable (awning-type) units with non-insulated glazing set in aluminum frames.</p> <p><i>The window units appeared to be in fair overall condition and are surpassing their useful lives. Many of the units were observed to have deteriorated glazing (powdery and spalling) and aged and separating gaskets. The window units were not energy efficient and were modified for through-window air conditioning units. The windows were original to the building at 51 years old. Based on the age, apparent condition and estimated RUL of the windows, replacements are recommended early in the evaluation term. A budgetary allowance for replacement of windows with insulated glass alternatives is presented in Table 1.</i></p>	F	11
Exterior Doors	<p>The main entrance doors to the building typically were storefront style swing doors with full glass vision panels set in metal frames.</p> <p>Metal service doors provided building access at secondary building entrances.</p> <p>A prior Energy Audit Report prepared by Honeywell (undated, assumed to be prepared in 2017-2018) notes the exterior doors have leaks at the perimeter of the door systems throughout the facility.</p>	G to F	

BUILDING EXTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>Some of the metal service doors were exhibiting signs of corrosion and general wear. Replacement of some of the doors is recommended, and a budgetary estimate of cost is included in Table 1.</i>		12
Truck Docks	<p>The building included a truck dock that provided an elevated loading platform, located adjacent to the Boiler Room. The dock included bumper guards.</p> <p><i>The observed dock and equipment appeared to be in generally good condition requiring routine repairs and maintenance during the evaluation term.</i></p>	G	
Exterior Stairs	<p>Exterior stairs were observed west side (rear) and typically were constructed of concrete assemblies with closed risers and metal handrails.</p> <p><i>The steel handrails-guardrail was missing from one side and the existing one lacked the required extension. Replacement of the existing railing and installation of an additional railing should be anticipated early in the evaluation term and a budgetary estimate is included in Table 1 as an Immediate Repair.</i></p>	G to F	13

5.4 ROOF

The purpose of roof system(s) is to protect the building components and occupants from adverse moisture, temperature, collapse, and other unwanted elements. The selection, design, and installation of a roof are critical to a building's financial performance and can be one of the most expensive building systems to repair, maintain, and replace. Items included in the roof assessment include roof type, age, drainage, warranty status, ancillary roofs, skylights, and roof accessories.

ROOF			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Roof Covering	<p>The low-slope/flat roof system at the main building was constructed of gypsum board and concrete decking supported by open-web steel joists and CMU walls. The majority of the roof covering consisted of an EPDM elastomeric single-ply roofing membrane. The main roof generally had single-ply EPDM base and edge flashing. The edge of the roof was lined with metal fascia.</p> <p>The modular classrooms at the north side of the building were covered with asphalt composition roof shingles.</p> <p>Based on our observations and site supplied expired roof warranty, we assume the EPDM roof covering is at least 31 years old (circa 1990) and the asphalt composition roof shingles were original at approximately 22 years old (circa 199). This is consistent with a general review of aerial imagery of the building.</p> <p>Prior reports (Neary Roof report from approximately 2015) found severe ponding, numerous roof patches, curled/delaminated flashing strips at roof penetrations, lifted/delaminated field seams, loose and bulging insulation with loss of adhesion and some cuts and holes in the membrane. The report indicated the roof was acceptable and good and could be repaired. The report recommended all lifted edges of field seams be repaired and cut, remove, and replace all bulged/lifted insulation at a cost of approximately \$60,000.</p> <p>A later roof report submitted by The Garland Company, Inc. and dated February 13, 2020 noted in their report that the roof had completely failed with severe ponding, lifted insulation, failed seams and perimeters and many other deficiencies. The report noted that much of the roof had been re-seamed. The report states that there were little options available, other than replacement at a cost of approximately \$1,575,000-\$1,750,000.</p> <p>A prior Energy Audit Report prepared by Honeywell (undated, assumed to be prepared in 2017-2018) notes the exterior walls are of</p>	F to P	

ROOF			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>solid brick and CMU with no cavity for retrofitting of insulation. The report recommends air sealing at the intersection of the roof with the exterior walls to improve the building's energy efficiency. Costs are included and shown in the Table 1 for air sealing at the tops of the exterior walls at the time of re-roofing.</p> <p><i>The roofing appeared to be in fair to poor condition with evidence of severe tenting, seam separation, sealant deterioration and flashing failure. Based on the apparent conditions, replacement should be expected within the next year. Estimated costs for these items are included in Table 1, recognizing that for a project of this magnitude, a formal bidding process will be required.</i></p>		14, 15
Roof Drainage	<p>The main roof system was relatively flat with surface drainage provided by a series of internal roof drains, which discharged into the site's storm water collection system.</p> <p>The roof at the modular classrooms was equipped with limited gutters located over the doorways only, which discharged to paved areas at the base of the exterior walls.</p> <p><i>Evidence of water ponding was observed in multiple locations throughout the field of the flat roof due to severe tenting. It is assumed ponding issues will be remediated at the time of re-roofing.</i></p>	F	
Skylights & Roof Accessories	Not Applicable.	N/A	
Roof Access	Fixed access was provided via a ladder through a roof hatch located in a utility closet.	G	
Ancillary Roofs	Not Applicable.	N/A	

ROOF			
Item	Description of System or Component	Overall G, F, P	Cost Item #
<p><i>Roof evaluations should be conducted by a professional roofing inspector on an annual basis and corrective or preventative repairs should be made accordingly. A qualified inspector will be the best judge of the need to recover/replace the roofs and the specific timing associated with such actions.</i></p>			

5.5 BUILDING INTERIOR

Building interior systems are those that relate to the visible features of finished rooms, hallways, common areas, service areas, tenant spaces, stairwells and restrooms. Items included in the interior assessment are the floor, wall, ceiling, stair and restroom finishes.

BUILDING INTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Hallways & Entrance Vestibules	<p>The hallways and entrance vestibule interior finishes at the building included the following.</p> <p><u>Floor Coverings</u>: Vinyl tile (reported to contain asbestos, typical throughout the school building)</p> <p><u>Wall Coverings</u>: Painted CMU with an epoxy paint finish</p> <p><u>Ceiling Coverings</u>: Suspended grid ceiling system with drop-in acoustical tiles</p> <p><i>The floor coverings and ceiling systems in the hallways and entrance vestibules appeared to be in generally fair condition. The majority of the floor tiles were original to the building and some of the ceiling tiles have been replaced over the years. Based on the observed conditions and estimated RUL of the floor coverings and ceiling systems, replacements should be expected during the evaluation term. A budgetary estimate of cost is included in Table</i></p>	G to F	17, 19

BUILDING INTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p><i>1. It should be noted that costs can vary depending on the types of finishes and fixtures installed at the time of renovation.</i></p> <p><i>Asbestos abatement and review of potential hazardous materials is beyond the scope of this assessment. However, a review of the AHERA Report dated June 25, 2013 by Hub Testing Laboratory, Inc, samples of suspected materials were collected and analyzed for asbestos (ACM). The report identifies the following as assumed to contain asbestos; pipe fittings, hot water tank insulation, breeching insulation, floor tiles, mastic associated with floor tiles, ceiling plaster, transite panels, glazing and caulking associated with window walls, exterior window sills, sink undercoating, sheetrock ceiling tiles, CMU and grout, ceiling tiles, sheetrock and mastic associated with vinyl cove base. The report included recommendations for monitoring, with response actions for disturbed or broken materials suspected of containing asbestos. These materials will require consideration during any renovations that may disturb them, which could result in escalation of costs.</i></p>		
Classrooms	<p>Finishes in the classrooms typically were vinyl tile floors, painted CMU walls, and suspended grid ceilings with drop-in acoustical tiles. The walls included a strip of adhered acoustical wall tiles (reported to contain asbestos) located at the top of the walls. The classrooms were equipped with built-in casework consisting of stained wood base cabinets with a sink.</p> <p><i>The observed interior finishes in the classroom areas appeared to be in fair condition. The vinyl floor tiles were original, the ceiling systems appeared aged, and the casework was worn and some modified to include higher sinks. Based on the observed conditions, age, and estimated RUL of the floor coverings, ceiling systems and casework, replacements should be anticipated early in the evaluation term. Budgetary estimates for replacement of floor tiles, ceiling systems and casework are included in Table 1. It</i></p>	F	17, 19, 23

BUILDING INTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>should be noted that costs can vary depending on the types of finishes and fixtures installed at the time of renovation.</i>		
Office Areas	<p>Finishes in the offices were predominately carpet floors with some ceramic tile, painted CMU walls with some stained wood wall paneling, and suspended grid ceilings with drop-in acoustical tiles. Some of the offices appeared to be converted from classrooms, as such the underlying floor system is suspected of containing vinyl tile with asbestos. Some of the offices were equipped with built-in casework consisting of stained wood base cabinets with a sink (from prior use as classrooms).</p> <p><i>The observed interior finishes in the office areas appeared to be in fair condition. The carpet floors were reported to be approximately seven years old. The ceiling systems appeared aged, and the casework was worn and appeared to be at the end of its expected useful life (at 51 years old). Based on the observed conditions, age, and estimated RUL of the floor coverings, ceiling systems and casework, replacements should be anticipated early in the evaluation term. Budgetary estimates for replacement of flooring, ceiling systems and casework are included in Table 1. It should be noted that costs can vary depending on the types of finishes and fixtures installed at the time of renovation.</i></p>	F	16, 19, 23
Gymnasium, Cafeteria, Auditorium & Library	<p>Finishes in the gymnasium, cafeteria, auditorium and library spaces were a combination of carpet, sheet and tile vinyl floors, painted CMU walls with some stained wood paneling and casework, and suspended grid ceilings with drop-in acoustical tiles.</p> <p><i>The observed interior finishes in the gymnasium, cafeteria, auditorium and library areas appeared to be in fair condition. The carpet floors were reported to be approximately seven years old. The ceiling systems appeared aged, and the casework was worn and appeared to be at the end of its expected useful life. Based on</i></p>	F	16, 17, 18, 19, 23

BUILDING INTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>the observed conditions, age, and estimated RUL of the floor coverings, ceiling systems and casework, replacements should be anticipated early in the evaluation term. Budgetary estimates for replacement of flooring, ceiling systems and casework is included in Table 1. It should be noted that costs can vary depending on the types of finishes and fixtures installed at the time of renovation.</i>		
Kitchen	<p>The building included a kitchen that was finished with quarry tile floors, painted CMU walls and a suspended grid ceiling with drop-in acoustical tiles. The kitchen included stainless steel shelving and food preparation tables and had commercial appliances including a walk-in cooler, a walk-in freezer, ovens and other assorted equipment.</p> <p><i>In general, the kitchen appeared to be in good to fair overall condition. The walk-in cooler and freezer were no longer in working order and appeared to be at the end of their expected useful life. Renovation/replacement of finishes, kitchen appliances and walk-in freezer and cooler should be expected during the evaluation term. It should be noted that costs can vary depending on the types of finishes and fixtures installed at the time of renovation.</i></p>	G to F	19, 24, 26
Stairs	<p>Observed stairs at the auditorium were constructed with steel assemblies with closed risers and painted steel handrails. The stairwells typically had masonry walls. The mezzanine was accessed by a steel ship's ladder with open risers.</p> <p><i>The stairs and ships ladder appeared to be in good overall condition requiring routine cleaning and maintenance during the evaluation term.</i></p>	G	
Toilet Rooms	Typical restroom finishes at the building included epoxy flooring, ceramic tile walls and suspended grid ceilings with drop-in acoustical tiles.	F	

BUILDING INTERIOR			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>The restrooms appeared to be in fair overall condition. However, based on the age and condition of the finishes and fixtures, significant renovations should be expected during the evaluation term.</i>		19, 20, 21, 22, 25

5.6 MECHANICAL SYSTEMS

The mechanical systems evaluated include the readily visible components of the heating, ventilation, and air conditioning (HVAC) equipment. The evaluation was intended to be a general overview of the component type, equipment capacity, and distribution methods. Operational testing of mechanical systems was not conducted. Specific equipment included air conditioning and heating units, distribution and ventilation mechanisms, boilers (where applicable), and facility controls.

MECHANICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Air Conditioning	<p>Cooling of some office spaces was provided by ductless split system units with remote air-cooled condensers. The condensing units were located on the roof and had estimated cooling capacities ranging from four to five tons each. These units were approximately 1 ½ years old.</p> <p>The building did not have a central air conditioning system. Selected spaces were cooled by through the window units.</p> <p>Supplied documents included an energy audit report prepared by Honeywell and undated (assumed to be prepared in 2017-2018). The report details existing mechanical, electrical, and plumbing systems within the building. The report further details sizes of the</p>	G to F	

MECHANICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>various equipment and their energy consumption. The report recommends efforts to improve the building envelope's energy efficiency.</p> <p><i>The observed interior ductless split system units and associated condensing units appeared to be in generally good condition. It is expected that routine repair and maintenance can extend the service life of this equipment through the evaluation term.</i></p> <p><i>The through the window units appeared to be in good to fair overall condition and replacement of selected units should be expected during the evaluation term. A budgetary allowance for this item is included in Table 1.</i></p>		27
Heating	<p>The primary heating source for the building included a system of through-wall unit ventilators and cabinet style radiators (floor and ceiling-mounted) equipped with hot water coils. Hot water delivered to the ventilators and radiators was produced by two gas-fired boilers located in the Boiler Room. The boilers were manufactured by Buderus and had a rated input capacity of 3,392 MBH/hr each. The boilers reportedly were manufactured in 2006. The unit ventilators were reportedly replaced in approximately 2009.</p> <p>The primary heating source for library, auditorium (Learning Center) and (portion of the) hallway was provided by three AHUs equipped with hot water heating coils. The AHU's were manufactured by Greenheck and were rated for 267,300 BTUs, 249,100 BTUs and 250,400 BTUs. The AHUs were located on an adjacent mezzanine. The units were approximately 11 years old and supplied heat and ventilation to the spaces.</p> <p>Tempered air was delivered to the Boiler Room (for combustion) by a roof-mounted gas-fired heating unit. The make-up air unit was</p>	G to F	

MECHANICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>manufactured by Reznor in December 2008 and had a rated capacity of 175,000 BTU/hr.</p> <p><i>The observed unit ventilators appeared to be in good overall condition requiring routine inspection and maintenance during the evaluation term.</i></p> <p><i>The observed boilers appeared to be in generally good condition. It is expected that routine repair and maintenance can extend the service life of the boilers through the evaluation term.</i></p> <p><i>The AHUs and roof-mounted heating unit appeared to be in good to fair condition. However due to their age and estimated RUL of the observed units, replacements are expected during the evaluation term. A budgetary estimate of cost for these items are included in Table 1.</i></p>		28, 29
Ventilation	<p>Mechanical ventilation was provided by the through wall ventilators and AHUs. Additional mechanical ventilation was provided by conventional ceiling fans.</p> <p>Bathrooms were provided with exhaust by powered centrifugal ventilation units mounted on the roof. The kitchen was equipped with an exhaust hood with discharge at the roof level through a fan powered central duct.</p> <p>Passive ventilation was provided by operable windows and doors, overhead doors and natural air infiltration.</p> <p><i>Indoor air quality was not studied as part of this assessment. Major equipment we observed appeared to be operable and in good overall condition.</i></p>	G	
Control Systems	The building included a dedicated (web-based) Energy Management System (EMS) manufactured by Automated Logic.	G	

MECHANICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>According to the Site Contact, the system allowed for central station manipulation of set-point temperatures and on-off times of various, but not all, equipment (boilers, pumps, ventilators, AHUs, exhaust fans and cabinet unit heaters). In addition, the system monitored space temperatures, humidity, outside air temperatures, air-flow, and fresh air intake.</p> <p><i>The observed control systems appeared to be in good overall condition. Reportedly the software was updated a couple of months ago.</i></p>		

5.7 ELECTRICAL SYSTEMS

Electrical items are related to the readily visible components of the electrical systems installed at the facility. This assessment is intended to be a general overview of the component type, equipment capacity, and distribution methods. Operational testing of electrical systems was not conducted. Items included in the electrical assessment are service distribution, transformers, switchgear, panelboards, conductors, and lighting.

ELECTRICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Transformers and Power Delivery	Electrical service to the building was provided by National Grid. Power was supplied via underground lines from a pad-mounted transformer located outside on the southwest corner of the building.	G	
Main Switchgear	The switchgear units were located in the main electrical room. The main electrical service switchgear provided 450-amp, 208/120-volt, 3-phase, 4-wire, alternating current (AC).	F	

ELECTRICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
& Electrical Distribution	<p>Secondary electrical panels were observed at various locations in the building. Electrical panels were equipped with circuit breaker overload protection.</p> <p>It was reported that the distribution wiring providing power to the branch circuits within the tenant spaces and common areas consisted of copper. Where observed, wiring was located in rigid and flexible metal conduit.</p> <p><i>The electrical equipment appeared to be somewhat dated, and according to on-site personnel, the available power within the building was inadequate, blows breakers regularly, lacks sufficient number of distribution panels and outlets and in general lacks capacity to support current equipment/loads of the school. Upgrade of the electrical system should be anticipated early in the evaluation term.</i></p>		30
Interior Lighting	<p>Lighting fixtures throughout the school typically were fluorescent and LED fixtures recessed in the suspended ceilings. Observed fluorescent units included T-8 lamps and compact fluorescent lamps. The school has been replacing fluorescent lamps with LED lamps as replacements are required.</p> <p><i>Lighting fixtures appeared to be in good overall condition requiring routine inspection, repairs and maintenance during the evaluation term.</i></p>	G to F	
Emergency Power	<p>A Caterpillar brand, 125 kVa, 100 kW emergency generator was located at the west elevation (rear of the building and adjacent to the main electrical room), and provided power to the life safety systems, kitchen, boilers, AHUs, ventilators, pumps and motors. According to maintenance staff representatives, the unit is exercised on a monthly basis, with a full load test scheduled for once a year. The unit was fueled by diesel, and the 225-gallon tank</p>	G	

ELECTRICAL SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>was an integral part of the generator. Observed gauges indicated the unit had a total service time of 406.7 hours.</p> <p><i>The unit appeared to be in generally good condition. Regular service and general repairs should be expected during the evaluation term as part of regular and routine maintenance.</i></p>		

5.8 PLUMBING SYSTEMS

Plumbing items are related to the readily visible components of the plumbing systems installed at the facility. This assessment was intended to be a general overview of the component type, system capacity, and distribution methods. Operational testing of plumbing systems was not conducted. Items included in the plumbing assessment were sanitary sewers, roof drains, domestic water supply, natural gas distribution, and insulation.

PLUMBING SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Water Supply	The building was supplied with water underground from the Town of Southborough's main line.	G	
Domestic Water Distribution	<p>A main water service line entered the building in the Boiler Room. A backflow prevention device was observed on the domestic main. The domestic water meter was observed at the service connection inside the Boiler Room. In exposed locations, observed distribution piping for domestic water systems was constructed of copper.</p> <p><i>Where exposed, observed domestic water piping appeared to be in good condition and free from damage or deterioration. Active piping leaks were not reported or observed during the on-site visit.</i></p>	G	

PLUMBING SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Hot Water Systems	<p>A 67-gallon gas-fired water tank located in the Boiler Room provided domestic hot water for the building during non-heating months. The water heater was installed in August 2016 and was manufactured by Bock.</p> <p>An indirect-fired hot water storage tank provided domestic hot water for the building during the heating months. The tank was approximately 250 gallons in capacity and reportedly had a layer of asbestos which was encapsulated. The tank was located on an upper section within the Boiler Room and was reported to be original to the building.</p> <p><i>The indirect-fired storage tank appeared to be in good condition requiring regular maintenance to extend the life of the equipment through the evaluation term. Water pressure and volume were reported to be adequate for the building needs.</i></p> <p><i>The gas-fired water tank appeared to be in good to fair condition. Based on the estimated RUL of the unit, replacement should be expected during the evaluation term. An estimated cost for replacement is included in Table 1.</i></p>	G to F	31
Sanitary Sewer	<p>Sanitary wastes generated at the building were conveyed to a septic system located at the southwest corner of the building. The system consisted of a collection tank, distribution box, pumps and a leach field. The system was reported to be a fast system-type. It was reported that the system is inspected on a monthly basis.</p> <p><i>Sanitary sewer systems and waste piping were not observed due to hidden (underground) conditions. No evidence of odor or problems with the wastewater systems were observed or reported.</i></p>	G	
Natural Gas	The building's gas service line entered the front of the building. At the meter and other exposed locations, the gas piping within the	G	

PLUMBING SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	building was observed to be steel. The gas meter was located at the exterior wall of the building.		

5.9 CONVEYANCE SYSTEM

Conveyance systems include readily visible and accessible equipment installed at the facility. This evaluation was intended to be a general overview of the systems observed. No operational testing was conducted. These systems included equipment used to transport people or objects vertically or horizontally within the building and include elevators, escalators, conveyors, and platform lifts.

CONVEYANCE SYSTEM			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Elevators	Not Applicable.	N/A	
Escalators	Not Applicable.	N/A	
Platform Lifts	Not Applicable.	N/A	

5.10 LIFE AND FIRE SAFETY

Life and Fire Safety Systems were observed to the extent that components were visually accessible. This evaluation was intended to be a general overview of the systems observed and not an opinion of safety or adequacy. Operational testing was not conducted. These systems include sprinklers and standpipes, emergency lighting, alarm and annunciation components, smoke evacuation, and fire separation.

LIFE & FIRE SAFETY SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Sprinkler Systems	Not Applicable.	N/A	
Specialty Suppression Systems	Not Applicable.	N/A	
Fire Hydrants	The fire hydrant nearest the building was observed to be an estimated 75 feet from side of the structure.	G	
Fire Pump	Not Applicable.	N/A	
Emergency Lighting	Emergency lighting fixtures were provided throughout the building. The hallways and select areas contained emergency lighting fixtures which were backed by the emergency generator. <i>Emergency lighting units appeared to be in good condition; however, the emergency lighting units were not operated or tested as part of this FCA.</i>	G	
Illuminated Exit Signs	Illuminated exit signs were provided throughout the building. The building contained exit light fixtures which were backed by the emergency generator. <i>Exit signs appeared to be in good condition; however, exit signs were not operated or tested as part of this FCA.</i>	G	
Alarm Systems	The building was provided with a fire alarm system with battery backup consisting of smoke detectors and pull stations. The building was equipped with audible alarms, which included visual strobe components. A EST3 Model central alarm panel located in the Office area monitored the system. In the event of an emergency, the panel	G	

LIFE & FIRE SAFETY SYSTEMS			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<p>notified a central monitoring station, which notified the fire department.</p> <p><i>The alarm panel was functioning in the "Normal" mode at the time of our visit. VERTEX did not test the system or observe its operation as part of this assessment. A fire equipment vendor reportedly performs inspections on the equipment on a regular basis. The last inspection was performed in June 2020.</i></p>		
Smoke Detection and Control	<p>Hard-wired smoke detectors were observed in various building locations.</p> <p><i>Smoke detectors appeared to be in good condition; however, smoke detectors were not operated or tested as part of this FCA.</i></p>	G	
Fire Extinguishers	<p>Fire extinguishers were provided at various locations throughout the building.</p> <p><i>According to equipment tags, observed fire extinguishers were serviced or re-charged in July 2020 by Impact Fire.</i></p>	G	

6.0 ANCILLARY STRUCTURES

Ancillary structures are those elements contained within a property, which are considered to be physical plants subject to the provisions of building codes, which may or may not be considered occupied structures, and may or may not include associated mechanical, electrical or plumbing systems. Typical ancillary structures might include parking garages, annex buildings or storage sheds.

ANCILLARY STRUCTURES			
Item	Description of System or Component	Overall G, F, P	Cost Item #
Modular Classrooms	<p>The property included two modular classrooms. The classrooms were located in one structure and attached at the north end of the building via a connector hallway. The structure consisted of trailer-type construction and rested on asphalt pavement. The modular classroom structure was reported to be approximately 22 years old. The roof was a pitched gable-type with asphalt composition roof shingles (original to the construction). Roof drainage consisted of limited gutters above the exterior doorways. The exterior was clad with faux-brick vinyl siding and had vinyl-framed sliding windows with insulated glazing. The exterior doors consisted of insulated metal with half glass and lever-type hardware. Exterior stairs consisted of painted wood with closed risers and wooden handrails and guardrails.</p> <p>The interior finishes consisted of carpet floors, vinyl-coated wall panels and suspended acoustical ceiling systems. The classrooms were equipped with smoke detectors, illuminated exit lights with emergency egress light fixtures, audio-visual fire alarm devices and manual pull stations. Heating and cooling was provided by (two) electric through-wall package units mounted on the exterior of the structure, providing air conditioning and heat. The units were rated for approximately three tons each. Lighting was provided by recessed fluorescent fixtures located in the suspended ceiling system.</p>	G to F	

ANCILLARY STRUCTURES			
Item	Description of System or Component	Overall G, F, P	Cost Item #
	<i>The observed interior finishes in the modular classrooms appeared to be in good to fair condition. The carpet floors and suspended ceiling systems were original at approximately 22 years old. Based on the observed conditions, age, and estimated RUL of the floor coverings and ceiling systems replacements should be anticipated early in the evaluation term. Budgetary estimates for replacement of carpet flooring and ceiling systems are included in Table 1.</i>		16, 19
Garage	<p>The property included a two-bay garage located at the southwest corner of the building. The garage appeared to be completely deteriorated and reportedly not accessible at the time of this assessment.</p> <p>The roof consisted of a pitched gable style structure with asphalt composition roof shingles and wood trim. The exterior walls were unfinished CMU, and the overhead doors were aluminum roll-up type. The garage had one pedestrian exterior door consisting of painted metal with knob-type hardware. The garage appeared to rest on a concrete slab-on-grade.</p> <p><i>The roof appeared bowed, and the shingles were worn and had organic growth on their surface. The wood trim was unfinished, warped and deteriorated. The CMU exterior walls had step cracking and displacement, with some spalling. The doors were not operable at the time of this assessment. Due to the existing condition of the garage, it is recommended that consideration be given to the demolition of the garage. Due to the lack of use of the building, no cost for improvements is provided in Table 1.</i></p>	P	

7.0 ACCESSIBILITY (ADA)

The Americans with Disabilities Act (ADA) is not a building code; it is a civil rights law that was enacted in 1990 to provide persons with disabilities with accommodations and access equal to, or similar to, that available to the general public.

As required by the ADA, the U.S. Architectural and Transportation Barriers Compliance Board promulgated the ADA Accessibility Guidelines (ADAAG), which provided guidelines for implementation of the ADA by providing specifications for design, construction and alteration of facilities. The ADAAG was superseded by the 2010 ADA Standards for Accessible Design.

As part of this FCA, VERTEX performed a “Baseline Evaluation” of ADA consisting of a limited scope visual survey and completion of a checklist extracted from ASTM E2018-15 X2 (Figure X3). This visual review most closely resembles what was previously known as a Tier I ADA survey.


Our survey was limited to visual observations unless specifically stated. Measurements were not taken, and compliance with dimensional tolerances stated by the guidelines was only visually assessed. While opinions of cost to correct noted barriers have been provided, they do not constitute a recommendation that removal of the barriers are “readily achievable” and not an “undue burden” as stated in the ADA.

In addition to the new 2010 ADA Standards, some states and municipalities have adopted building codes similar to the 1991 ADA Accessibility Guidelines (ADAAG). In some instances, these code requirements are more restrictive than the 1991 ADAAG.

Representative areas of the following portions of the site were surveyed:

- 1) **Parking** – Comparison of the number of provided parking stalls designated for handicapped use to the number required for the reported parking stall total for the site.
- 2) **Exterior Accessible Route and Building Entrances** - Visual identification of physical barriers from parking to the building entrances.
- 3) **Building Entrances** - Review of the building entrance access to the interior.
- 4) **Interior Accessible Routes and Amenities** – Review of the interior route, obstructions, path of travel and access to public features and equipment.
- 5) **Interior Doors** – Review of doors, clear width, hardware and apparent opening force.

- 6) **Elevators** – Observation of elevator floor area, signals, signs, safety devices, and emergency call systems.
- 7) **Toilet Rooms** - Visual review of common area restrooms available for public use (toilet stalls designed with accessible features, sinks at lower heights with adequate clearances, appropriate sink fixtures and accessories).

 ASTM E2018-15 - Uniform Abbreviated Screening Checklist - 2010 Americans with Disabilities Act				
Item	Yes	No	NA	Comments
A. History				
1. Has an ADA survey previously been completed for this property?			✓	Unknown.
2. Have any ADA improvements been made to the property since original construction?	✓			Accessible parking, exterior accessible route and building entrance. Interior improvements included some accessible hardware and limited toilet room modifications. Note however that toilet room entrance doorways were not accessible.
3. Has building ownership/management reported any ADA complaints or litigation?		✓		
B. Parking				
1. Does the required number of standard ADA-designated spaces appear to be provided?		✓		ADA-1; four were provided and six are required.
2. Does the required number of van-accessible designated spaces appear to be provided?	✓			
3. Are accessible spaces part of the shortest accessible route to an accessible building entrance?	✓			
4. Is a sign with the International Symbol of Accessibility at the head of each space?	✓			
5. Does each accessible space have an adjacent access aisle?	✓			
6. Do parking spaces and access aisles appear to be relatively level and without obstruction?	✓			



ASTM E2018-15 - Uniform Abbreviated Screening Checklist - 2010 Americans with Disabilities Act

C. Exterior Accessible Route				
1.	Is an accessible route present from public transportation stops and municipal sidewalks on the property?		✓	<i>The school is located in a residential neighborhood.</i>
2.	Are curb cut ramps present at transitions through curbs on an accessible route?	✓		
3.	Do the curb cut ramps appear to have the proper slope for all components?	✓		
4.	Do ramps on an accessible route appear to have a compliant slope?		✓	
5.	Do ramps on an accessible route appear to have a compliant length and width?		✓	
6.	Do ramps on an accessible route appear to have compliant end and intermediate landings?		✓	
7.	Do ramps on an accessible route appear to have compliant handrails?		✓	
D. Building Entrances				
1.	Do a sufficient number of accessible entrances appear to be provided?	✓		
2.	If the main entrance is not accessible, is an alternate accessible entrance provided?		✓	
3.	Is signage provided indicating the location of alternate accessible entrances?		✓	
4.	Do doors at accessible entrances appear to have compliant clear floor area on each side?	✓		
5.	Do doors at accessible entrances appear to have compliant hardware?	✓		
6.	Do doors at accessible entrances appear to have a compliant clear opening width?	✓		
7.	Do pairs of accessible entrance doors in series appear to have the minimum clear space between them?	✓		
8.	Do thresholds at accessible entrances appear to have a compliant height?	✓		
E. Interior Accessible Routes and Amenities				
1.	Does an accessible route appear to connect with all public areas inside the building?		✓	ADA-2; <i>The auditorium lacked accessible access.</i>
2.	Do accessible routes appear free of obstructions and/or protruding objects?	✓		
3.	Do ramps on accessible routes appear to have a compliant slope?	✓		<i>At the modular classrooms.</i>



ASTM E2018-15 - Uniform Abbreviated Screening Checklist - 2010 Americans with Disabilities Act

4.	Do ramps on accessible routes appear to have a compliant length and width?	✓			
5.	Do ramps on accessible routes appear to have compliant end and intermediate landings?	✓			
6.	Do ramps on accessible routes appear to have compliant handrails?	✓			
7.	Are adjoining public areas and areas of egress identified with accessible signage?			✓	
8.	Do public transaction areas have an accessible, lowered counter section?	✓			
9.	Do public telephones appear mounted with an accessible height and location?			✓	
10.	Are publicly-accessible swimming pools equipped with an entrance lift?			✓	
F. Interior Doors					
1.	Do doors at interior accessible routes appear to have compliant clear floor area on each side?	✓			
2.	Do doors at interior accessible routes appear to have compliant hardware?		✓		ADA-3; Only some of the hardware has been upgraded to be accessible.
3.	Do doors at interior accessible routes appear to have compliant opening force?	✓			
4.	Do doors at interior accessible routes appear to have a compliant clear opening width?	✓			
G. Elevators					
1.	Are hallway call buttons configured with the "UP" button above the "DOWN" button?			✓	
2.	Is accessible floor identification signage present on the hoistway sidewalls?			✓	
3.	Do the elevators have audible and visual arrival indicators at the entrances?			✓	
4.	Do the elevator hoistway and car interior appear to have a minimum compliant clear floor area?			✓	
5.	Do the elevator car doors have automatic re-opening devices to prevent closure on obstructions?			✓	
6.	Do elevator car control buttons appear to be mounted at a compliant height?			✓	
7.	Are tactile and Braille characters mounted to the left of each elevator car control button?			✓	



ASTM E2018-15 - Uniform Abbreviated Screening Checklist - 2010 Americans with Disabilities Act

8.	Are audible and visual floor position indicators provided in the elevator car?			✓	
9.	Is the emergency call system at the base of the control panel and not require voice communication?			✓	
H. Toilet Rooms					
1.	Do accessible toilet rooms appear to have a minimum compliant floor area?		✓		ADA-4 & ADA-5; the entrances at the multi-use rooms were not accessible and the single-use staff toilet rooms lacked sufficient floor area.
2.	Does the lavatory appear to be mounted at a compliant height and with compliant knee area?	✓			
3.	Does the lavatory faucet have compliant handles (easily operable with closed fist)?	✓			
4.	Is the plumbing piping under lavatories configured to protect against contact?		✓		ADA-5
5.	Are grab bars provided at compliant locations around the toilet?		✓		ADA-5
6.	Do toilet stall doors appear to provide the minimum compliant clear width?		✓		ADA-5
7.	Do toilet stalls appear to provide the minimum compliant clear floor area?		✓		
8.	Do urinals appear to be mounted at a compliant height and with compliant approach width?	✓			
9.	Do accessories and mirrors appear to be mounted at a compliant height?	✓			

8.0 REPORT QUALIFICATIONS & LIMITATIONS

This report was prepared in accordance with the scope of work, and terms and conditions associated with VERTEX Proposal No. P.0300.21, dated February 1, 2021.

This report was prepared in general conformance with the guidelines of ASTM E2018-15 for Property Condition Assessments. This report was intended to provide a general overview of the building systems at the facility and the general conditions of such. The evaluation was performed using that degree of skill and care normally exercised by reputable consultants performing similar work. The activities of this evaluation included observations of visible and readily accessible areas. Consequently, a comprehensive study to identify, document, and assess specific property/building defects was not conducted. In some cases, additional study may be warranted to more fully assess concerns noted. In addition, system checks or testing, or the operation of machinery and equipment is beyond the scope of this evaluation. This report should be construed as neither a complete inventory of the building materials, contents or components nor a survey to determine status of material or equipment recalls.

The opinions and recommendations presented in this report are based on VERTEX's observations, evaluation of the information provided, and interviews with personnel possessing knowledge of the facility. No calculations were made to determine the adequacy of the facility's original or existing design. The possibility exists that defects and deficiencies are present at the subject facility, which were not readily visible or accessible. The development of future problems not identified in this report, on any observed system, at the subject property should be anticipated.

The opinions and recommendations in this report should not be construed in any way to constitute a warranty or guarantee regarding the current or future performance of any system identified.

The following paragraphs are intended to summarize VERTEX's Definition of Facility Condition Assessment (PCAs).

A Facility Condition Assessment ("FCA") is the process by which VERTEX observes researches and documents in a written report (the FCA Report") the current physical condition of commercial property and, in addition, provides required estimated expenditures to remedy physical deficiencies. A physical deficiency is defined to be a patent, conspicuous defect, or significant deferred maintenance of the subject property's material systems, components or equipment. It could also include material systems, components or equipment that are approaching, have realized, or have exceeded their typical expected useful life ("EUL") or whose remaining useful

life (“RUL”) should not be relied upon as a result of actual age, abuse, excessive wear and tear, exposure to the elements, lack of proper maintenance, or other factors. This definition specifically excludes routine maintenance, miscellaneous repairs, operating maintenance, etc. It should be noted that items considered as routine or operating maintenance may be defined by the current practices of the management or property owner operating the site. Specific definitions of categories of physical deficiencies including Immediate Repairs, Short-Term Repairs, and Capital Needs including the time period associated with each, are presented within the body of the FCA Report.

The scope of the FCA has been specifically agreed upon by VERTEX and the Client in the proposal for these services. Unless specifically requested by the Client and included in the written scope of work or services, the FCA does not include an environmental assessment of the property; building system or component operation or testing; building or fire/life-safety code reviews; or a survey to determine the compliance of building plans with any as-built conditions unless items of non-compliance are reasonably observable during the walk-through survey.

This FCA has been performed in general accordance with the guidelines established by ASTM, and the amount of time and effort is further dictated by additional factors including cost and time constraints and risk tolerance established by the Client. VERTEX’s proposal for the evaluation clearly states the scope of work and level of effort agreed upon.

This assignment was performed as a Level I FCA. For the purposes of clarification and comparison, VERTEX’s levels of FCA service are defined as follows:

- **Level I FCA: This assessment will be prepared by a qualified professional, performing a visual survey of the property to assess the general condition of the property, structures and associated mechanical components. This FCA may be escalated to a more thorough Level II or Level III FCA following the initial site visit and evaluation, following discussion with the Client.**
- **Level II FCA: This assessment includes the Level I FCA, with specific items of concern investigated in more detail by one or more specialist in the respective fields (mechanical, roofing, elevators, etc.). These more detailed visual assessments may be incorporated into a single FCA report discussion or may be presented in a separate report.**
- **Level III FCA: This assessment includes the Level I FCA, with specific items of concern investigated in more detail by a team of specialists, including subcontractors where warranted, and including operation, testing, and potentially destructive testing of individual systems or components where warranted and approved. These more detailed assessments may be incorporated into a single FCA**

report discussion, or may be presented in a separate report, which may include test and evaluation data.

The visual observation portion of the FCA consists of a walk-through survey of the subject property undertaken to observe readily accessible property components, systems, and elements for the purposes of providing a brief description of same, providing an opinion on their general apparent physical condition, and identifying material physical deficiencies as of the time of VERTEX's site visit in accordance with the criteria agreed upon by the Client and VERTEX and set forth in the FCA's scope of services. This portion of the FCA is a non-intrusive, visual survey; it is not to be construed as a punch list or detailed survey of the property's major physical deficiencies. It is also not considered to be an inventory of building system or material components.

The observation portion of the FCA is based on the concept of visually observing a representative sampling of differing types of building conditions and locations to provide the Client with a reasonably expected magnitude of commonly encountered conditions. VERTEX typically does not survey all systems and equipment nor all tenant and common areas, back-of-house areas, etc., only a representative sampling of such equipment, systems and areas designated in VERTEX's proposal, and either (a) reasonably believed by VERTEX to provide a reasonable representation of the present and probable future condition of the subject property's units, areas, systems, buildings, etc., or (b) as otherwise specified by the Client. VERTEX may then extrapolate these representative findings to all such typical areas and systems of the subject property to provide the Client with a reasonably estimated magnitude of commonly anticipated conditions and to use as a basis for estimating the cost of required expenditures to remedy physical deficiencies at the subject property.

The research portion of the FCA consists of requesting and reviewing relevant, available documents (such as permits) and records of outstanding, material building, zoning and fire code violations. VERTEX has reviewed only such record information as is reasonably ascertainable from standard sources and obtainable from such sources in time (not to exceed ten days) to meet the Client's deadlines. If such information was not practically reviewable or was not provided to VERTEX in time to formulate an opinion and complete the FCA Report in the agreed upon time frame, this fact is stated in the report, and VERTEX will simply forward additional information to the Client if received after the submission of the report. Note that a review of property drawings is not included in the FCA unless provided by the owner and/or user in the same ten-day time frame.

Also, as part of the research portion of the FCA, VERTEX typically provides the building owner with a Pre-Survey Questionnaire & Request for Documentation. This request, whether complete with the owner's responses, supplied information and documentation, or partially complete or incomplete, is included as an exhibit to the FCA Report. In the event that a Pre-Survey Questionnaire & Request for Documentation is not utilized as part of the evaluation, the reason for its exclusion is typically stated in the FCA Report. A general listing of information provided by the owner or its representatives is also included within the FCA Report.

Based on observations and information received during the FCA, VERTEX has prepared general-scope type or budgetary-level estimates of the costs to remedy the material Physical Deficiencies observed. Estimates are provided for observed components or systems exhibiting significant deferred maintenance, and existing physical deficiencies requiring major repairs or replacement. Repairs or improvements that could be classified as (a) cosmetic or decorative, (b) part or parcel of a building renovation program, (c) enhancements to reposition the asset in the marketplace, (d) under warranty or required for warranty transfer purposes, (e) the financial responsibility of the tenant of a leased space at the property, and/or (f) routine or normal preventive maintenance are not included, unless stated otherwise.

In some cases, where additional study or specific expertise is required to define appropriate repair or renovation methods, an estimated cost for the study is presented. In these cases, associated repair or renovation costs are typically excluded, unless reasonable order of magnitude budgetary estimates can be assumed without the benefit of a specific scope of work.

Unless specifically requested by Client and included in the agreed upon, written scope of services the following items were excluded from the scope of services for this FCA:

- Removal of materials, furniture or finishes; conducting any exploratory probing or testing; dismantling or operation of any equipment; or disturbing any personal items or property which obstructs access or visibility.
- Preparation of engineering calculations (civil, structural, mechanical, electrical, etc.) to determine any system's components or equipment's adequacy or compliance with any specific or commonly accepted design requirements and building codes, or the preparation of designs or specifications to remedy any physical deficiency.
- Taking any measurements or quantities to establish or confirm such information or representations of owner such as size and dimensions of property, any legal encumbrances such as easements, floor areas, dwelling unit count and mix, building dimensions, building property line setbacks or elevations, number and size of parking spaces, etc.

- Reporting on the presence or absence of pests such as wood damaging organisms, rodents or insects, unless such evidence is readily apparent during the course of the consultant's survey or information is provided to the consultant as to their presence by the owner, user, property manager, etc.
- Reporting on the condition of subterranean conditions such as underground utilities, separate sewage disposal systems, wastewater treatment plants, wells or systems that are either considered process related or peculiar to a specific tenancy or use, or items or systems that are not permanently installed.
- Entering or accessing any area of the premises deemed to pose a dangerous or adverse condition to the consultant or to perform any procedure which may damage or impair the physical integrity of the property, any system or equipment.
- Providing an opinion on the condition of any system or component which is seasonally shut down.
- Evaluation of any acoustical or insulating characteristics of any system or component.
- Opining on matters regarding security of the property and protection of its occupants or users from unauthorized access except to the extent of comments on the integrity of readily observable exterior security fencing.
- Operation or witnessing the operation of lighting or other systems typically controlled by time clocks or that are normally operated by the facility operating staff.
- Provision of a warranty or guarantee of any systems or component's physical condition or use. A FCA is not to be construed as a substitute for any system's or equipment's warranty transfer inspection.
- Review of compliance with any federal, state, city, trade/design, or insurance industry building codes, local laws, health codes or local zoning ordinances. However, violations of codes, laws and ordinances that are observed by VERTEX and any retroactive or pending requirements contained in such codes, laws, and ordinances that are known to VERTEX, or identified during interviews with code authorities, may be identified in the report.
- Compliance of any material, equipment or system with any certification or actuation rate program, vendor's or manufacturer's warranty provisions, or provisions established by any standards that are related to insurance industry acceptance/approval such as Factory Mutual (FM), State Board of Fire Underwriters, etc.
- Surveying for the presence of any environmental issues such as wetlands, hazardous wastes, hazardous materials, mold, asbestos, lead based paint, or indoor air quality.

TABLE 1

IMMEDIATE AND REPLACEMENT RESERVES COST ESTIMATES

TABLE 1
IMMEDIATE REPAIRS, SHORT TERM REPAIRS, and CAPITAL NEEDS ESTIMATE



Site Name:	Neary Elementary School
City, ST:	Southborough, Massachusetts
Age, Yrs.:	51
Project No.:	69604

# Buildings:	2
Est. Building SF:	63,000
Eval. Term, Yrs.:	10
CPI:	2.50%
# Units:	NA

	Total	Per SF	Per SF/YR
Immediate Repairs \$:	\$10,000	\$0.16	
Short Term \$ (no inflation):	\$3,260,552	\$51.75	\$25.88
Short Term \$ (inflated):	\$3,282,935	\$52.11	\$26.06
Capital Needs \$ (no inflation)	\$3,677,472	\$58.37	\$5.84
Capital Needs \$ (inflated)	\$3,744,570	\$59.44	\$5.94

ITEM						Immediate	Reserves
ITEM No.	PHOTO No.	DESCRIPTION	QTY	UNIT	UNIT COST	YEARS 0-1	YEARS 1-10
SITE DEVELOPMENT							
1	1, 34, 35, 36	Cut & patch deteriorated asphalt pavement areas	5,650	SF	\$5.29		\$29,889
2	1, 34, 35, 36	Renew asphalt pavement surface, including crack sealing (moderate), seal coat and re-stripe	230,600	SF	\$0.21		\$48,426
3	24	An allowance to repair and sectional replacement of concrete sidewalks	900	SF	\$12.82		\$11,538
4	24	An allowance for sectional replacement of concrete curbing	280	LF	\$21.47		\$6,012
5	35, 36	An allowance to install (drainage) swale at rear of garage to relieve drainage issue on adjacent pavement	1	LS	\$5,000.00	\$5,000	
6	26	Replace playground equipment, moderate size	1	EA	\$26,700.00		\$26,700
BUILDING STRUCTURE							
No significant BUILDING STRUCTURAL costs identified							
BUILDING EXTERIOR							
7	42, 43	Stucco - repair or replace damaged, weathered or deteriorated cladding - on wood framing	750	SF	\$8.79		\$6,593
8	42, 43	Scraping, surface preparation and re-painting of exterior walls, 2-coat, roller applied - Stucco at high roofs	5,344	SF	\$1.21		\$6,466
9	6, 7	Cut out and replace sealants between joints, brick & cast stone trim	4,766	LF	\$7.88		\$37,556
10	6, 7	Cut out and replace sealants between siding and wall penetrations (windows and doors)	2,978	LF	\$3.42		\$10,185
11	6, 10, 60	Replace windows, awning & fixed - double pane glass - Metal	2,652	SF	\$91.84		\$243,560
12	16, 17, 18	Remove and replace exterior door, hollow core metal, insulated, standard size	6	EA	\$1,691.71		\$10,150
13	17	Budget for replacement of exterior stair handrails & guardrails at rear concrete stair	1	LS	\$5,000.00	\$5,000	
ROOF							
14	38 thru 49	Remove existing roof and replace with single ply EPDM - 60 mil, fully adhered (Includes cost to add perimeter air sealing at the top of the exterior walls at the time of re-roofing)	60,654	SF	\$23.00		\$1,395,042
15	53	Remove existing roof and replace with fiberglass composition shingles, laminated at Modular Classrooms	2,346	SF	\$4.68		\$10,979

SHORT		TERM	CAPITAL NEEDS SCHEDULE							RESERVE TOTAL
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	
\$7,472			\$7,472			\$7,472			\$7,472	\$29,889
\$24,213					\$24,213					\$48,426
	\$5,769					\$5,769				\$11,538
	\$3,006					\$3,006				\$6,012
										\$0
				\$26,700						\$26,700
										\$0
\$6,593										\$6,593
\$3,233							\$3,233			\$6,466
\$18,778							\$18,778			\$37,556
\$5,092							\$5,092			\$10,185
\$121,780	\$121,780									\$243,560
\$10,150										\$10,150
										\$0
\$1,395,042										\$1,395,042
		\$10,979								\$10,979

TABLE 1
IMMEDIATE REPAIRS, SHORT TERM REPAIRS, and CAPITAL NEEDS ESTIMATE



Site Name:	Neary Elementary School
City, ST:	Southborough, Massachusetts
Age, Yrs.:	51
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# Buildings:	2
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Capital Needs \$ (inflated)	\$3,744,570	\$59.44	\$5.94

ITEM						Immediate	Reserves
ITEM No.	PHOTO No.	DESCRIPTION	QTY	UNIT	UNIT COST	YEARS 0-1	YEARS 1-10
BUILDING INTERIOR							
16	76, 77, 78, 80, 86, 87	Replace carpet floor coverings - low pile medium traffic at Offices, Auditorium, Modular Classrooms & Library	17,000	SF	\$6.11		\$103,870
17	56, 61, 82	Replace resilient floor tile, vinyl composition tile at Classrooms, Hallways & Cafeteria	44,700	SF	\$4.39		\$196,233
18	79	Replace resilient floor tile, sheet goods at Gymnasium	6,500	SF	\$19.22		\$124,930
19	56, 61, 76, 79, 80, 82	Acoustical tile ceiling, replace, including suspended grid	62,000	SF	\$8.50		\$527,000
20	57, 58	Replace commercial grade toilet, wall hung	29	EA	\$1,533.65		\$44,476
21	57	Replace commercial wall hung urinal	16	EA	\$1,602.00		\$25,632
22	57, 58	Replace toilet stall partitions, plastic laminate	21	EA	\$1,018.87		\$21,396
23	63	Replace wood base cabinetry with sinks in classrooms	1,200	LF	\$360.00		\$432,000
24	84	Allowance for general replacement of commercial kitchen appliances	1	LS	\$15,000.00		\$15,000
25	57	Replace toilet room sinks, wall hung	28	EA	\$1,150.00		\$32,200
MECHANICAL SYSTEMS							
26	74, 75	An allowance to replace walk-in cooler & walk-in freezer	1	LS	\$75,000.00		\$75,000
27	8, 72	Replace through-window air conditioning unit	20	Ton AC	\$950.00		\$19,000
28	66, 22	Replace central air-handling unit, heat & ventilation at mezzanine & modular classrooms (modular classrooms replaced in Year 1)	11,400	CFM	\$4.87		\$55,518
29	52	Replace direct fired rooftop heating unit, gas fired, 175 MBH, serving Boiler Room	1	EA	\$8,010.00		\$8,010
ELECTRICAL SYSTEMS							
30	91	An allowance to upgrade existing electrical service with additional capacity, distribution panels and outlets	1	LS	\$150,000.00		\$150,000

SHORT		TERM	CAPITAL NEEDS SCHEDULE							RESERVE TOTAL
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	
	\$51,935						\$51,935			\$103,870
	\$196,233									\$196,233
	\$124,930									\$124,930
\$175,667	\$175,667	\$175,667								\$527,000
\$44,476										\$44,476
\$25,632										\$25,632
\$21,396										\$21,396
\$216,000	\$216,000									\$432,000
			\$15,000							\$15,000
\$32,200										\$32,200
\$75,000										\$75,000
\$4,750		\$4,750		\$4,750		\$4,750				\$19,000
\$27,759							\$27,759			\$55,518
						\$8,010				\$8,010
\$150,000										\$150,000

TABLE 1
IMMEDIATE REPAIRS, SHORT TERM REPAIRS, and CAPITAL NEEDS ESTIMATE



Site Name:	Neary Elementary School	# Buildings:	2
City, ST:	Southborough, Massachusetts	Est. Building SF:	63,000
Age, Yrs.:	51	Eval. Term, Yrs.:	10
Project No.:	69604	CPI:	2.50%
		# Units:	NA

	Total	Per SF	Per SF/YR
Immediate Repairs \$:	\$10,000	\$0.16	
Short Term \$ (no inflation):	\$3,260,552	\$51.75	\$25.88
Short Term \$ (inflated):	\$3,282,935	\$52.11	\$26.06
Capital Needs \$ (no inflation)	\$3,677,472	\$58.37	\$5.84
Capital Needs \$ (inflated)	\$3,744,570	\$59.44	\$5.94

ITEM						Immediate	Reserves
ITEM No.	PHOTO No.	DESCRIPTION	QTY	UNIT	UNIT COST	YEARS 0-1	YEARS 1-10
PLUMBING SYSTEMS							
31	70	Replace commercial gas/oil water heater, 70 gallon, 199,000 BTU	1	EA	\$4,111.80		\$4,112
CONVEYANCE SYSTEMS							
Not Applicable							
LIFE SAFETY/FIRE PROTECTION SYSTEMS							
No significant LIFE SAFETY/FIRE PROTECTION SYSTEM costs identified							
ANCILLARY STRUCTURES							
No significant costs identified							
TOTAL - Immediate Repairs						\$10,000	
TOTAL - Capital Needs							\$3,677,472

SHORT		TERM		CAPITAL NEEDS SCHEDULE						RESERVE TOTAL
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	
		\$4,112								\$4,112
										\$0
										\$0
										\$0

TOTAL CAPITAL NEEDS, BY YEAR, UNINFLATED	\$2,365,233	\$895,319	\$195,508	\$22,472	\$31,450	\$24,213	\$29,007	\$106,798	\$0	\$7,472	\$3,677,472
Inflation Factor	1.000	1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	
TOTAL CAPITAL NEEDS, BY YEAR, WITH INFLATION	\$2,365,233	\$917,702	\$205,405	\$24,200	\$34,715	\$27,395	\$33,639	\$126,949	\$0	\$9,332	\$3,744,570

Notes/Abbreviations:

**Item Number corresponds to item described in supporting "cost item #" in text report.*

LS = Lump Sum; LF = Linear Foot; SF = Square Feet; SY = Square Yard; EA = Each; TN = Ton; kW = Kilowatt; FL = Floor; RI = Riser; RUL = Remaining Useful Life

Immediate Needs = material existing or potential unsafe conditions resultant from a damaged or deteriorated condition, material building or fire code violations on file with municipal agencies, or conditions that if left uncorrected, have the potential to result in or contribute to critical element or system failure within one year or will result most probably in a significant escalation of its remedial cost. Also included as immediate needs are items, materials or systems that have exceeded their useful life. Immediate Repair time frame for repair is between 0 and 1 year. These items are generally included regardless of cost.

Short Term Repairs = Items that may not warrant immediate attention, but require repairs or replacements that should be undertaken on a priority basis in addition to routine preventive maintenance. Such opinions of probable costs may include costs for testing, exploratory probing, and further analysis should this be deemed warranted by VERTEX. Short Term repairs are the aggregate sum of Capital Needs repairs within years 1 and 2. See report text for cost thresholds defining Short Term Repairs/Capital Needs versus items of Routine Maintenance.

Capital Needs = Items which are expected to require significant repair, replacement or renovation during the specified evaluation term due to the observed condition and estimated RUL. See report text for cost thresholds defining Short Term Repairs/Capital Needs versus items of Routine Maintenance.

TABLE 2

IMPROVED ADA COMPLIANCE
PRIORITIES AND ESTIMATED COSTS

**TABLE 2
GENERAL ADA IMPROVEMENTS**

Site Name: <input type="text" value="Neary Elementary School"/> Site Location: <input type="text" value="Southborough, Massachusetts"/> Building Age, yrs: <input type="text" value="51"/> Project No.: <input type="text" value="69604"/>						# of ADA Items 5	
ADA Observations							
Item #	Photo #	Description	QTY	Unit	Unit Cost	Total	
PARKING - EXTERIOR ROUTE - BUILDING ENTRANCES							
ADA- 1	34	Install handicapped parking stall with signs and access aisle, Standard Space	2	EA	\$801.00	\$1,602	
ADA- 2	67	Install chair lift as an alternative access measure/reasonable accommodation (at auditorium stairs)	1	EA	\$21,360.00	\$21,360	
INTERIOR ACCESSIBLE ROUTES - AMENITIES - INTERIOR DOORS - ELEVATORS							
ADA- 3	64	An allowance to replace door hardware with lever or push/pull hardware throughout the school	130	EA	\$453.90	\$59,007	
TOILET ROOMS							
ADA- 4	57, 58, 59	Renovate restroom entrance & general configuration to compliant dimensions	6	LS	\$5,340.00	\$32,040	
ADA- 5	57, 58, 59, 70, 71	Convert existing or add restroom for single-user (reasonable accommodation) at student & staff toilet rooms	6	LS	\$10,680.00	\$64,080	
HOSPITALITY GUEST ROOMS							
Not Applicable							
						TOTAL	\$178,089

Notes/Abbreviations:

LS = Lump Sum; LF = Linear Foot; SF = Square Feet; SY = Square Yard; EA = Each; TN = Ton; kW = Kilowatt; FL = Floor

Any future alterations are subject to compliance with local, state and federal requirements. In some cases, the tenants do not offer services which interface with the general public, and reasonable accommodations appear to be in place for employee accessibility.

ADA related issues are included on this table regardless of magnitude of cost.

ADA Priorities:

1 = Accessible approach and entrance
 2 = Access to goods and services
 3 = Access to restrooms
 4 = Other measures

This is not meant to be a detailed ADA compliance audit. Costs are based on general, 'order of magnitude' estimates to provide improved accommodations

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION



Photo #1: Aerial view of site from Google Earth



Photo #2: Main building entrance



Photo #3: Partial east elevation



Photo #4: Drop-off/pick-up at main entrance (east elevation)



Photo #5: Partial east elevation



Photo #6: Close-up view of aluminum-framed windows, cast stone trim, brick veneer & thru-wall ventilation



Photo #7: Close-up view of perimeter joint sealant at wall openings with aged, cracked and separating sealant



Photo #8: Through-window mounted air conditioning unit



Photo #9: Secondary entrance at the Office of the Superintendent Northborough Southborough Public Schools



Photo #10: View of wall-mounted light fixture & blank off panel infilled with wood paneling (prior opening for AC unit)



Photo #11: Natural gas service at southeast corner of building



Photo #12: South elevation. Note uneven asphalt sidewalk



Photo #13: Egress doors at south elevation with soffit-mounted light fixture



Photo #14: Partial west elevation. Note asphalt sidewalk



Photo #15: Raised area of lawn at the southwest corner with concrete retaining wall and chain link fencing



Photo #16: Concrete loading dock with bumpers at west elevation (rear of building). Note ductwork from roof to boiler room



Photo #17: West elevation with overhead door & concrete stairs



Photo #18: Transition from higher roof with taller windows at the Cafeteria



Photo #19: Partial west elevation. Note asphalt paving



Photo #20: North side of building with modular classrooms



Photo #21: Modular classrooms. Note wood stairs & asphalt ramp with railings



Photo #22: View of wall-mounted air handling unit & (faux brick) vinyl siding & vinyl-framed sliding windows



Photo #23: Partial north elevation



Photo #24: Concrete sidewalks with some minor surface scaling



Photo #25: Overview of asphalt paving with concrete curbing at north side



Photo #26: Playground equipment (steel & polycarbonate-type) with wood chips & wood curbing at north side of site



Photo #27: Playing fields on north side of site



Photo #28: Playing fields on north side of site



Photo #29: Playground equipment (steel & polycarbonate-type) with wood chips & wood curbing at north side of site



Photo #30: Overview of asphalt-paved parking on east side of site with playing field beyond



Photo #31: Asphalt paving at east side at drop off-pick up area with minor random cracking



Photo #32: Fire hydrant on-site



Photo #33: Wall-mounted building sign



Photo #34: Accessible parking spaces, with faded painted lines & symbols, adjacent to the main building entrance. Note some asphalt pavement cracking



Photo #35: View of ponding water on asphalt pavement at west elevation



Photo #36: Continuation of ponding water at west elevation with some potholes, note septic system beyond



Photo #37: View of (no longer in use) garage at west side of property



Photo #38: Roof access hatch



Photo #39: Overview of roof with an EPDM membrane (circa 1990). Note perimeter joints re-seamed & gas line beyond



Photo #40: Edge of roof with aged and separating sealant at joints



Photo #41: Aged and cracked sealant at historical patches



Photo #42: Raised portion at high roof with cracked stucco and brick veneer



Photo #43: Close-up view of cracks in stucco at high roof



Photo #44: View of courtyard from roof level



Photo #45: Roof-mounted condensers serving interior duct-less mini-splits (circa 2019)



Photo #46: Aged roof membrane with deteriorated joint sealant & open joints to the weather



Photo #47: Close-up view of deteriorated joints in roof membrane



Photo #48: Metal plates at coping seams with open joints



Photo #49: Historical patches lifting (with openings) at turned-up roof membrane



Photo #50: Severe tenting of roof membrane, preventing drainage to internal roof drains



Photo #51: Wasp-bee nests on high walls



Photo #52: Gas-fired roof-mounted heater supplying tempered air to boiler room below (circa 2008)

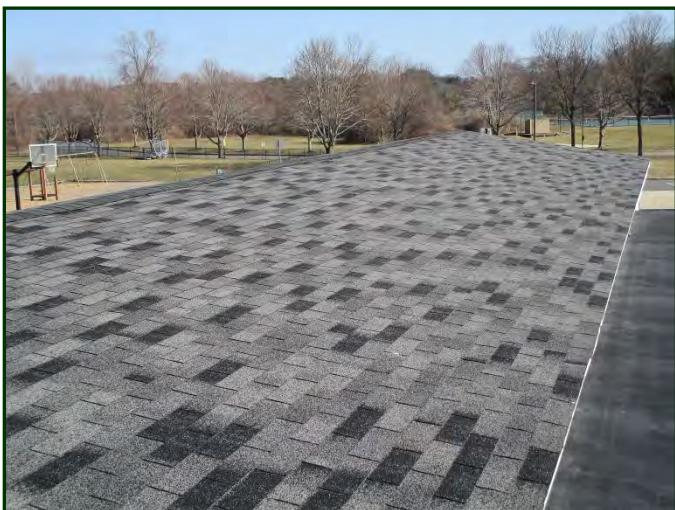


Photo #53: Asphalt composition roof shingles on modular classrooms (circa 1999)



Photo #54: Superstructure with gypsum board roof decking on open web steel bar joist on load bearing CMU walls (predominately)

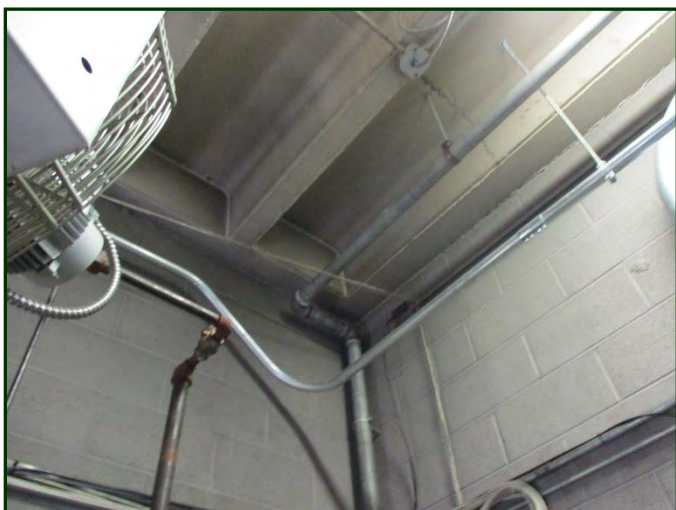


Photo #55: Superstructure at boiler room with cast-in-place concrete roof structure on load bearing CMU walls



Photo #56: Corridor with (reported) VAT flooring, epoxy painted CMU walls and suspended acoustical ceiling system

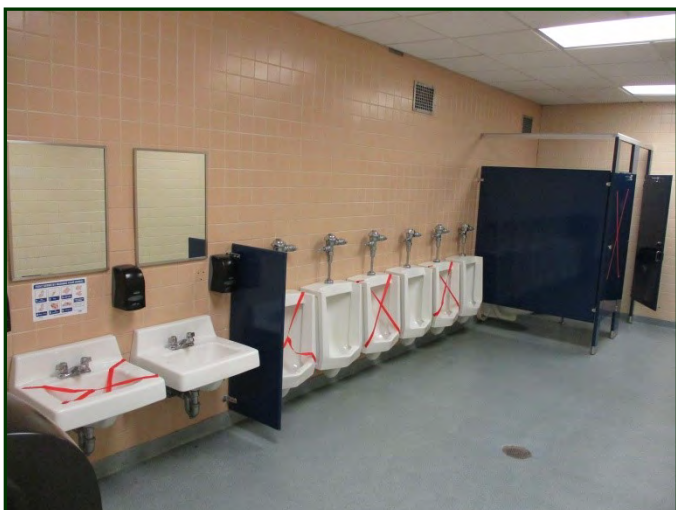


Photo #57: Boy's Toilet Room with epoxy flooring, ceramic tile walls and suspended acoustical ceiling system. Note periodic toilets blocked for Covid-19 precautions.



Photo #58: Toilet stall with grab bars



Photo #59: Student toilet room with non-accessible doorway (too narrow for ADA compliance)-typical



Photo #60: Interior view of aluminum-framed windows with deteriorated glazing (powdery & spalling) & aged gaskets

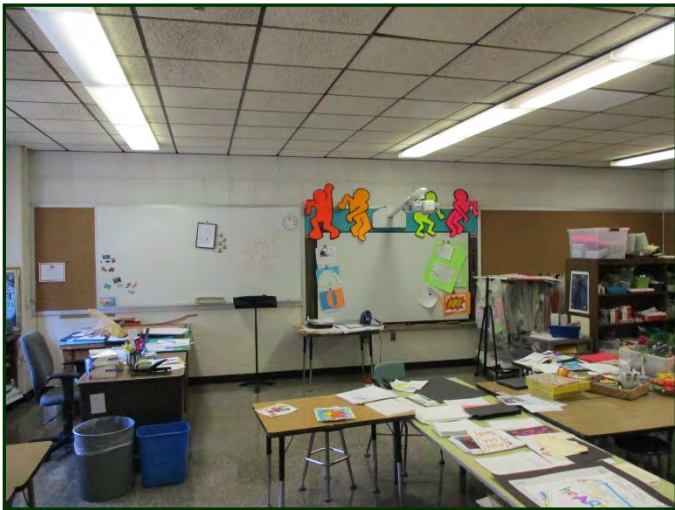


Photo #61: Typical classroom with VAT (reportedly) flooring, aged acoustical ceiling system & painted CMU walls



Photo #62: View of acoustical wall tiles in classrooms



Photo #63: Typical classroom with original (aged) wood case-work modified for higher height sink



Photo #64: View of typical classroom. Note knob-type hardware at door beyond



Photo #65: Newer unit ventilators (circa 2009 approximately) with hot water coils (supplies heat & fresh air) at classrooms-typical



Photo #66: One of three air handling units on mezzanine (circa 2010) supplies heat & ventilation to library, hallway, auditorium & Learning Center



Photo #67: Ceiling-mounted air handling units in gymnasium with hot water coils. Note aged & stained ceiling tiles



Photo #68: Gas-fired boilers in boiler room (circa 2006)



Photo #69: Original indirect-fired water storage tank used for heating months, in boiler room



Photo #70: Gas-fired domestic water tank for non-heating months, in boiler room (circa 2016)



Photo #71: Ceiling-mounted ductless mini-split AHU in office area



Photo #72: Through-window air conditioning unit



Photo #73: Building’s web-based energy management system



Photo #74: Walk-in cooler and walk-in freezer in kitchen area



Photo #75: Interior view of walk-in cooler



Photo #76: Office area with carpet floor



Photo #77: Office area



Photo #78: Office area

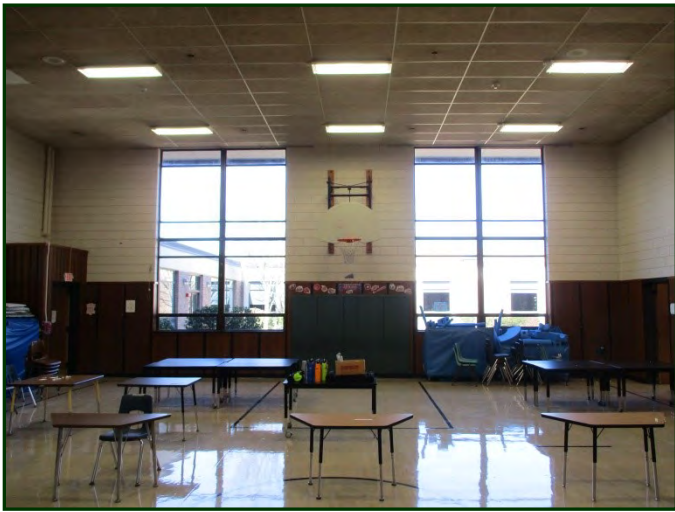


Photo #79: Gymnasium with sheet vinyl floor



Photo #80: Auditorium with (tiered) carpet floor



Photo #81: Classroom



Photo #82: Cafeteria



Photo #83: Food serving area



Photo #84: Kitchen with quarry tile floor

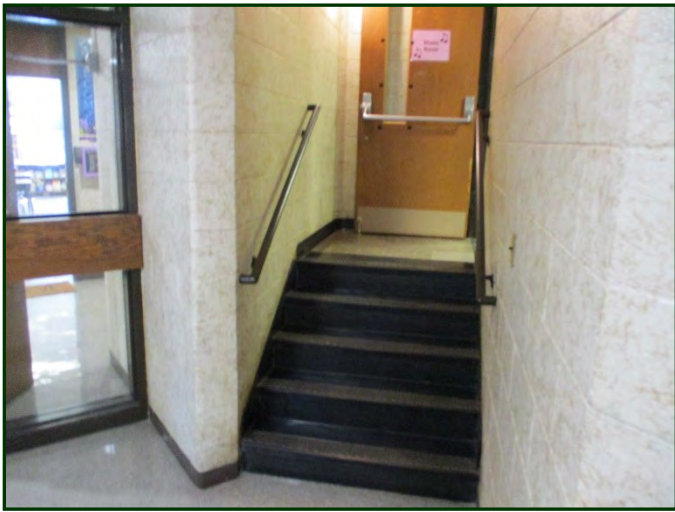


Photo #85: Stairs serving auditorium



Photo #86: Ramp with carpet & metal handrails serving modular classrooms



Photo #87: Modular classroom



Photo #88: Staff toilet room



Photo #89: Staff toilet room



Photo #90: Pad-mounted electrical transformer



Photo #91: Main electrical switchgear



Photo #92: Diesel-fueled emergency generator on concrete pad at rear of building



Photo #93: Domestic water service with backflow preventer in boiler room



Photo #94: Fire alarm control panel in office adjacent to main building entrance



Photo #95: Manual pull fire alarm device



Photo #96: Fire extinguisher in wall cabinet with current inspection tag

APPENDIX B

PRE-SURVEY QUESTIONNAIRE & REQUEST FOR DOCUMENTATION



The Vertex Companies, Inc.
700 Turner Industrial Way
Aston, Pennsylvania 19014

T: 610.558.8902
F: 610.558.8904

PRE-SURVEY QUESTIONNAIRE & REQUEST FOR DOCUMENTATION

TO: Keith Lavoie

PROJECT NAME: Neary Elementary School

VERTEX #: 69604

VERTEX has been contracted to conduct a Property Condition Assessment (PCA) at the site referenced above. It would be greatly appreciated if you could direct the questionnaire to the person(s) most knowledgeable about the property for completion. The completed questionnaire may be returned to VERTEX via fax, email or mail, or may be delivered at the time of our on-site visit. The questionnaire will be presented as an exhibit in our PCA report.

In addition to the questionnaire, we are requesting that information relating to the building be available for our review prior to, or during the on-site visit. Where practical, we also request that copies of this information be provided. Requested information includes the following.

- ☐ Building Plans (Structural, Architectural, Electrical, Mechanical, Plumbing, Site Surveys, Site Plans, etc.) – *preferably As-Built drawings if available*
- ☐ Municipal Department Documents (Certificates of Occupancy, Building Code Violations, Zoning Variances or Restrictions, etc.) Copies of any outstanding violations with respect to building, zoning or fire codes or safety.
- ☐ Promotional/Leasing Information (Offering Memorandum, Recent Appraisals, Sales/Leasing Literature, Rent Roll, Site Diagrams, Reduced Floor Plans, etc.)
- ☐ Warranties for materials and systems (Roofs, Mechanical Systems, Equipment, etc.)
- ☐ Certificates of inspection or compliance (Elevators, Escalators, Boilers, Fire Sprinklers, Fire Alarms, etc.) and/or any safety inspection records
- ☐ Service/Maintenance contracts including vendor names and phone #s (Elevator, Roofing, Mechanical, etc)
- ☐ Building rent roll, records indicating occupancy percentages and turnover percentages
- ☐ Previous Property Studies (Property Condition Surveys, Inspections, Phase I ESAs, Appraisals, Roof Condition Reports, ADA Compliance Studies, etc.)
- ☐ Historical information with regards to Capital Expenditures for a minimum of the past five years (Dates and summaries of work performed with associated costs)
- ☐ Pending proposals for repair, renovation or general work on the building or associated systems

Any other information that is relevant to the maintenance, repair history or condition of the property is also welcome.

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PRE-SURVEY QUESTIONNAIRE

GENERAL PROPERTY INFORMATION

Property Name:	
Property Address:	
City, State, Zip:	
Current Owner:	
Year Constructed:	
Year Purchased:	
Gross SF:	
Zoning District:	
Site Acreage:	
# of Parking Spaces:	
Gas:	
Electric:	
Utility Providers: Water:	
Sewer:	
Storm:	

RESPONDENT INFORMATION

Name:	
Date:	
Title:	
Company:	

VERTEX®

PRE-SURVEY QUESTIONNAIRE

Please respond to the following questions to the best of your knowledge.

1. Please describe the maintenance, repair or replacement responsibilities of the landlord and tenant. (For example, "tenant maintains interior space, landlord is responsible for all structural elements including the roof covering, and replacement of HVAC equipment, if needed")

2. To the best of your knowledge, does the building have any of the following problems? and, if so, please describe the location and condition.

ISSUE	YES	NO	N/A
Roof, Wall or Window leakage?			
<i>Location, description:</i>			
Basement/Crawlspace water or moisture infiltration?			
<i>Location, description:</i>			
Structural Problems?			
<i>Location, description:</i>			
Heating capacity or distribution deficiencies?			
<i>Location, description:</i>			
Air conditioning capacity or distribution deficiencies?			
<i>Location, description:</i>			
Inadequate domestic water pressure/leaks/drainage problems?			
<i>Location, description:</i>			
Inadequate electrical capacity or distribution or frequent power outages?			
<i>Location, description:</i>			
Elevator service problems?			
<i>Location, description:</i>			

VERTEX[®]
PRE-SURVEY QUESTIONNAIRE

3. Please provide a general description of significant (greater than \$3,000) capital improvements with associated costs, which have been made at the property within the past 5 years. Please provide documentation if possible.

Description of Improvement	Year Completed	Approx \$

4. If you are in receipt of, or solicited any proposals to perform any repairs, renovations or replacement work to the building(s) or any of its components that will exceed an aggregate cost of \$3,000, please describe those projects. Please attach copies of bids or proposals, if possible.

Proposed Project	Year Anticipated	Approx \$

VERTEX®
PRE-SURVEY QUESTIONNAIRE

5. Is there any ongoing or pending litigation related to the property's physical condition?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, describe:
------------------------------	-----------------------------	-------------------

6. Has any structure or portion of the property considered "down" or been condemned, or deemed uninhabitable?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, describe:
------------------------------	-----------------------------	-------------------

7. To the best of your knowledge, please check any of the following materials or issues that are present within the building(s).

<input type="checkbox"/> Recalled Sprinkler Heads	<input type="checkbox"/> Reactive Chinese Drywall	<input type="checkbox"/> Aluminum branch wiring
<input type="checkbox"/> Electrical fuses (not circuit breakers)	<input type="checkbox"/> Fire Resistant Treated (FRT) plywood	<input type="checkbox"/> Polybutylene piping
<input type="checkbox"/> Galvanized steel piping	<input type="checkbox"/> Phenolic foam roof insulation	<input type="checkbox"/> Fire damage

Please describe location and extent of materials checked in Question 7 above.

8. Are there any other building attributes, deficiencies, issues or improvements not already discussed herein, that may be of interest to a potential lender or purchaser? If so, please describe below.

--

APPENDIX C

RELEVANT SUPPORTING DOCUMENTATION

National Flood Hazard Layer FIRMMette



71°32'48"W 42°18'5"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

71°32'10"W 42°17'38"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/22/2021 at 4:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Building Department
9 Cordaville Road, Lower Level
Southborough, MA 01772
Attn: Laurie Livoli, Building Commissioner

**Re: Neary Elementary School
53 Parkerville Road Southborough, MA**

Dear Ms. Livoli:

The VERTEX Companies, Inc. is an engineering firm currently conducting a Property Condition Assessment of the above referenced property. As part of the due-diligence process we request your assistance by providing us with some information from your files. Through the Freedom of Information Act, we request your assistance by providing us with the following information concerning the site and buildings at the referenced property files:

- 1) Are there any open building code violations, or unresolved building safety issues on file for the property?
☐ YES ☐ NO

Brief description of violation(s) or open issue(s)

- 2) Does the building have a current Certificate of Occupancy? ☐ YES ☐ NO

If yes, can a copy be provided? _____

- 3) Are there specific items (such as elevators, backflow preventers) that the municipality may require updating to current codes, even if no renovations or use changes are planned? In other words, are there any "non-grandfathered" items required at the property due at a certain date? ☐ YES ☐ NO

If yes, please describe _____

- 4) Name of Respondent: _____ Date: _____

Thank you for your assistance in this matter. If you need additional information to complete our request, please contact me at (617) 275.5407. Responses may be emailed to my attention at prusso@vertexeng.com.

Respectfully submitted,



Philip Russo, R.A.
Project Manager

Fire Department
32 Cordaville Road
Southborough, MA 01772
Attn: Steven Achilles, Fire Chief

**Re: Neary Elementary School
53 Parkerville Road Southborough, MA**

Dear Chief Achilles:

The VERTEX Companies, Inc. is an engineering firm currently conducting a Property Condition Assessment of the above referenced property. As part of the due-diligence process we request your assistance by providing us with some information from your files. Through the Freedom of Information Act, we request your assistance by providing us with the following information concerning the site and buildings at the referenced property files:

- 1) Are there any open fire code violations, or unresolved fire safety issues on file for this property?

☐ YES ☐ NO

Brief description of violation(s) or open issue(s)

- 2) Does your Department inspect the property regularly? ☐ YES ☐ NO

If yes, can a copy of the most recent inspection be provided? ☐ YES ☐ NO ☐ ATTACHED

- 3) Name of Respondent: _____ Date: _____

Thank you for your assistance in this matter. If you need additional information to complete our request, please contact me at (617) 275.5407. Responses may be emailed to my attention at prusso@vertexeng.com.

Respectfully submitted,



Philip Russo, R.A.
Project Manager

Zoning Department
9 Cordaville Road, Lower Level
Southborough, MA 01772
Attn: Laurie Livoli, Zoning Officer

**Re: Neary Elementary School
53 Parkerville Road Southborough, MA**

Dear Ms. Livoli:

The VERTEX Companies, Inc. is an engineering firm currently conducting a Property Condition Assessment of the above referenced property. As part of the due-diligence process we request your assistance by providing us with some information from your files. Through the Freedom of Information Act, we request your assistance by providing us with the following information concerning the site and buildings at the referenced property files:

1) What is the current zoning at the property?

Current Zoning	Is a school building considered to be a permitted use?

2) Are there any open zoning code violations, or unresolved zoning issues on file for the property?

<input type="checkbox"/> YES <input type="checkbox"/> NO	If yes, please give a brief description of violation(s) or open issue(s)

3) Name of Respondent: _____ **Date:** _____

Thank you for your assistance in this matter. If you need additional information to complete our request, please contact me at (617) 275.5407. Responses may be emailed to my attention at prusso@vertexeng.com.

Respectfully submitted,



Philip Russo, R.A.
Project Manager

**Facilities Management
Department
Report on the Neary
School renovation
Project**

**Southborough School
Board**

June 8, 2006



Content

1. FY 06 expenditure report – indicates the companies and/or materials that we have made commitments.

The “not yet spent” column, are firm prices that we have received, from vendors to perform a service.

The “Funds spent” column, are funds for work completed and processed for payment.

2. This page - will provide you a time line update on the progression of the project and when portions of the work will be done and how funds are being allocated.
3. These are the before pictures – The goal was to replace the main water valve, and water meter. This will allow us to isolate water to the building. In the future we will operate these types of valves on a regular basis, to prevent the accumulation of rust and sediments that prevent the valve from opening and closing.
4. These are the after pictures – We found that the pipes were in good condition, so we did not have to replace the pipes themselves. We also did not find asbestos in any of this work. We will reinsulate the pipes after we finish the boiler replacement work.

NEARY SCHOOL RENOVATIONS FY 06 FUNDS EXPENDITURES

\$450,000

6/8/2006

VENDOR NAME OR PRODUCT	TASK/MATERIAL	COMMITTED FUNDS NOT YET SPENT	FUNDS SPENT	REMAINING FUNDS
Ostrow electric company	wiring for phone, PA, clock & security	\$73,800		\$376,200
Rodenhiser plumbing	water main and valves		\$11,850	\$364,350
Putnum Pipe	water meter		\$1,891.45	\$362,458.55
Samsung camara	video camara		\$270.60	\$362,187.95
Wilkinson Inc.	Replace Boiler	\$146,331		\$215,856.95
American Environmental	Asbestos removal	\$5,000		\$210,856.95
Hub Testing	Asbestos Inspection	\$4,000		\$206,856.95
Suburban Glass & Mirror	Replace boiler room door	\$7,580		\$199,276.95

NEARY SCHOOL RENOVATION COST & TIME LINE UPDATE

6/8/2006

FY 06 FY 07

Work description	estimated cost	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	Comments
1 Install wire & cable	\$73,800					x	x	x				work to start June 26. Price firm.
2 Install Fire & sec alarm	55,000 x						x	x				RFP being developed for work to be done this summer.
3 Install PA, phone& clock	110,000 x						x	x				RFP being developed for work to be done this summer.
5 Start boiler & asbestos removal	\$16,580						x	x	x			Work to start June 26. Price firm for asbestos & door.
6 Replace Main water valve & meter	\$13,741											Work completed March 18, 2006
7 Install new Boilers	146,331					x						Reviewing proposal & legal opinion. boiler EDD 12 weeks
8 Electrical & Mechanical engineer's	32,000					x	x	x	x	x		Develop & review proposals for electro/mechanical work

Total of work
FY 06 Budget amount ~~\$447,452~~ \$450,000

Remaining in FY 06 budget
FY 07 renovation budget ~~\$2,548~~ \$450,000
New total budget for FY 07 ~~\$452,548~~

Red indicates estimates only. All other cost firm.

a we will start the old boiler removal on June 26, and complete installation in Sep, & test the system for heating.

b Wire and cable project will be accomplished during 06 summer vacations.

c Fire and security alarm system bids to go out this June, with returns due in July, installation to start in Aug.

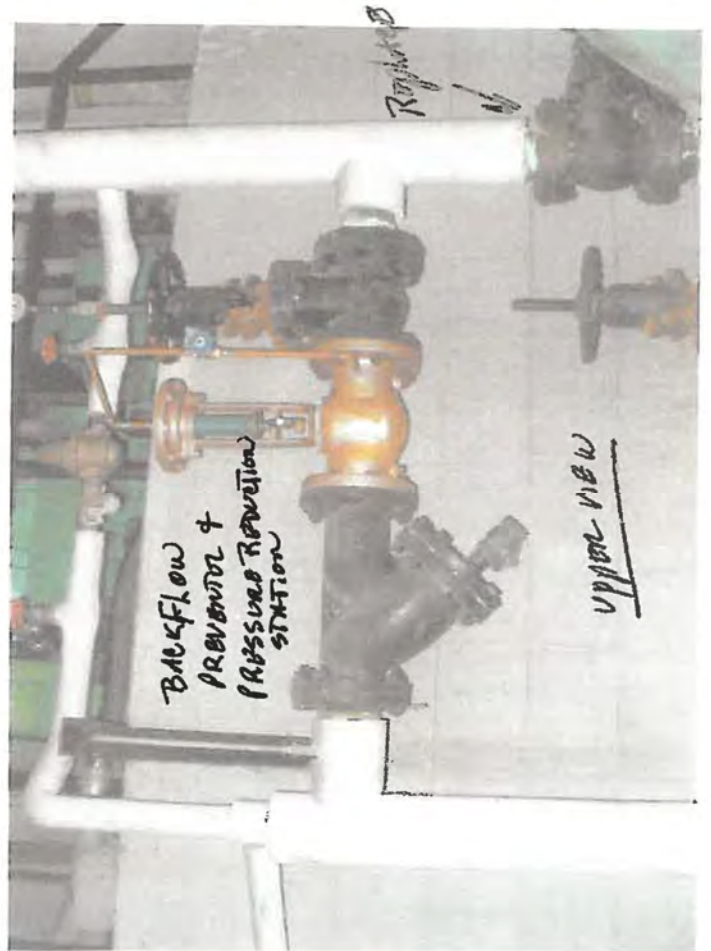
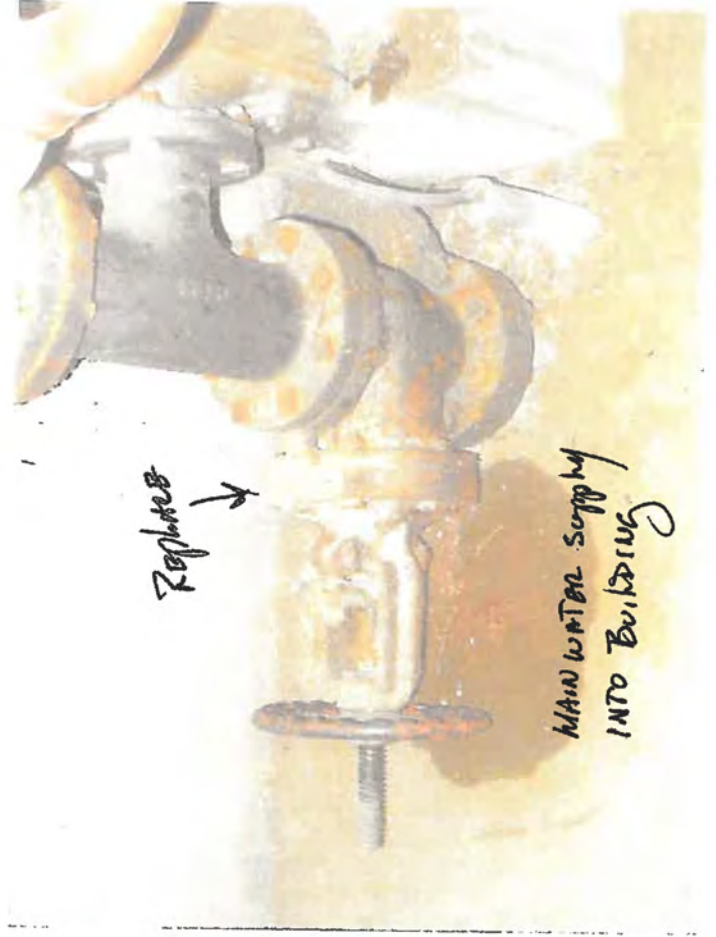
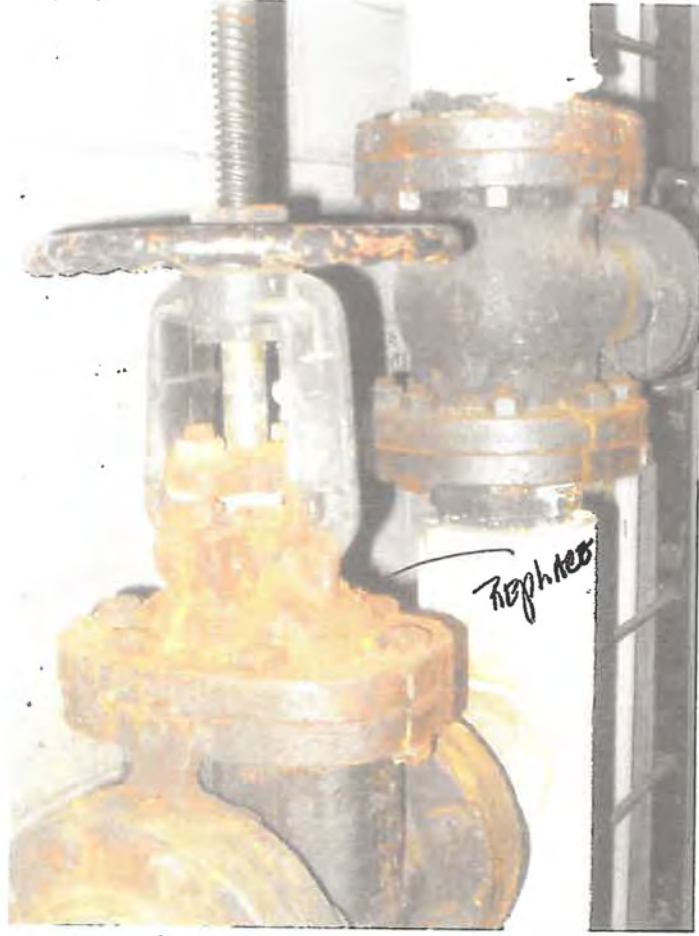
d The phone & PA system bids to go out in June, with returns due in July, installation to start in Aug.

e Funds not totally consumed during the fiscal year will be carried over to the next year.

g The Head Custodian and The Town Maintenance Mechanic will travel to a two day training session, and will stay over night. The location of the training seminar will depend on the vendor that we select.

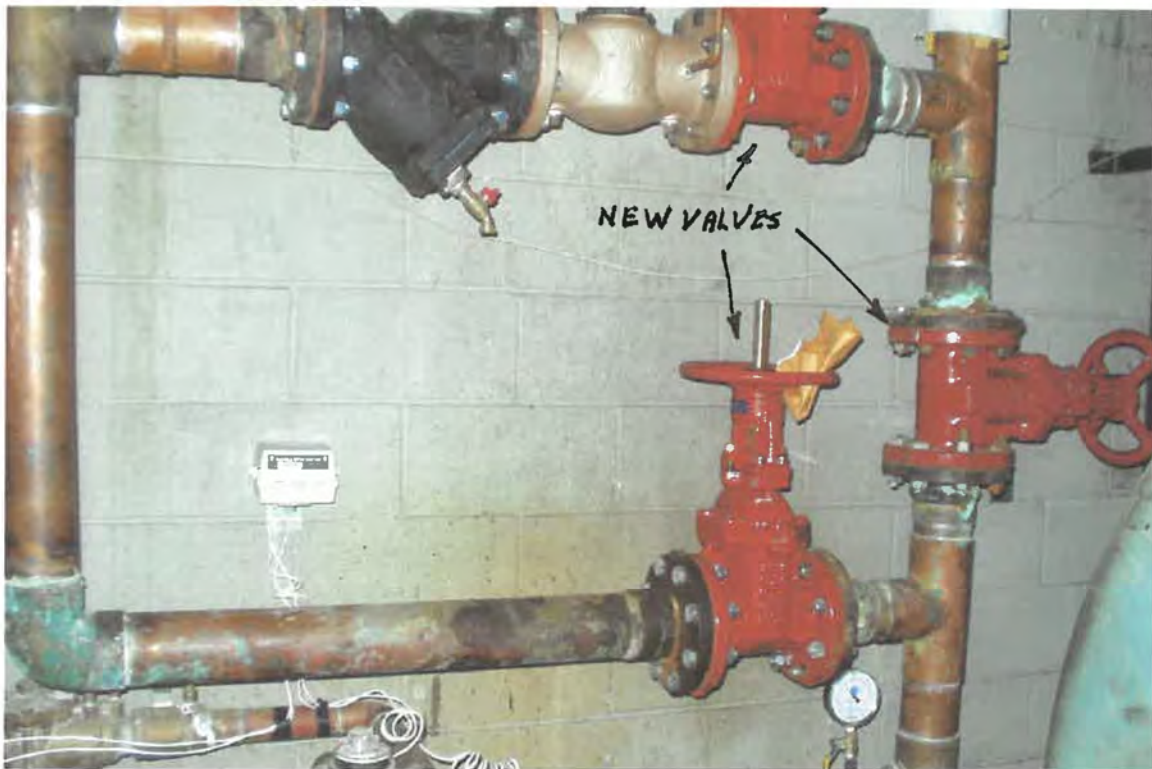
Prepared by
Basilio Diaz
Facilities Manager

BEFORE





WORK COMPLETED MARCH 18, 2006



The Garland Company, Inc.

Roof Asset Management Program



Margaret A. Neary Elementary School - Roof Inspection

Prepared By
Adam Silun

Prepared For
Brian Fantony

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Client Data

Client: Southborough Public Schools

Client Data

Name	Southborough Public Schools		
Address 1	53 Parkerville Rd		
City	Southborough	State	Massachusetts
ZIP	01772	Country	United States

Contact Info

Contact Person	Brian Fantony	Title	Facilities Manager
Mobile Phone:	508-878-2503	Office Phone:	-
Email:	bfantony@nsboro.k12.ma.us		



Facility Summary

Client: Southborough Public Schools

Facility: Margaret A Neary Elementary School

Facility Data

Address 1	-
City	-
State	-
ZIP	-
Type of Facility	School
Square Footage	60,500
Contact Person	Brian Fantony

Asset Information

Name	Date Installed	Square Footage	Roof Access
EPDM Roof Section		-	



Construction Details

Client: Southborough Public Schools

Facility: Margaret A Neary Elementary School

Roof Section: EPDM Roof Section

Information

Year Installed	-	Square Footage	-
Slope Dimension	-	Eave Height	-
Roof Access	-	System Type	EPDM



Photo Report

Client: Southborough Public Schools

Facility: Margaret A Neary Elementary School

Report Date: 02/13/2020

Title: Roof Inspection

Roof Section: EPDM Roof Section



Photo 1

This roof is completely failed with areas of severe ponding, lifted insulation, failed seams and perimeters and many other deficiencies.



Photo 2

Re-seaming has been completed on much of the roof.



Photo 3

Allow hard to see in the picture, there are areas of lifted insulation. These areas of lifted insulation should be monitored closely as it means the insulation is no longer attached to the roof deck and is in danger of causing a catastrophic failure.



Photo 4

More areas of ponding and lifted insulation.



Photo 5

More severe ponding.



Photo 6

The nails on the wood blocking around the perimeter of the roof are protruding through the membrane.



Photo 7

Better view of the lift insulation which is evident in multiple places on this roof.




Solution Options

Client: Southborough Public Schools

Facility: Margaret A Neary Elementary School

Roof Section: EPDM Roof Section

Replace Options

Solution Option:	Replace 	Action Year:	2020
Square Footage:	-	Expected Life (Years):	30
Budget Range:	\$1,575,000.00 - \$1,750,000.00		

This roof has completely failed and there are little options available, other than replacement, that exist for this roof. If replacement isn't an option, close attention should be paid to the areas of lifted insulation because once this happens, it only takes one strong wind storm to cause a catastrophic failure.

The budget to replace this roof would be \$1,575,000 to \$1,750,000

Roof System:

The system I recommend is a 2-ply Mod Bit using a Cold process. Cold adhesive is a polymer modified liquid asphalt that is squeegeed into place, with the base sheet rolled out for 100% coverage, the modified cap will lap creating redundancy and we now have a 400 mm water proofing membrane. The modified cap sheets incorporate dual scrims that have better resistance to punctures and tears. They are also polymer modified to age better and deal with the four seasons of New England. We can heat weld the seams but this roof does not have excessive roof traffic. This system carries a 30 year water tight warranty.

Green Roofing:

The roof systems we've been doing in the Central Massachusetts area for the past decade or more incorporate recycled materials in the modified cap sheet. These modified sheets incorporate recycled crumb rubber from discarded tires, recycled glass as the silica parting agents and recycled boiler slag for the sheets under coating. The roofing system we've been installing are very good long term roof assemblies that will have excellent return on investment for local schools, towns and cities.

Note: Scope to include, but not limited to

- 1] Remove entire roofing system down to the deck
- 2] Install new insulation assembly R-30
- 3] Install 1 ply of modified base sheets in cold process
- 4] Install 1 ply of modified cap sheet
- 5] 2 ply flashing system dives 4 plies at the turn
- 6] Install new 040 edge metal and wall panel system
- 7] Cool roofing finish of your choice

At no additional cost we will:

- Assist in the design of the roof replacement
 - Attend pre-bid & pre-construction meeting to answer questions
 - Daily job site inspections to insure proper materials and procedures are followed
 - Run final inspections and punch list followup
 - Provide a 30 year warranty on the roofing system
 - Perform annual follow-up inspections
-

Over the years there are on going studies looking at commercial roofing. Including the Army Core of Engineers, NRCA, the Ducker Study and plenty more. Year after year it clearly shows that multi-ply built-up roofing is the best performing systems for longevity and life cycle costs. In the BUR family the modified BUR systems, which utilize a modified cap sheet, are the highest performing group concerning puncture resistance and fatigue. The modified built-up system is a three ply system with the top ply being a modified cap sheet. The cap sheet [a modified felt] can be the last layer of protection or it can be followed up with a flood and gravel. Each felt has a layer of bitumen below and above it to adhere the layers giving you more layers of added protection. The flashing are the weakest point of all roofing systems and is why another two layers are added to give the field termination five layers of protection.

While the built-up system is more expensive than an EPDM to start, it's low maintenance over it's 30 year life cycle make it the cheapest and least time consuming roofing system available. With proper maintenance these systems can last past their 30 year projection.

The average life span of single-ply system is 8-12 years. They're the least expensive roofing system for up-front costs, but demand high annual maintenance and the high life cycle cost makes them the more expensive system. The EPDM membrane is approximately 40-60mm thick, the same as a bicycle tire. It is easily punctured or damaged and requires high year round monitoring/maintenance with allot more headaches.

PVC [Polyvinyl Chloride] roofing systems are a stronger single-ply system than EPDM, but still suffer the same short comings. Puncture resistance and seam splitting are the leading shortcomings in a single membrane. Like EPDM it requires year round monitoring and maintenance. The PVC roof is more expensive than the EPDM, often equivalent to the built-up system. At the end of it's life span you have spent more than most roofing systems available. A long term problem coming to light with the PVC material is the environmental impact in recycling after the roof is removed. Europe made PVC roofing material popular and it was finally introduced to the United States. Europe is now in the process of eliminating PVC material as a whole and many countries have already banned it as a roofing membrane. Leading manufacturers like Nike, Mattel, Baxter International, Lego and IKEA have also eliminated PVC material from all their products. Many Fire Depts. dislike PVC roofing due to the chlorine gases released in a fire. From the cradle to the grave, PVC is not an environmentally friendly product.

The Public Schools of
NORTHBOROUGH and SOUTHBOROUGH
OFFICE OF THE SUPERINTENDENT
53 PARKERVILLE ROAD – SOUTHBOROUGH, MASSACHUSETTS 01772
TELEPHONE (508) 486-5115 FAX (508) 486-5123 www.nsboro.k12.ma.us

Memorandum

To: Dave White

From: Cheryl Levesque,
Business Director



Date: February 3, 2016

RE: AHERA Reports - Southborough Public Schools

Dave - enclosed are the most recent AHERA Reports from 2013 for the four schools in Southborough.

We have included a copy to be retained in your office, a copy to be kept on file in the Principal's Offices, and a copy to be filed in each Head Custodian's office.

If you have any questions, please contact either myself or Pauline.

Thank you.



HUB TESTING LABORATORY, INC.

Environmental Testing Service

95 Beaver Street - Waltham, MA 02453
(781) 893-8330 (781) 893-4414 (fax)

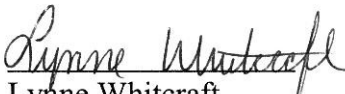
REPORT FOR: Northborough-Southborough Public Schools
53 Parkerville Road
Southborough, MA 01772

ATTENTION: Cheryl L. Levesque
Director of Business

PROJECT: AHERA Three-Year Re-inspection

SUBJECT: Neary Elementary School
53 Parkerville Road
Southborough, MA 01772

PREPARED BY: Hub Testing Laboratory, Inc.


Lynne Whitcraft
Management Planner
MA Cert. No.: AP900405

DATE: June 25, 2013



HUB TESTING LABORATORY, INC.

Environmental Testing Service

95 Beaver Street - Waltham, MA 02453
(781) 893-8330 (781) 893-4414 (fax)

REPORT FOR: Northborough-Southborough Public Schools
53 Parkerville Road
Southborough, MA 01772

ATTENTION: Cheryl Levesque
Director of Business

PROJECT: Neary Elementary School
53 Parkerville Road
Southborough, MA 01772

SUBJECT: AHERA Three-Year Reinspection

DATE: June 2013

As required by the US Environmental Protection Agency's AHERA regulations, Hub Testing Laboratory has completed a survey and reassessment of asbestos containing materials in the Neary Elementary School of the Northborough-Southborough Public School District. This report summarizes the locations and conditions of materials remaining in the building and reviews the ongoing responsibilities of the Local Education Agency (LEA). Lynne Whitcraft (AI 61691) completed the inspection in June of 2013.

When sampling of suspect asbestos-containing materials was done, samples representative of the material were taken. Samples of thermal systems insulation and miscellaneous materials were collected in unobtrusive locations. Samples of surfacing materials were collected using the guidance document method for random sampling.

This latest survey report should be incorporated into the files that the LEA maintains, pertaining to response actions, operations & maintenance activities, six month reinspection, training, air sampling and major asbestos activities.

SUMMARY OF AHERA REINSPECTION

The reinspection consisted of reviewing previous documentation available, interviewing building personnel, and performing a thorough survey of each functional space in the building. The following sections summarize the current reinspection, the presence of suspect or proven ACM in the building, any damage to the ACM, and response action proposals.

CURRENT FINDINGS

MATERIALS FROM PREVIOUS INSPECTION

During the previous three-year AHERA inspection of the Neary Elementary School in 2009, the following materials were identified as either containing asbestos or assumed to contain asbestos. The list is classified by material. Any change in the condition or presence of the material discovered in the current reinspection is noted here. Materials marked with an asterisk (*) are Assumed Asbestos-Containing Materials.

1. Pipe fittings

Location: Heating system throughout school (primarily above suspended ceilings)

Quantity: Visible 160 LF (linear feet), but throughout school

Condition: Damaged

Note: Pipe insulation is fiberglass and the associated *mud* fittings are asbestos.

2. Hot water tank insulation

Location: Boiler Room

Quantity: 90 SF

Condition: Damaged

Note: Impact to tank surface. Material should be re-sampled.

3. Breeching insulation

Location: Boiler Room

Quantity: 150 SF

Condition: Not damaged

4. Floor tiles

Location: Through out school

Quantity: 30,670 SF

Condition: Damaged – Worn areas at entrances to classrooms & at entry doors, cracked tiles throughout school

Note: The attached Materials Chart specifically describes the type and locations of each floor tile.

5. Mastic associated with floor tiles

Location: Through out school

Quantity: 30, 670 SF

Condition: Not damaged

6. Ceiling plaster*

Location: Boiler Room

Quantity: 2,500 SF

Condition: Not damaged

7. Transite panels

Location: Gym Doors, Hallway Doors, Gym Walls, Front Lobby, Hallway Walls, Cafeteria Hallway Walls

Quantity: 1,760 SF

Condition: Damaged

8. Transite panels

Location: Shelving units in classrooms associated with HVAC unit

Quantity: 6 panels per classroom

Condition: Not damaged. Some panels have been abated

9. Glazing & caulking associated with window walls *
Location: Window walls
Condition: Not Damaged
10. Window sills – exterior window walls *
Location: Window walls through out school
Quantity: 200 SF
Condition: Damaged in gym
11. Sink undercoating
Location: Classrooms
Quantity: 25 units (\approx 600 SF)
Condition: Not damaged

NEW MATERIALS SINCE PREVIOUS INSPECTION

New suspect asbestos-containing materials were located during the current three-year AHERA inspection.

1. Sheetrock ceiling tiles
Location: Kitchen
Condition: Not damaged
2. CMU and grout
Location: Throughout school
Quantity: 400 SF
Condition: Not damaged
3. Sheetrock
Location: Divider walls in classrooms, cafeteria, gym, window wall by office
Condition: Not damaged

4. Mastic associated with vinyl cove base

Location: Throughout school

Condition: Not damaged

SUSPECT MATERIALS ANALYTICALLY DETERMINED NOT TO CONTAIN ASBESTOS

The following material was sampled, analyzed, and determined not to contain asbestos.

1. Ceramic tile grout
2. Domestic water pipe fittings
3. 12x12 White w/blue floor tile in modular classrooms
4. Floor tiles in classroom 3

ACTION SHEET

Based on the current three-year AHERA Reinspection of the Neary Elementary School, the following actions for ongoing asbestos management in the school are recommended.

SIX-MONTH SURVEILLANCE

Every six months a periodic surveillance of known and assumed asbestos-containing materials in the school must be conducted and documented. The chart included in this report may be used for the documentation. Use the right hand columns to indicate changes in a material's condition or quantity, and explain the changes in the comment section at the bottom of each page. Fill out the date of the survey and the signature of the person who conducted it at the end of the chart.

TRAINING

In the event that the LEA's Designated Person changes, or new maintenance personnel are hired, the LEA must have Asbestos Awareness Training provided for these individuals.

RECORDKEEPING

Continue to update files pertaining to:

- a. Training/Licensing of school personnel
- b. Notifications
- c. Response Actions
- d. Reinspection

LABELING

All friable asbestos containing materials must be maintained with identifying labels. The labels can help to prevent the entry of untrained and unprotected personnel into areas, which may have been contaminated.

CAUTION
ASBESTOS. HAZARDOUS.
DO NOT DISTURB
WITHOUT PROPER
TRAINING AND EQUIPMENT

CLEANING

In the case that friable materials become damaged in an occupied space, the materials should be repaired and debris cleaned by qualified trained personnel with proper cleaning equipment and personal protective equipment.

RECOMMENDED RESPONSE ACTIONS

All known and assumed asbestos-containing materials must be monitored for any change in condition. Every precaution and extreme care should be taken to keep these materials in an undamaged condition. In the event that a material is damaged, the appropriate response action should be taken to deal with the situation. Proposed response actions are based on the inspector's visual assessment of ACM according to AHERA assessment categories and risk assessment categories. These categories are detailed on the attached chart. All response actions should be implemented in a timely manner and must be designed by an accredited Asbestos Abatement Designer.

CEILING TILES

The 1x1 ceiling tiles located at the top of the walls in the classrooms are a known asbestos containing material. Efforts have been made for numerous years to restrict their impact by occupants. Items are continuing to be stapled into these tiles causing damage and potential fiber release. Funding should be appropriated and a plan put in place for the removal of these tiles.

In addition, there are 4 other homogenous areas of suspect ceiling tiles that are presumed to be asbestos containing materials. These ceiling tiles should be sampled and incorporated into the plan as appropriate.

FLOOR TILES

Minor damage was noted. Floor tiles are becoming loose. These tiles have been tested and are known to be asbestos containing. Funding should be put in place to begin a program of removal. Efforts should be taken to prevent the delamination of the asbestos-containing floor tiles in the building. The condition of the floor tiles should be monitored during the six-month surveillances, which is performed as required by a knowledgeable person. This process will aid in documenting when tiles become broken and to determine when and where significantly damaged tiles need to be replaced.

THERMAL SYSTEMS INSULATION (TSI)

Care should be taken not to disturb any TSI. There are some discrepancies regarding the hot water tank insulation. Funding should be put in place to perform necessary testing.

ASSUMED MATERIALS

Until such time as these materials are sampled and determined to be asbestos containing or not, they must be treated as containing asbestos. All efforts should be taken not to disturb the assumed materials. The inspector did not note issues that require immediate attention. The condition of the materials should be monitored during the six-month surveillances, which is performed as required by a knowledgeable person.

ASSOCIATED COSTS

Sampling of ceiling tiles and hot water tank insulation (5 areas of homogenous material) throughout the school building:

Approximate cost: \$850.00

Removal of floor tile:

Approximate cost: \$7.00 per square foot

Removal of ceiling tile:

Approximate cost: \$40.00 per square foot

These estimates would be reduced when and if added to work at additional schools.

All work beyond the capabilities of a trained and licensed in house O&M maintenance person must be performed by a licensed and qualified asbestos removal contractor. A licensed Project Designer must design all abatement projects outside of O&M.

3 YEAR RE-INSPECTION **Nearby Elementary School** **June 2013**

ASSUMED AND PROVEN ASBESTOS-CONTAINING MATERIALS

<u>Material & Amount</u>	<u>Location</u>	<u>Type & Friability</u>	<u>Assessment (ND, D, SD), (PD, PSD), (L, M, H)</u>	<u>Type/% Asbestos & # of Samples</u>	<u>Comment</u>	<u>Six Month Surveillances & Re-inspections</u>					
						6-mo.	12-mo.	18-mo.	24-mo.	30-mo.	3-YR
Fittings	Visible in gym but throughout school	T, F	D, H	Chrysotile 15 - 45% Three samples	Sample Numbers – 14150-2, 14150-9, 20310-1 See Report January 29, 2002 & July 10, 2009 6/13 - Damaged by water tank Removed from HVAC mezzanine and boiler room.						C
Hot Water Tank 90 Square Feet	Boiler Room	T, F	D, M	Chrysotile 10%	Sample Number 20223 See Report June 4, 2009 *Small nicks in cover						✓
Breeching 150 SF	Boiler Room	T, F	ND, M	Chrysotile 40% Amosite 10% One Sample	Sample Number - 10920-4 See Report June 2, 1998						✓
12" x 12" Gray floor tile 30, 270 SF	Throughout hallways and classrooms	M, NF	D, H	Chrysotile 4% Four samples	Sample Numbers – 14150-6, 14150-8, 14150-10 See Report January 29, 2002, Sample Number 12844-3 See Report July 21, 2000 ** Wear & tear especially at thresholds & double doors 6/13 – New damage noted in custodian office and outside gym (by custodian office) & new areas removed. Removed from secretary, principal's office and corridor sections.						C

Comments: Sample packing on water tank during next inspection

Key	Amount	Friability	Assessment
SF - square feet	F - friable	ND - not damaged	
LF - linear feet	NF - not friable	D - damage	
Type	Assessment	SD - significantly damaged	
T - TSI	L - low access.	PD - potential for damage	
S - surfacing	M - medium access.	PSD - potential for significant damage	
M - misc.	H - high accessibility		

Six Month Surveillance & Re-inspections

Fill in the corresponding box with a ✓ for no change in condition or a C for a change in the status of a material. Write details about changes in the comment area below the chart on the same page. The person conducting the surveillance must sign and date below.

6-mo. Date:

Signature:

18-mo. Date:

Signature:

12-mo. Date:

Signature:

24-mo. Date:

Signature:

30-mo. Date:

Signature:

3-YR Re-inspect: 6/25/13

Signature:

Lynne W. W.

3 YEAR RE-INSPECTION **Nearby Elementary School** **June 2013**

ASSUMED AND PROVEN ASBESTOS-CONTAINING MATERIALS

Material & Amount	Location	Type & Friability	Assessment (ND, D, SD), (PD, PSD), (L, M, H)	Type/% Asbestos & # of Samples	Comment	Six Month Surveillances & Re-inspections				
						6-mo.	12-mo.	18-mo.	24-mo.	30-mo.
Mastic associated with above floor tile 30, 670 SF	Throughout hallways and classrooms	M, NF	ND, L	Chrysotile 15% One Sample	Sample Number – 12844-3A See report July 21, 2000					✓
12" x 12" Green floor tile w/dark green flecks and associated mastic Carpet adhesive	Faculty room, bathrooms of the speech office, reading room, guidance office and at water fountains (400 SF)	M, NF	ND, L							✓
	Office, library, room 25 A & B, rooms 27C, business office and superintendent's office.	M, NF	ND, L							C
Ceiling Tiles 12" x 12" 12,349 SF	Classrooms, HVAC mezzanine, Learning Center, Exit & Bathrooms between room 23 & 24	M, F	D, H	Amosite 25% Two samples	Sample Numbers 12779-1, (Rm 12) 12779-2, (Rm 21) See Report June 24, 2000 2 rows on walls in classrooms 6/13 - Some classrooms have items stapled to ceiling tiles.					✓
Ceiling Tiles 2' x 2' Fissure 100,000 SF	Classrooms 2 thru 24, Lower Library Ceiling, Cafeteria,	M, F	D, H		** Replacement tiles evident 6/13 - Water staining noted					C
Ceiling Tiles 18" x 18" 600 SF	Classroom 1	M, F	ND, H							✓

Comments:

Key	Amount	Friability	Assessment
SF – square feet		F – friable	ND – not damaged
LF – linear feet		NF – not friable	D – damage
Type		Assessment	SD – significantly damaged
T – TSI		L – low access.	PD – potential for damage
S – surfacing		M – medium access.	PSD – potential for significant damage
M – misc.		H – high accessibility	

Six Month Surveillance & Re-inspections

Fill in the corresponding box with a ✓ for no change in the status of a material. Write details about changes in the comment area below the chart on the same page. The person conducting the surveillance must sign and date below.

6-mo. Date:	Signature:	18-mo. Date:	Signature:
12-mo. Date:	Signature:	24-mo. Date:	Signature:
30-mo. Date:	Signature:	3-YR Re-inspect: 6/25/13	Signature: <i>Dyma Wustph</i>

3 YEAR RE-INSPECTION **Nearby Elementary School** **June 2013**

ASSUMED AND PROVEN ASBESTOS-CONTAINING MATERIALS

<u>Material & Amount</u>	<u>Location</u>	<u>Type & Friability</u>	<u>Assessment (ND, D, SD), (PD, PSD), (L,M,H)</u>	<u>Type/% Asbestos & # of Samples</u>	<u>Comment</u>	<u>Six Month Surveillances & Re-inspections</u>					
						6-mo.	12-mo.	18-mo.	24-mo.	30-mo.	3-YR
Ceiling Tiles 2' x 4' 3,300 SF	Band Room, Custodian Office, Psych room, Equipment room across from room 21, Storage between room 21 & 22, Garage Outside at room 21, OT/ESL room, Teachers' Lounge, and Transoms above hallway doors	M, F	D, H		Damaged in Custodian's office						✓
Ceiling Tiles 2' x 4' Tectum 4,800 SF	Gym & HVAC mezzanine	M, NF	ND, H								✓
Ceiling Plaster 2,500 SF	Boiler Room	M, F	ND, H								✓
Sheetrock ceiling tiles	Kitchen	M, NF	D, L								C
CMU and grout	Walls throughout	M, NF	ND, L								C
Sheetrock	Divider walls in classrooms, cafeteria, gym by office, window wall by office	M, NF	ND, L								C

Key

<u>Amount</u>	<u>Friability</u>	<u>Assessment</u>
SF – square feet	F – friable	ND – not damaged
LF – linear feet	NF – not friable	D – damage
<u>Type</u>	<u>Assessment</u>	<u>SD – significantly damaged</u>
T – TSI	L – low access.	PD – potential for damage
S – surfacing	M – medium access.	PSD – potential for significant damage
M – misc.	H – high accessibility	

Comments:

Six Month Surveillance & Re-inspections

Fill in the corresponding box with a ✓ for no change in the status of a material. Write details about changes in the comment area below the chart on the same page. The person conducting the surveillance must sign and date below.

6-mo. Date: _____ Signature: _____
 12-mo. Date: _____ Signature: _____
 30-mo. Date: _____ Signature: _____

18-mo. Date: _____ Signature: _____
 24-mo. Date: _____ Signature: _____
 3-YR Re-inspect: Date: 6/25/13 Signature: Lynne Winkler

3 YEAR RE-INSPECTION **Nearby Elementary School** **June 2013**

ASSUMED AND PROVEN ASBESTOS-CONTAINING MATERIALS										
Material & Amount	Location	Type & Friability	Assessment (ND, D, SD), (PD, PSD), (L, M, H)	Type/% Asbestos & # of Samples	Comment	Six Month Surveillances & Re-inspections				
						6-mo.	12-mo.	18-mo.	24-mo.	30-mo.
Mastic associated with vinyl cove base	Throughout school	M, NF	ND, L		Beige and black					C
Transite Panels 560 SF	Within Fire Doors Gym & Hallways	S, NF	ND, L		Underwritten Laboratories composite fire doors					✓
Transite Panels 6 panels per classroom	Behind Wood Laminate Front Lobby Hallway, Cafeteria Hallway & Classrooms behind shelving units attached to HVAC unit	S, NF	ND, L	Chrysotile 25%	Sample Number 20310-3 See Report July 10, 2009 Approximately 20 classrooms had panels removed in 2009.					C
Sink Coatings (25 units) 100 SF	Classrooms	M, NF	ND, L							✓
Exterior Window Sills 200 SF	Window walls throughout school	M, NF	D, H							✓
Glazing & caulking of pre-fab window walls	Throughout	M, NF	ND, L							✓

Key
Amount
 SF – square feet
 LF – linear feet
Type
 T – TSI
 S – surfacing
 M – misc.

Friability
 F – friable
 NF – not friable
Assessment
 L – low access
 M – medium access
 H – high accessibility

Assessment
 ND – not damaged
 D – damage
 SD – significantly damaged
 PD – potential for damage
 PSD – potential for significant damage

Comments:

Six Month Surveillance & Re-inspections
 Fill in the corresponding box with a ✓ for no change in the status of a material. Write details about changes in the comment area below the chart on the same page. The person conducting the surveillance must sign and date below.

6-mo. Date: Signature: **18-mo.** Date: Signature:
12-mo. Date: Signature: **24-mo.** Date: Signature:
30-mo. Date: Signature: **3-YR Re-inspect:** Date: **6/25/13** Signature: *Lynn Wintz*

3 YEAR RE-INSPECTION Nearby Elementary School June 2013

MATERIALS THAT HAVE BEEN ABATED/REMOVED OR PROVEN TO NOT CONTAIN ASBESTOS			
Material	Location	Samples	Comment
12" x 12" Ceiling tiles	Hallways, Front Offices including closets, Nurses office, Computer Wire Room, Bathrooms, Media Center, Custodian Closets, & New Administration offices		16,541 SF removed Summer of 2000 and replaced with 2'x2' tiles
2' x 2' Ceiling tiles	Mezzanine		New admin offices removed in 2008.
	Hallways, Front Office, Bathrooms, Upper Library Ceiling, Media Center, Custodian Closets, Modular 1 & 2 Classrooms		Mezzanine abated 8/2009 & replaced with tectum
			16,541 SF replaced 12"x12" tiles removed Summer of 2000 Modular Classrooms New 2001
Ceramic tile grout	Bathrooms in Reading Room, Speech Room, Guidance Office & hallways by water fountains	14151-1, 3, 4 (January 29, 2002)	Replaced with new fiberglass ceiling tiles.
Domestic water pipe fittings	Custodial Wash Machine Room, Custodial Closet near Music Room	10920-1, 2, 3 (June 2, 1998) 14150-7 (January 29, 2002)	Sampled and found not to be asbestos containing.
Fitting insulation	HVAC Mezzanine (36 elbows)		Sampled and found not to be asbestos containing.
Valve insulation	Boiler room (90 fittings)		HVAC mezzanine abated 8/2009 & replaced with fiberglass or uninsulated.
12" x 12" White w/blue floor tile	Gym # 2		Boiler room abated 8/2009 & replaced with fiberglass or uninsulated.
Floor tile	Modular 1 & 2 Classrooms		Abated in 8/2009.
	Classroom 3	21475-1 thru 21475-3 (December 2010)	New Construction 2001
12" x 12" Gray floor tile	Secretary & principal's office (400 SF)		Sampled and found not to be asbestos containing.
	Bisecting corridor of main hall and cafeteria (680 SF)		Abated 8/2009 and replaced with carpet.
Transite Panels (6 panels per classroom)	Corridor by office (3058 SF)		Abated 8/2010 and replaced with new 12x12 mottled VCT.
	Behind shelving units attached to HVAC unit in some classrooms		Abated 7/2011 and replaced with new 12x12 mottled VCT.
			Abated of panels from 20 rooms occurred in 8/2009.

Key		Comments:
Amount	Assessment	
SF – square feet	Friability	
LF – linear feet	F – friable	ND – not damaged
Type	NF – not friable	D – damage
T – TSI	Assessment	SD – significantly damaged
S – surfacing	L – low access.	PD – potential for damage
M – misc.	M – medium access.	PSD – potential for significant damage
	H – high accessibility	

Six Month Surveillance & Re-inspections

Fill in the corresponding box with a ✓ for no change in condition or a C for a change in the status of a material. Write details about changes in the comment area below the chart on the same page. The person conducting the surveillance must sign and date below.

6-mo. Date:	Signature:	18-mo. Date:	Signature:
12-mo. Date:	Signature:	24-mo. Date:	Signature:
30-mo. Date:	Signature:	3-YR Re-inspect: 4/25/13	Signature: <i>Dyma W</i>

MARGARET NEARY SCHOOL

Square Footage: 62,736 Sq. Ft.

Address: 53 Parkerville Road, Southborough, MA 01772

Occupancy Type: Elementary School



UTILITIES

Electricity is supplied by National Grid to the building by a single 450 amp, 208/120 volt, 3 phase, 4 wire electrical service. The electrical rate class: General Service - Demand G-2. Electricity is distributed throughout the building at 208/120 volts. Natural gas is provided by Eversource via a single exterior gas meter. Water is provided by the Town of Southborough municipal utility via a single water meter located in the boiler room.



Electric Meter



Natural Gas Meter



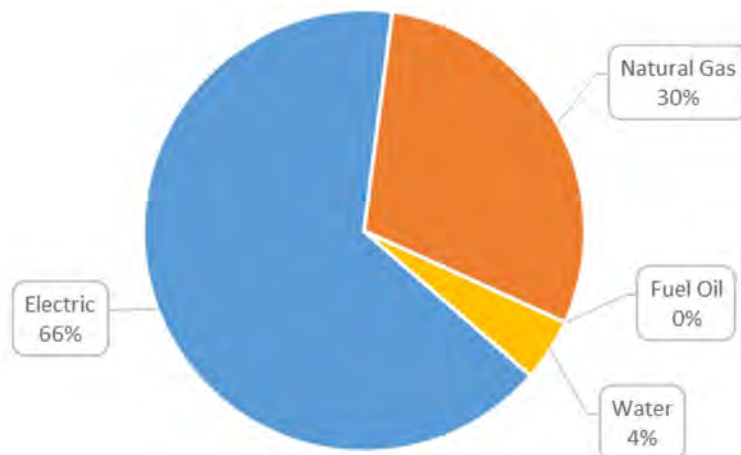
Water Meter

Utility	Meter No.	Meter Location
Electric	25140165	Exterior
Natural Gas	X000511	Side of Building
Water	59284378	Boiler Room

Town of Southborough - Margaret Neary School							
Utility	Consumption & Costs			Thermal Equivalents & Costs		Energy & Cost % Breakup	
	Units	Consumption	\$/Yr.	MMBTU/Yr.	\$/MMBTU	% Energy	% Cost
Electricity	kWh	294,800	\$ 38,086	1,006	\$ 37.85	29%	49%
	kW	1,580	\$ 12,643	-	\$ -	0%	16%
Natural Gas	Therms	24,959	\$ 23,013	2,496	\$ 9.22	71%	30%
Fuel Oil #2	Gallons	-	\$ -	-	\$ -	0%	0%
Water	kGallons	413	\$ 3,526	-	\$ -	0%	5%

As a check of building performance, the Energy Utilization Index (EUI) was calculated for the building. The EUI is calculated in units of 1,000 BTU/Sq. Ft. and can be used to compare the performance of a building against other, similar buildings in its peer group. Based on the three year utility analysis for FY 14/15, 15/16, and 16/17 the Margaret Neary School has an average existing EUI of 55.82 kBTU/Sq. Ft.

Margaret Neary School - Utility Cost Breakup by Type



OCCUPANCY AND SCHEDULE

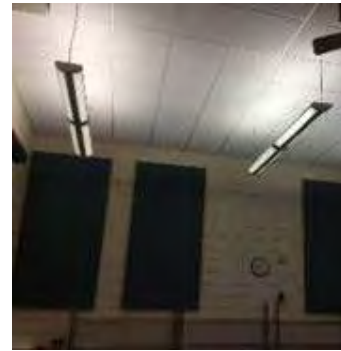
Occupancy: Average of 257 students and 50 staff on a typical day.

Weekday		Weekend	
Start Time	End Time	Start Time	End Time
6:00am	9:30pm	Unoccupied	Unoccupied

LIGHTING AND LIGHTING CONTROLS

All classroom lighting at the Margaret Neary School consists of four foot surface mounted wraps with T8 lamps and electronic ballasts. The majority of the building has occupancy sensors excluding the common areas and gymnasium. There are 883 fixtures with T8 lamps and electronic ballasts throughout the building.





Existing Lighting

MECHANICAL AND DISTRIBUTION SYSTEMS

HEATING SYSTEM

Heating is provided by two (2) Buderus hot water boilers, model # GE615/12 rated at 3,392,000 BTU/hr each and fired by Gordon Piatt burners, model # S10.1-GO-30 rated at 3,389,000 BTU/hr maximum natural gas firing rate. Hot water is delivered to end devices by two (2) supply pumps with 3 horsepower motors.



Hot Water Boilers



Hot Water Pumps

DOMESTIC HOT WATER SYSTEMS

Domestic hot water (DHW) is generated by the boilers through an indirect DHW tank in the winter months. When the boilers are not operating, DHW is generated by a Bock, model # 72PG NAT natural gas fired domestic hot water heater with 67 gallon storage capacity. A small electric DHW heater is located in a custodian closet. Water is distributed throughout the building by inline circulator pumps.



Indirect DHW Tank



Natural Gas Fired DHW Heater



Electric DHW Heater



DHW Circulator Pump

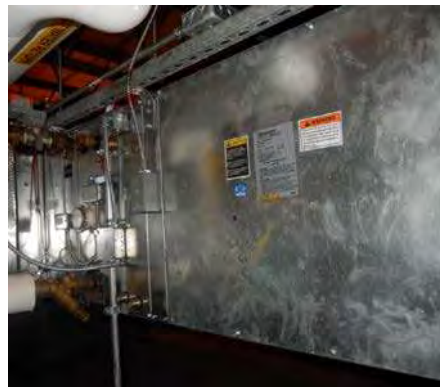
AIR SIDE EQUIPMENT

The heating, ventilation and air conditioning (HVAC) equipment serving the facility includes various Air Handling Units (AHUs) with hot water heating. The AHUs are located in the mezzanine mechanical room. A Combustion Air Unit (CAU) located on the roof serves the boiler room. A kitchen Makeup Air Unit (MAU) provides make up air for the kitchen exhaust hood. Equipment configuration varies and is detailed below.

- AHU-1: Greenheck, model # VFC-3000-20
 - 267,300 BTU/hr of hot water heating capacity
 - 2,600 supply air CFM
 - This unit serves the Corridors
- AHU-2: Greenheck, model # LFC-65-FC-30
 - 249,100 BTU/hr of hot water heating capacity
 - 3,200 supply air CFM
 - This unit serves the Auditorium
- AHU-3: Greenheck, model # LFC-65-FC-30
 - 250,400 BTU/hr of hot water heating capacity
 - 3,160 supply air CFM
 - This unit serves the Library
- CAU-1: Reznor
 - Natural gas fired
- MAU-1:
 - 100% outside air with hot water heating



AHU 1



AHU 2



CAU-1

TERMINAL UNITS

Terminal units for the building consist of unit ventilators, cabinet unit heaters, unit heaters, and finned tube radiation. These units receive hot water from the boiler plant in the winter.



Unit Ventilator



Fin Tube Radiation

The modular classrooms are served by dedicated Bard heat pumps.



Modular Classroom Heat Pumps

COOLING SYSTEMS

Cooling is provided to the Library by a Mitsubishi split system.



Library Condensing Unit



Library Evaporator Unit

Cooling is provided to the Superintendent's office by two (2) Quietside split systems and one (1) Quietside heat pump.



Superintendent's Office Condensing Unit A



Superintendent's Office Evaporator Unit A



Superintendent's Office Heat Pump Condensing Unit



Superintendent's Office Heat Pump Evaporator Unit

Cooling is provided to the Server Room by a Daikin split system.



Server Room Condensing Unit



Server Room Evaporator Unit

EXHAUST FANS

Exhaust fans on the roof serve toilets, kitchen, and other service areas and general building exhaust.



Example Exhaust Fans

CONTROLS

This building is controlled by an Automated Logic (ALC) Building Management System (BMS). The BMS is a full electronic DDC system and was installed within the last ten (10) years. The majority of HVAC equipment in the building is controlled by the BMS. The follow equipment is part of the system:

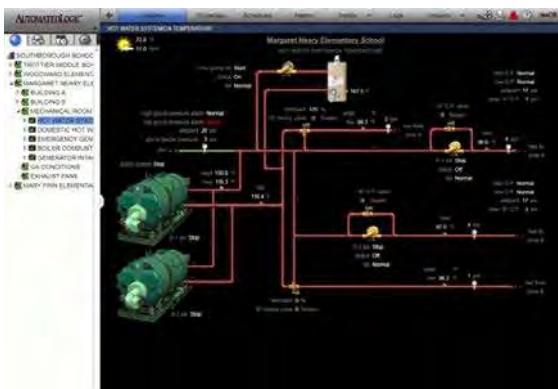
- Twenty-eight (28) Unit Ventilators
- Three (3) Air Handling Units
- One (1) Combustion Air Unit serving the Boiler Room
- Boiler Plant consisting of Two (2) Boilers & Two (2) Hot Water Pumps
- Sixteen (16) Exhaust Fans
- Eight (8) Cabinet Unit Heaters



Floor Plan Graphic



Boiler Plant Control Panel



Boiler Plant Graphic



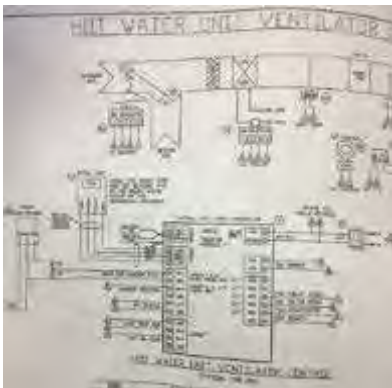
AHU 2 Graphic



Typical ALC Room Sensor



Typical Unit Ventilator Controller



Unit Ventilator Controller Wiring Schematic



Typical ALC Controller for Misc. Exhaust Fans

WATER

Bathroom fixtures are generally in good condition and performing well. Fixtures seem to have adequate pressure based on visual observation of the flush performance. All fixtures are high flow and can benefit from a low flow retrofit.

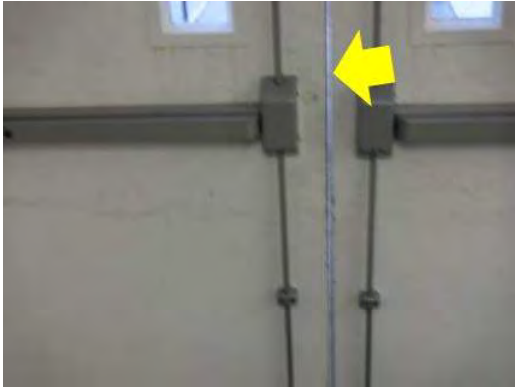
Existing plumbing fixtures are:

- Toilets – Twenty-seven (27) high flow toilets with flushometers are located throughout the building.
- Urinals – Fourteen (14) 1.0 GPF wash down urinals with Sloan flush valves are located throughout the building. The flush valves have a 3/4" spud connection to the wall mounted china.
- Faucets – Forty-six (46) faucets are located in bathrooms throughout the school. Faucets generally have 1.5 to 2.0 GPM flow rates.

BUILDING ENVELOPE

The following is a description of the existing building envelope conditions:

- Attic/Roof – The roof is flat; additional disruptive investigation would be necessary to determine the condition of the roof insulation. Air sealing is recommended at the perimeter of the building where the roof assembly meets the wall assembly.
- Walls – The walls are brick exterior and structural block; there is no cavity in this wall assembly that would allow retrofit insulation.
- Windows – The windows are single pane fixed sash and hopper units. Air conditioning units are installed through select window systems.
- Doors – There are air leaks at the perimeter of the door systems throughout the facility.



Door Weather Stripping Opportunity



Roof-Wall Intersection Sealing Opportunity

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TROTTER MIDDLE SCHOOL

Square Footage: 128,144 Sq. Ft.

Address: 49 Parkerville Road, Southborough, MA 01772

Occupancy Type: Middle School



UTILITIES

Electricity is supplied by National Grid to the building by a 1,200 amp, 480Y/277 volt, 3 phase, 4 wire electrical service. The electrical rate structure for this facility is Time of Use G-3. Electricity is distributed throughout the building at 208/120 volts via stepdown electrical transformers. Natural gas is provided by Eversource via a single exterior gas meter. Water is provided by the Town of Southborough municipal utility via two water meters located in the boiler room.



Electric Meter



Transformer 1



Transformer 2



Natural Gas Meter



Water Meter 1



Water Meter 2

Emergency power is provided by Kohler 100 kW generator, model # 100R0ZP71.

Carlisle SynTec Systems

Carlisle SynTec Systems
Division of Carlisle Corporation
P.O. Box 7000
Carlisle, PA 17013
(717) 245-7000; Telex 84-2511 (SynTec CLSL)

CARLISLE

SERIAL NO. 101076

CARLISLE SURE-SEAL® MEMBRANE SYSTEM WARRANTY

BUILDING OWNER: **SOUTHBOROUGH SCHOOL COMMITTEE**

NAME OF BUILDING: **MARGARET A NEARY SCHOOL**

AB# 488N-90

BUILDING ADDRESS: **SOUTHBOROUGH, MA**

JSI/REV.1

DATE OF COMPLETION OF THE CARLISLE MEMBRANE SYSTEM: **10/31/90**

DATE OF ACCEPTANCE BY CARLISLE: **DECEMBER 11, 1990**

Carlisle SynTec Systems, Division of Carlisle Corporation (**CARLISLE**) warrants to the Building Owner (**OWNER**) of the above described building, that; subject to the terms, conditions and limitations stated in this warranty, Carlisle will repair any leak in the Carlisle Sure-Seal® Membrane System (**CARLISLE MEMBRANE SYSTEM**) installed by a Carlisle Authorized Roofing Applicator for a period of **10** years commencing with the date of Carlisle's acceptance of the Carlisle Membrane System installation. However, in no event shall Carlisle's obligations extend beyond **10.5** years subsequent to the date of substantial completion of the Carlisle Membrane System.

See below for exact date of warranty expiration.

The Carlisle Membrane System is defined as the following Carlisle Materials: Membrane, Flashings, Adhesives and Sealants, and any other Carlisle brand products utilized in this installation.

TERMS, CONDITIONS, LIMITATIONS

1. Owner shall provide Carlisle with written notice within thirty (30) days of the discovery of any leak in the Carlisle Membrane System. Owner should send written notice of a leak to Carlisle's Supporting Services Department at the address set forth at the top of this warranty. By so notifying Carlisle, the Owner authorizes Carlisle or its designee to investigate the cause of the leak. Should the investigation reveal the cause of the leak to be outside the scope of this Warranty, investigation and repair costs for this service shall be paid by the Owner.
2. If, upon inspection, Carlisle determines that the leak is caused by a defect in the Carlisle Membrane System's materials, or workmanship of the Carlisle Authorized Roofing Applicator in installing the same, Owner's remedies and Carlisle's liability shall be limited to Carlisle's repair of the leak.
3. This Warranty shall not be applicable if, upon Carlisle's inspection, Carlisle determines that any of the following has occurred:
 - (a) The Carlisle Membrane System is damaged by natural disasters, including, but not limited to, lightning, fire, insect infestation, earthquake, tornado, hail, hurricanes, and winds of peak gust speeds of 55 mph or higher measured at 10 meters above ground; or
 - (b) The Carlisle Membrane System is damaged by any intentional or negligent acts, accidents, misuse, abuse, vandalism, civil disobedience, or the like.
 - (c) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, etc., occurs and causes a leak, or otherwise damages the Carlisle Membrane System; or
 - (d) Acids, oils, harmful chemicals and the like come in contact with the Carlisle Membrane System and cause a leak, or otherwise damage the Carlisle Membrane System.
4. This Warranty shall be null and void if any of the following shall occur:
 - (a) If, after installation of the Carlisle Membrane System by a Carlisle Authorized Roofing Applicator there are any alterations or repairs made on or through the roof or objects such as, but not limited to, structures, fixtures, or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle; or
 - (b) Failure by the Owner to use reasonable care in maintaining the roof, said maintenance to include, but not be limited to, those items listed on Carlisle's Care & Maintenance Information sheet which accompanies this Warranty.
5. During the term of this Warranty, Carlisle shall have free access to the roof during regular business hours.
6. Carlisle shall have no obligation under this Warranty while any bills for installation, supplies, service, and warranty charges have not been paid in full to the Carlisle Authorized Roofing Applicator, Carlisle, or material suppliers.
7. Carlisle's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.

CARLISLE DOES NOT WARRANT PRODUCTS UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED; AND SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION AND PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY CARLISLE.

THE REMEDIES STATED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR FAILURE OF THE MEMBRANE SYSTEM OR ITS COMPONENTS. THERE ARE NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHICH EXTEND BEYOND THE FACE HEREOF. CARLISLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS UNDER ANY THEORY OF LAW.

THIS WARRANTY EXPIRES: DECEMBER 10, 2000

CARLISLE SYNTec SYSTEMS

DIVISION OF CARLISLE CORPORATION

By: **Kem W. Scott**

AUTHORIZED SIGNATURE: *Kem W. Scott*
TITLE: VICE PRESIDENT MARKETING AND SALES

DATE OF ISSUE: DECEMBER 11, 1990



We submit this report based on the following:

1. Visual survey of the roofing membrane, including flashing at roof edges, pipes, fascia/gravel stop and roof top unit curbs, etc.
2. Taking test cores, measuring 4.0" x 4.0" in size from the Main low roofs, the Gymnasium & the Library roofs, and, visual analysis of the roof system components.
3. Interview with the facility manager and tour of the inside of the building.

THE BUILDING:

The building is a structural steel frame construction with concrete block exterior walls and masonry brick veneer and EIFS (Exterior Insulated Finish System), built in the early seventies, per your office. The current roof was reportedly installed about 20-25 years ago.

THE ROOF LEAKS:

Your office reported no active roof leaks, but, past leaks were numerous, sporadic and patched properly.

A: THE ROOF SYSTEM COMPONENTS:

The roof area is about 60000 +/- square feet. The Main roof is lower than the roofs of Gymnasium and the Library.

- Light weight gypsum roof deck.
- First layer of 1.50 +/- inch thick polyisocyanurate rigid board insulation (dry-to-touch) with total R-value of 10.00 +/- . This insulation was adhered to the roof deck with bitumen (asphalt).
- Second layer of 1.50 inch thick polyisocyanurate rigid board insulation, R-value of 10.00 +/- , and, adhered to the first layer of insulation with bitumen (asphalt). The total insulation thickness is 3.0 +/- inches with an average R-value of about 20.00. The insulation was found to be dry-to-touch in all test cores.
- 0.060-inch (60 mils) thick cured EPDM, elastomeric roofing membrane, fully adhered to the second layer of insulation.
- Metal gravel stop/fascia.

B: ROOF DRAINAGE:

- The roof drainage is via internally connected roof drains system.
- It appears that there is hardly any slope in the roof deck/system, except between roof drains.
- There is a sporadic water ponding in several roof areas on almost every roof.

C: ROOF WARRANTY:

- There is no active roof warranty for these roofs.

- The original roof was reportedly installed in the early seventies. The existing roof system was constructed about 25 +/- years ago.

D: OTHER OBSERVATIONS:

1. There are many past roof patches in almost every roof.
2. The severe water ponding was observed along the entire rear section of the roof. But, many minor areas of water ponding were noted all across the roof due primarily to uneven roof surface resulting from application of modified bitumen roof membrane over roof gravel.
3. There are numerous roof patches spread all over the roof indicating past roof leaks.
4. The edges of most of the flashing strips at pipes, roof drains, roof top unit curbs have curled up / delaminated from the roof membrane.
5. At numerous location, the edges of the "field seams" on the roof membrane have lifted / delaminated. But, none of these were noted to be allowing water into the roof system.
6. We noticed some debris, nails, screws on the roof.
7. In several areas of the Main Roof we observed insulation which has curled up (bulged) by losing its adhesion to the roof deck.
8. The edges of many walk way pads have lifted, and, are a safety hazard for anyone going to the roof.
9. We found couple of cuts and holes in the roofing membrane.

E: REVIEW AND COMMENTS:

1. The existing roof system is about 20-25 years old. It seems to have enough insulation to meet the Energy Code of Commonwealth of Massachusetts, with R-20 +, including the total thickness of the insulation, inside/outside air film, the light weight concrete roof deck, etc.
2. There are several deficiencies in the roof system, i.e., lifted edges of the field seams, the original flashing at pipes, curbs, roof edges, etc. But, none of these appear to have, yet, contributed to the past roof leaks. These are all manageable at a reasonable cost.
3. There is some water ponding on each roof. It is undesirable, but, not harmful to the useful life of the roofs.
4. The general condition of all roofs is acceptable and good.
5. The bulged / lifted roof insulation is most likely due to loss of adhesion of the insulation to the deck. The insulation adhesion to the roof deck was originally weak or lost it after water got into the roof system due to roof leaks. But, it can be repaired properly.
6. The metal gravel stop has weathered, looks ugly, but, it is watertight, and poses no threat to the roof system.

F: RECOMMENDATIONS

1. Repair all lifted edges of the field seams of the roof membrane wherever found. Follow the SPRI (Single-Ply Roof Institute) recommendation to accomplish this task.
2. Cut, remove and replace all bulged / lifted insulation and roof membrane over it. Use FAST 100 adhesive to adhere the new insulation to the roof deck, and, cover it with fully adhered roof membrane to match with the existing roof system.

G: COST ESTIMATE:

1. At today's cost, our estimate is about \$60,000.00 to repair all current roof system deficiencies. You can come up with this money in one year or spread it within 3-5 years.

NOTES:

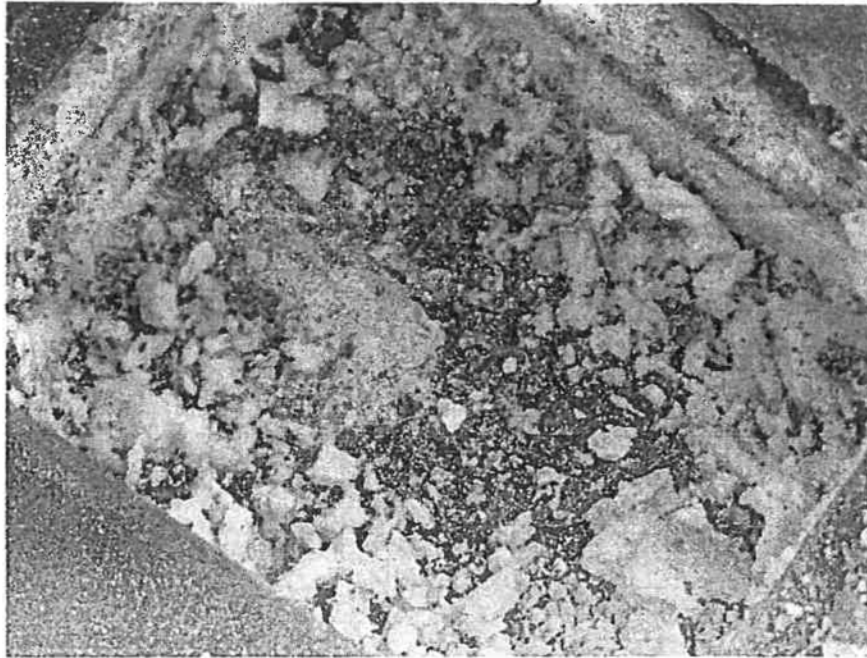
1. The test cut results are indicative of the condition of the roof insulation at the locations of the test cores only.
2. You should prevent water from entering the roof system instead of waiting and patching/repairing the roof leaks. Once the water gets into the roof system, it is most likely to affect the insulation adhesion to the roof deck.

Sincerely,

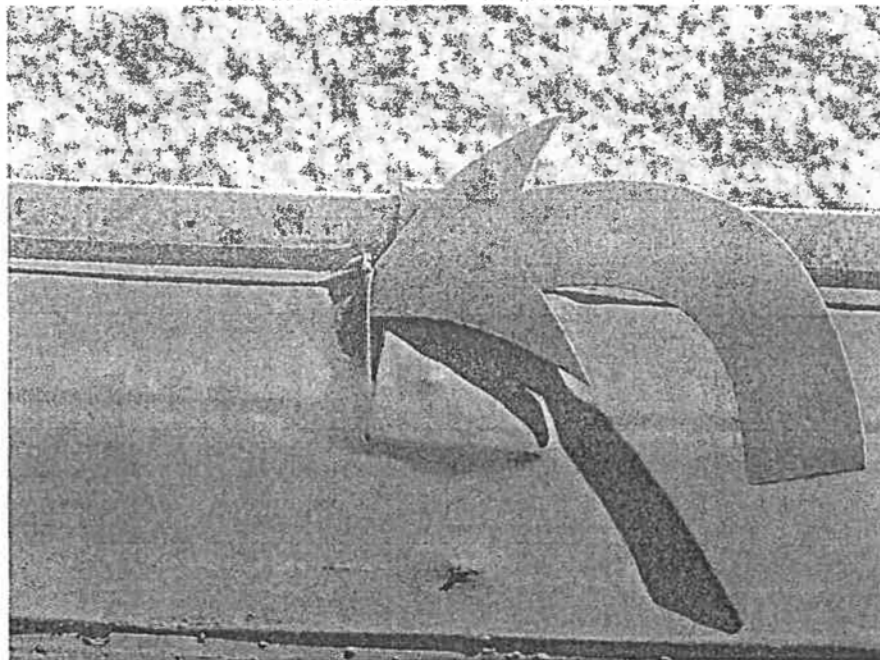
Saghir Tahir

Attachment: 13 Photos of roof condition

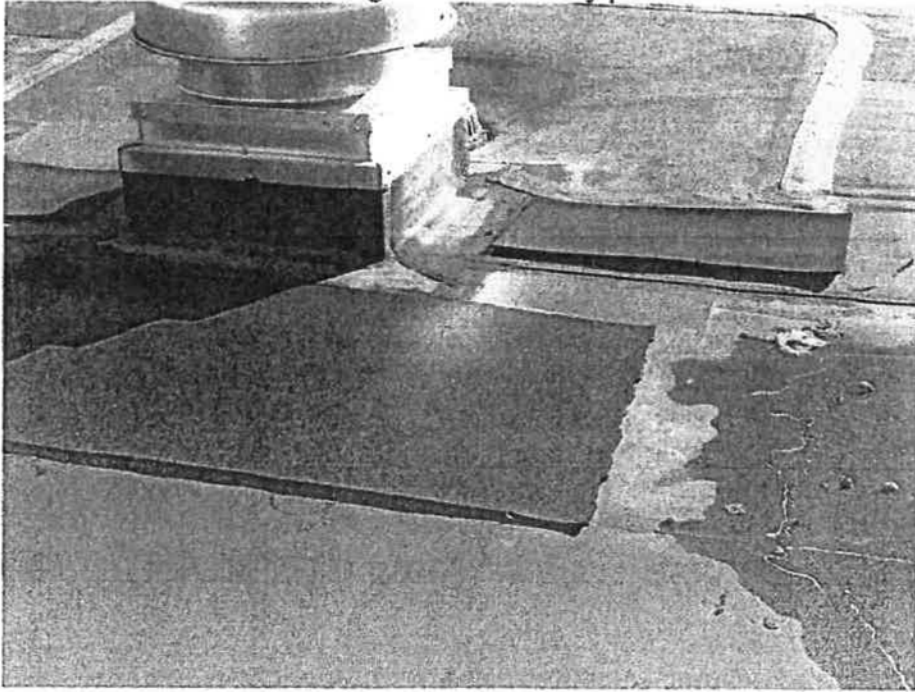
Two layers of insulation adhered to the light weight
concrete deck with asphalt



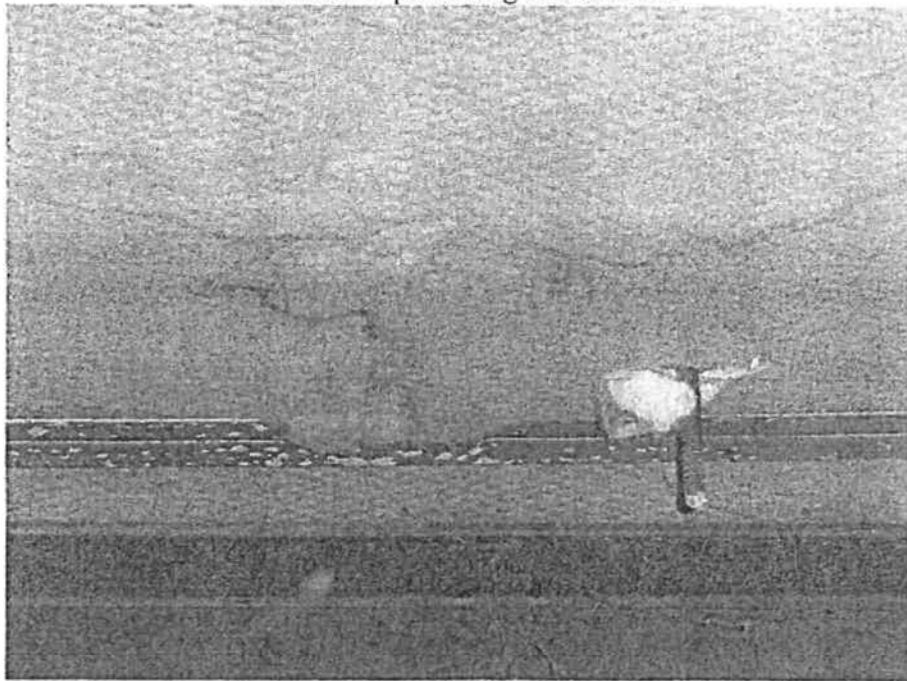
Cut in the roof membrane at seams of fascia



Lifted edges of the walk way pads



Underside of the roof deck. Note the water stains and fastener protruding thru the deck



HOME

SEARCH

SUMMARY

INTERIOR

EXTERIOR

SALES

| Assessors Record Card | Summary Record Card |

Previous Assessment | Condo Info | Sales | Zoning |

Card 1 of 3

[Next Card](#)

[Last Card](#)

WebPro

Location 53 PARKERVILLE ROAD	Property Account Number F_645164_2933613	Parcel ID 43-0000-018-0
------------------------------	--	-------------------------

Old Parcel ID

Current Property Mailing Address

Owner SOUTHBOROUGH TOWN OF NEARY 1963 #53 & TROTTIER 1997 #49	City SOUTHBOROUGH
Address 17 COMMON STREET	State MA
	Zip 01772
	Zoning RA

Current Property Sales Information

Sale Date 12/6/1967	Legal Reference 4813-316
Sale Price 65,000	Grantor(Seller) WILSON GARDENS

Current Property Assessment

	<u>Card 1 Value</u>	<u>Total Parcel Value</u>
Year 2021	Building Value 8,040,000	Building Value 38,959,600
	Xtra Features Value 310,500	Xtra Features Value 408,300
Land Area 80.700 acres	Land Value 4,653,800	Land Value 4,653,800
	Total Value 13,004,300	Total Value 44,021,700

Narrative Description

This property contains 80.700 acres of land mainly classified as GASB-IMP-EDU with a(n)

APPENDIX D

STAFF QUALIFICATIONS

Highlights

Expertise

INDOOR AIR QUALITY
CONSTRUCTION DUE DILIGENCE
LOAN MONITORING
PROPERTY CONDITION ASSESSMENTS
CONSTRUCTION ESTIMATING
LEED ASSESSMENT & CERTIFICATION
LITIGATION SUPPORT & EXPERT TESTIMONY (CONSTRUCTION)
CIVIL ENGINEERING
CIVIL/STRUCTURAL
ENGINEERING GEOLOGY
STRUCTURAL
GREEN BUILDING
ENERGY CERTIFIED EFFICIENCY AUDITING
COMPLIANCE AUDITS
PCA

Eric Nelson, PE, LEED® AP, CEA Vice President, Property Condition Assessments

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BIOGRAPHY

Mr. Nelson is a Vice President directing the Property Condition Assessment and Energy Savings Investigation practices at VERTEX. He has over 27 years of experience with construction-related services such as construction materials testing and inspection, Geotechnical engineering, foundation design and analysis and design of pavement systems. Since 1997, he has been extensively involved in the performance, review and management of Property Condition Assessments (PCAs) for projects of variable size and complexity throughout North America. In addition, he has provided Construction-Monitoring services to evaluate construction progress, and approve or deny contractor payment requests on multiple projects in the northeast. He has also managed a number of large scale projects involving pre- and post-construction condition assessments of structures to monitor and assess damage from construction-related vibration. Mr. Nelson has also directed VERTEX's building analysis program with respect to energy usage and savings strategies for projects at various locations in North America. Mr. Nelson has been involved in over 3,000 construction and assessment projects during his career, with extensive involvement in new construction, foundation design, pavement design, remodeling and re-development, property acquisition, lender due diligence and financial needs assessments and development of replacement reserves for numerous property types.

EDUCATION/TRAINING

B.S., Civil Engineering, University of Illinois 1989
Shallow Foundation Design, University of Missouri-Rolla 1992
Deep Foundation Design, University of Florida 1994
Environmental Chemistry, Illinois Institute of Technology 1996
Earth Retaining Structures, University of Delaware 2004

LICENSES/CERTIFICATIONS

Professional Engineer (PE) – Civil, State of AZ, DE, IL, IN, MD, MI, NC, NJ, NY, PA, TX, WI
LEED® AP (Legacy)
Certified Energy Auditor (CEA)
Certified Building Inspection Engineer (BIECI)
Photovoltaic Entry Level Certificate of Knowledge
40 Hour OSHA Hazardous Waste Op. Training
Ground Source Heat Pump Loop Installer

ASSOCIATIONS

Delaware Valley Green Building Council (DVGBC)
Association of Energy Engineers (AEE)

PUBLICATIONS/PRESENTATIONS

Nelson, Eric, and Shaw, Michael and Crelease, Charles, "Changes to Environmental Due Diligence – EPA's Draft All Appropriate Inquiry Rule" – NJPA Real Estate Journal, April 23, 2004

Nelson, Eric, "Property Condition Assessments – Going Beyond ASTM" – NJPA Real Estate Journal, March 11, 2005

Nelson, Eric, "Evaluating Sustainable Solutions" – Modern Contractor Solutions, October 2011

RELEVANT EXPERIENCE

Property Condition Assessment, ADA Assessment, Structural Review | 363 W. Erie, Chicago IL

Performed a detailed acquisition PCA on this iconic historical warehouse that had been converted to full floor office space in downtown location. Managed structural engineering review of the building that included evaluation of the structural condition, fire escape iron, exterior facades, and compliance with local Chicago laws. PCA included a detailed ADA review to determine compliance with existing requirements and developed an ADA plan for ownership to help enforce ADA compliance for future projects. Costs developed for longer term capital projections were vetted by soliciting contractor proposals for confirmation of budgetary values.

Property Condition Assessments | STORE Portfolio (75 Sites).

75 site, 13 state Property Acquisition PCAs - Properties ranging from Florida to Oregon and Minnesota to Mississippi. Led a team that completed all of the site visits in a four-week period and submitted reports for client review for all sites within six weeks. Evaluations were complicated by the multiple lease arrangements and differencing maintenance responsibilities between tenant and landlord at various sites. Reporting focused on areas of immediate and short-term concern, and repair estimates were provided for each individual site. In addition a tabulated spreadsheet consolidating concerns within the portfolio was provided and indicated sites of greatest concern based on a custom developed Facility Condition Index.

Property Condition Assessments , ESA | Three Iconic High Rise Buildings, Boston and NYC

VERTEX mobilized over 20 professionals, including registered architects, engineers, electricians and mechanical and environmental specialists to evaluate the structure, facade, roof, mechanical systems, electrical systems, plumbing systems, fire / life safety systems, elevator systems and ADA compliance at each facility. A detailed environmental Phase I evaluation was also performed at each site. A VERTEX project manager at each site organized team members facilitated tours of the property and interfaced with the current management at each facility in order to meet strict project deadlines. The evaluations including detailed cost estimates for immediate repairs and longer term capital needs were completed on time and on budget within a three week time period, providing the Client with valuable decision making information.

Property Condition Assessments | Industrial Portfolio, Charlotte, NC.

Evaluation of three industrial warehouse and distribution buildings with an aggregate floor area in excess of 375,000 square feet. Performed a complex evaluation of moisture conditions within an occupied portion of one of the facilities, and developed budgets for over \$200,000 in needed Immediate Repairs. In addition, we estimated budgets for over \$1 million dollars in future Capital Reserve Costs. This information was utilized by the Client to assist in negotiating better terms and purchase prices for the various structures. In addition, our Energy Audit of the facilities recommended energy conservation measures including lighting upgrades, re-application of building sealants and HVAC upgrades with estimated paybacks of nearly \$50,000 annually.

Property Condition Assessments | New York State School Districts; Institutional.

Mr. Nelson developed a PCA School evaluation program. He managed field personnel, authored reports, provided peer review, and provided client follow-up services for State-required evaluation program of NYS School Conditions for multiple districts. Mr. Nelson also developed reporting

methodology and format for transfer of collected data to meet and exceed requirements for NYS School 5-year Capital Needs Plan for nearly 3 million square feet of school space.

Property Condition Assessment | LaFayette Center, Boston, MA (for Investor).

Mr. Nelson conducted a full-scale PCA 1997/98. The six-story office building included some limited retail space and contained a total floor area of 608,973 square feet. In addition to a 10-year Capital Needs Estimate, the report included estimates for general insurance replacement costs.

Facilities Assessment | Confidential Transaction, Philadelphia - (for Buyer).

Mr. Nelson conducted the assessment, coordinated and managed supplemental evaluations. This included managing structural, mechanical, electrical and foundation engineering professionals to complete a comprehensive due diligence assessment for a confidential buyer. This site was a confidential, historically designated site comprised of multiple buildings, totaling over 2 million square feet. Physical evaluation also included detailed records review and study of potential future uses of the complex.

Property Condition Assessment | Hilton Hotel, Cancun, Mexico - (for Buyer).

Mr. Nelson conducted a full evaluation of a full-service luxury hotel, conference and golf course facility in the resort area of Cancun, Mexico. The hotel included unique issues due to the corrosive climate, potable water standards, and differing standards and local requirements when compared to typical USA properties. The assessment also included full evaluation of FF&E including general cost estimates and replacement schedules for all items. The assessment also included a generalized cost estimate for total replacement of building and contents for insurance purposes.

REIT Acquisition Assessment | Clarion Partners - for Buyer & Lender).

Mr. Nelson conducted an overview evaluation of a 200+ property portfolio of industrial properties located throughout the United States. Evaluation included an extensive research period and records review at the seller's headquarters in order to provide a summarized report of all previous Phase I and PCA due diligence efforts associated with properties in the portfolio. Headed up the evaluation for a team of PCA professionals including determination of assessment criteria, review of reports, development of risk rankings, and development of a portfolio opinion of appropriateness for existing Replacement Reserve Capital Funds. Developed assessment protocols and managed field operations during specific portfolio property site visits designed to verify or deny portfolio assumptions. Worked with lenders and buyer during changing evaluation criteria to provide concise, timely and valuable opinions on overall quality of existing management and financial health.

Facilities Assessment | Centre Square, Philadelphia - (General Evaluation).

Mr. Nelson conducted an evaluation of the Centre Square Office Building located at 15th and Market Street in Philadelphia. The ASTM compliant evaluation was performed at the 2.2 million square foot, twin tower facility connected by a ground level Galleria, and underground parking levels. The assessment focused on site elements, mechanical, electrical, plumbing, roofing, façade, structural elements, elevators, fire protection systems, ADA compliance and interior finishes.

Property Condition Assessment | Barbizon Hotel, NYC – (for Buyer).

Mr. Nelson conducted the assessment for the acquisition of the New York City high-rise hotel. His analysis included performance of field assessment and supervision/coordination of subconsultants including electrical engineers and mechanical contractors. Mr. Nelson's analysis also assessed elevator maintenance costs of Single-Occupant-Rooms and in-depth cost estimating for future improvements.

Property Condition Assessment | 570 Lexington Avenue, NYC - (for Seller).

Mr. Nelson conducted an assessment related to the acquisition of a NYC 50-story high-rise office building. Areas of special assessment included detailed records review of the existing building code violations in NYC, analysis of electrical system capacity and adequacy, and thorough review of previously performed NYC local law 11 façade evaluations.

Property Condition Assessment | Mall of America, Minneapolis - (for Mortgage Co.).

Mr. Nelson conducted the assessment for the four million square foot shopping center including analysis of pavement, parking structures, foundations, superstructure, roofing, building exterior, mechanical, electrical, plumbing, and fire protection systems. Mr. Nelson performed the assessment on-time and on-budget.

Property Condition Assessment | Private Estate, New York – (Liquidation Evaluation).

Mr. Nelson managed the assessment of a confidential private estate for the purpose of evaluating present day value, estimated capital needs and deferred maintenance at the time of liquidation. Properties included in the 14-property portfolio included retail, office, and industrial facilities ranging in condition from good to condemnable.

Property Condition Assessment | Renaissance Park Office Complex; Tampa, Florida (Acquisition Evaluation).

Mr. Nelson performed an in-depth PCA of the office complex known as Renaissance Park in Tampa, Florida in 2006. The office park was constructed in the late 1990's and included five buildings with an aggregate floor area in excess of 550,000 square feet. In spite of the relatively new construction, Mr. Nelson identified serious roofing issues that assisted in the client's purchase negotiations.

Property Condition Assessment | West Park Industrial Complex, Orlando, Florida (Acquisition Evaluation).

Mr. Nelson performed PCAs and Limited Mold Assessments on a portfolio of eleven industrial facilities in Orlando, Florida. He worked in conjunction with the client's other consultants and identified nearly \$1,000,000 in deficiencies requiring correction prior to ownership transfer. Mr. Nelson also discovered extensive mold and water damage in a pair of buildings that the client was fully unaware of and provided budgetary estimates for remediation that were utilized to negotiate the purchase price of the portfolio.

Property Condition Assessment | Hilton Anatole Hotel, Dallas, Texas (For CMBS Markets).

Mr. Nelson performed a comprehensive PCA for the Dallas area's preeminent hotel and conference center in relation to a mortgage backed security for Crow Holdings and Bank of America. The complex included 10-, 13- and 26-story towers surrounded by low-rise supporting structures, amenities and vast site grounds. The hotel included 1,606 guest rooms and nearly two million capital needs items, including over \$3.5M in mechanical equipment needs assessments of nine separate roofs and twelve restaurants and bars.

Property Condition Assessment | 25-Site Industrial Building Portfolio (for Collateral Pool).

Mr. Nelson directed the Due Diligence efforts for the performance of PCAs on 25 separate properties in the Houston, Texas vicinity. Total square footage of space for the portfolio exceeded 3.7 million. Project was completed within three weeks in order to meet the aggressive closing schedule required by the client's lender.

Property Condition Assessment | Trump Casino Complexes, Atlantic City, New Jersey (for Lender).

Mr. Nelson performed PCAs on five Atlantic City area properties including the Trump Marina, Trump Taj Mahal and Trump Plaza Hotels and Casinos. PCAs were performed for a confidential lender evaluating a \$1 billion loan backed by the properties as collateral. The hotels included an aggregate of 2,882 guest rooms and over 9,000,000 square feet. Mr. Nelson identified over a half-million dollars of Deferred Maintenance items and over \$73M of long-term capital needs to assist the client in evaluating the value of the property in relation to the substantial loan.

Construction Progress Review | Henry Oliver Building, Pittsburgh, Pennsylvania (for Lender).

Mr. Nelson performed construction progress reviews for the renovation of a 25-story historical building in downtown Pittsburgh, PA. Monitoring program included regular field visits and evaluation of construction progress as measured against the contractor's request for payments, and securing of documentation to protect the interests of the lender throughout the duration of the project.

Existing Condition Survey | Town Square Project, Hartford, Connecticut (Hartford Civic Center).

Mr. Nelson performed existing "baseline" conditions survey of the area of surrounding the proposed construction of a 37-story residential tower prior to foundation excavation and a complicated construction sequence. The evaluation included identification of significant damage, cracking and other issues. It also included data collection by digital photography and continuous digital video monitoring. This project included surveys of the Hartford Civic Center Arena and associated parking garages, roofs, skylights, facades, site elements and interiors of buildings and structures surrounding the project area.

PRE/POST Construction Evaluation | Avalon Seawall Construction.

Mr. Nelson was responsible for the management, instrumentation and construction documentation project for Jay Cashman Construction and the US Army Corps of Engineers (USACE). Mr. Nelson managed a team of engineers performing pre-and-post construction condition surveys with continuous video documentation of nearly 60 residences and 50 condominium units. Mr. Nelson managed the engineers and technical personnel who performed continuous video documentation of the interior and exterior of the residences using handheld digital video cameras. He monitored of construction vibration was performed with portable seismograph equipment at multiple locations 24 hours a day, 7 days a week for nearly 18 months. Mr. Nelson also downloaded the results from the seismograph equipment on a weekly basis. He worked with the clients to modify the monitoring program and monitoring locations to provide meaningful data. Mr. Nelson's services also included plotting vibration data against maximum allowable vibration magnitudes and frequencies, comparing the results with established guidelines and specifications. Lastly, Mr. Nelson presented his findings to concerned residents at Town Meetings on behalf of the contractor and USACE.

PRE/POST Construction Evaluation | Number 7 Line Subway Extension – New York City.

Mr. Nelson was responsible for the management of pre- and post-construction building condition surveys. He accomplished this using photographic and video documentation of topside commercial structures located along and above the nearly two-mile tunnel route. He also managed engineers and technical personnel who performed documentation of the interior and exterior of each structure. Mr. Nelson designed, coordinated and implemented evaluation and observation protocols for complex structures on issues related to the tunneling.

Expertise

PCA
Energy Certified Efficiency Auditing
LEED Assessment & Certification
Phase I ESAs
Construction Due Diligence
Property Condition Assessments
ENERGY STAR Portfolio Manager
Green Building
Environmental, Social and Corporate Governance (ESG) Assessments
Peer Review
PCS
Letter of Reliance
Energy Disclosure
Enhanced Services
Carbon/Greenhouse Gas Management
Sustainable Energy Services
Energy Permitting & Feasibility Analysis

Erik Eichenlaub, CEM, LEED Green Assoc. | Senior Project Manager

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BIOGRAPHY

Mr. Eichenlaub has multiple years of experience in the due diligence practice. To date, he has been involved with over 1,200 properties totaling over 215 million square feet in over 45 US states, Mexico, China and Canada. Currently, Mr. Eichenlaub serves as a Senior Project Manager at VERTEX.

As a Project Manager at VERTEX, Mr. Eichenlaub is responsible for specific job functions related to Phase I Environmental Site Assessments (ESAs), Property Condition Assessments (PCAs), Property Condition Screens (PCSs), Energy Savings Investigations (ESIs), Environmental, Social, and Corporate Governance (ESG) Assessments, Mold Investigations, Construction Monitoring and other due diligence projects. Responsibilities include: performing peer reviews of PCA reports, providing mentorship and training, managing client relations, planning and managing large portfolios, conduct environmental site assessments, field investigation activities, assessments of ADA compliance, professional and technical report writing and composition, municipality research, cost estimation, capital reserve planning, and data analysis. Mr. Eichenlaub has worked on various types of sites including residential, commercial, and industrial properties.

When conducting a PCA, Mr. Eichenlaub evaluates typical building systems such as the building site, the building envelope, interior systems, roofing systems, mechanical systems, plumbing systems, electrical & lighting systems, structural systems, vertical transportation systems, life safety systems, and ADA compliance.

Prior to joining VERTEX, Mr. Eichenlaub had additionally gained experience working with AutoCAD and Autodesk Revit for a small architectural firm specializing in upscale residential design. Additional duties included preparing as-built drawings, evaluating architectural drawings, and conducting on-site inspections.

EDUCATION/TRAINING

B.S., Engineering, Philadelphia University 2012
M.S., Project Management, Missouri State University 2019

LICENSES/CERTIFICATIONS

Certified Energy Manager (CEM), State of PA
LEED Green Associate, State of PA
OSHA 40 Hazwoper
OSHA 10 Construction
ASTM E1527-13 Phase 1 Training

SPECIAL TRAINING

Radon Sampling - Multi-Family

ASSOCIATIONS

ASCE / American Society of Civil Engineering
AEI / Architectural Engineering Institute
SACC / Swedish American Chamber of Commerce - Philadelphia
AEE / Association of Energy Engineers
GPAEE / Greater Philadelphia Chapter of AEE



USGBC / U.S. Green Building Council
Green Building United

PUBLICATIONS/PRESENTATIONS

VERTEX Website Blog Post: "Simple Multi-Family Property Energy & Water Savings Opportunities"
November 2019

VERTEX Website Blog Post: "ESG - Environmental, Social, and Corporate Governance in Relation
to Commercial Buildings" April 2020

Highlights

Registered Architect MA Lic #9077

Expertise

PCA
Construction Defect
Civil Engineering
Structural
Architecture
Property Claim - Personal
Civil/Structural
Construction Due Diligence
Property Condition Assessments
Peer Review
Analysis
PCS
Consultation
Design Plans

Philip Russo, R.A. | Project Manager

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BIOGRAPHY

Mr. Russo is a Massachusetts Registered Architect with over 32 years of experience. He has extensive knowledge related to assessment, architectural design, code review, construction documents, specifications, project costs, project forecasting, and construction administration. He has worked on a wide range of building types, including public government buildings such as libraries and K-12 school buildings, as well as hospitals and healthcare facilities and other multi-functional buildings of numerous types. Currently, Mr. Russo serves as Project Manager at VERTEX.

Since 2002, he has been extensively involved in the development and review of Property Condition Assessments (PCAs), Property Condition Screens (PCS's), Mold Investigations, review of construction documents for constructability and other due diligence projects for projects of variable size and complexity throughout North America, Europe, Russia and India.

As Project Manager at VERTEX, Mr. Russo's responsibilities include building/site assessment, technical report writing, coordination of external contractors, ADA compliance, municipal research, cost estimating, capital reserve planning and engineering data analysis. Additional responsibilities include peer review and mentoring of junior staff.

EDUCATION/TRAINING

B. Arch, Bachelor of Architecture Degree (B-Arch), Boston Architectural College, Boston, MA 1984
Diploma, Diploma in Architectural and Civil Design, Porter School of Design, Rocky Hill, CT

LICENSES/CERTIFICATIONS

Registered Architect, State of MA
Roofing 101 Module 1: The Basics
Roofing 101 Module 2: Roof Systems Basics
Roofing 101 Module 3: Low-slope Roof Assemblies
Roofing 101 Module 4: Steep-slope Roof Assemblies
Roofing 101 Module 5: Roof Flashings and Accessories
Security Awareness Certificate of Achievement
Hazwoper 8-hour Refresher

SPECIAL TRAINING

United States Army; Joint United States Military Advisory Group and 121st Evacuation Hospital, Seoul, South Korea, Honorable Discharge