



Turkey Hill Elementary School

129 Northfield Road
Lunenburg, MA 01462

Property Condition Assessment

March 9, 2018

PREPARED FOR:

Town of Lunenburg
17 Main Street, P.O. Box 135
Lunenburg, MA 01462

PREPARED BY:

The Vertex Companies, Inc.
400 Libbey Parkway
Weymouth, MA 02189

PHONE 781.952.6000

VERTEX Project No: 48237



March 9, 2018

Town of Lunenburg
17 Main Street, P.O. Box 135
Lunenburg, MA 01462
Attn: Heather R. Lemieux

Re: Property Condition Assessment
Turkey Hill Elementary School
129 Northfield Road
Lunenburg, MA 01462
VERTEX Project No. 48237

Dear Ms. Lemieux:

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

Our work was conducted in general conformance with P.2489.17, dated September 29, 2017, 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.

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1.0 EXECUTIVE SUMMARY

The VERTEX Companies, Inc. (VERTEX) performed a Property Condition Assessment (PCA) of the Turkey Hill Elementary School located at 129 Northfield Road in Lunenburg, MA, on February 8, 2018. 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: | Turkey Hill Elementary School |
| Location/Address: | 129 Northfield Road, Lunenburg, MA 01462 |
| Construction Year(s): | 1967-1969 |
| Property Type: | Elementary School |
| Number of Units: | Not Applicable |
| Reported/provided Building Area (SF): | 67,573 (Client Provided) |
| Reported/provided Site Area (Acres): | Shared with adjacent properties (High School, and Middle School) |
| Surrounding Property Usage: | Education, retail, vacant land, agriculture, commercial, residential, recreational |
| Utility Service: | <p style="margin-left: 40px;">Gas: National Grid</p> <p style="margin-left: 40px;">Electric: Unitil</p> <p style="margin-left: 40px;">Water: Lunenburg Water District</p> <p style="margin-left: 40px;">Sanitary: Town of Lunenburg</p> <p style="margin-left: 40px;">Storm: Town of Lunenburg</p> |

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 (Immediate, ADA 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 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: | Turkey Hill Elementary School | # Buildings: | 2 |
| Site Location: | Lunenburg , MA | Est. Bldg Area, SF: | 67,573 |
| Building Age, yrs: | 49 | Eval. Term, Yrs: | 5 |
| Building Type: | School | Per SF replace cost: | \$243 |

| GENERAL CATEGORY | SUMMARY RATING | | | | # Items | Immediate Needs Estimate | # Items | Capital Needs Est., Uninflated |
|--------------------------------|----------------|---|---|----|----------|--------------------------|-----------|--------------------------------|
| | G | F | P | NA | | | | |
| SITE DEVELOPMENT | X | | | | 0 | \$0 | 2 | \$20,895 |
| BUILDING STRUCTURE | X | | | | 0 | \$0 | 1 | \$1,000 |
| BUILDING EXTERIOR | | | X | | 0 | \$0 | 6 | \$809,836 |
| ROOF | X | | | | 0 | \$0 | 2 | \$960,999 |
| BUILDING INTERIOR | | | X | | 1 | \$1,741,500 | 8 | \$791,388 |
| MECHANICAL SYSTEMS | | | X | | 0 | \$0 | 2 | \$2,149,999 |
| ELECTRICAL SYSTEMS | X | | | | 2 | \$5,872 | 2 | \$55,157 |
| PLUMBING SYSTEMS | X | | | | 0 | \$0 | 1 | \$53,720 |
| CONVEYANCE | | | X | | 1 | \$500 | 1 | \$13,699 |
| LIFE SAFETY / FIRE PROTECT | X | | | | 1 | \$1,000 | 1 | \$150,000 |
| ANCILLARY STRUCTURES | X | | | | 0 | \$0 | 0 | \$0 |
| OVERALL RATING / TOTALS | | | X | | 5 | \$1,748,872 | 26 | \$5,006,693 |
| ADA IMPROVEMENTS | | | | | 5 | \$39,345 | | |

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 aggregate costs for Immediate and Short Term Needs by a simply modeled replacement cost value weighted for each category and based on building type.

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

GOOD: 0 to 5 percent
FAIR: 5 to 10 percent
POOR: 10 to 100 percent

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

Overall Property FCI = 24%

For this site, estimated total replacement costs include the estimated abatement needs and a general demolition estimate, which would require verification through a more comprehensive sampling and testing program.



2.0 PURPOSE AND SCOPE OF SERVICES

2.1 PURPOSE

The purpose of the Property Condition Assessment (PCA) was to observe and document readily visible material and building system defects that might significantly affect the value of the property. The PCA 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 five years.

It is understood that the Client is considering the appropriate renovation or re-use of the property described in this report. The report will be utilized to assist with planning decisions, as well as provide information for future capital planning.

Observations performed during the PCA 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 PCA. 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 PCA included the following: site reconnaissance; limited interviews with property management and maintenance personnel; and a review of available construction documents as provided by the building management. Operational testing of building systems or components was not conducted. Although the building was visually reviewed for suspected hazardous materials, sampling was not conducted and thus, this PCA does not confirm the presence or absence of asbestos, polychlorinated biphenyls (PCBs), mold, or contaminated soils or groundwater on the property.

During the PCA, 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.

VERTEX utilized ASTM E2018-15 as a guideline for the evaluation of the building. This recognized assessment protocol gives specific guidance for the condition assessment of buildings and provides a framework for an objective and repeatable methodology from an independent assessor.

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.

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 PCA at the request of the client or as value added considerations.

- ★ The field observations were performed by registered professional staff
- ★ Determination of USGS Seismic Hazard and IRC Termite Zone
- ★ A Capital Needs Assessment with a term length of five-years was performed
- ★ A visual review of specific accessibility 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 following areas were not accessed, or access was limited during the site visit.

- ★ Roof (roof was accessed but visibility was limited due to snow cover)
- ★ Landscaping (due to snow cover)

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 PCA include total amounts for *Immediate Repair* items, *Short-Term Repair* items, and *Capital Needs*. A separate cost table (Table 2) is provided to address accessibility issues.

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 un-remedied 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 five years.

ADA/MAAB Items are those items that would be required to upgrade or update existing systems to provide improved accommodations for handicapped persons.

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 the aforementioned Immediate Repair items, Short-Term

Repair items, Capital Needs and ADA/MAAB 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.

Estimated costs were developed with published unit price data and industry experience as summarized below.

Estimating/Quantity Take Off: Costs for selected items were estimated based on provided documentation, general calculations of capacity, area, size or other item features, and VERTEX's experience with buildings of similar size, construction and geographic location.

Like-with-Like Replacement: This assessment was not an attempt to design or address future programming needs, but rather an objective, independent assessment of the current condition of the buildings with a focus on repair, renovation or replacement of building materials, components or systems that have reached or are expected to reach the end of their useful lives in the next five (5) years.

Primary Estimating Source: RS Means 2017 Commercial Cost Renovation Data was utilized as the primary resource and some costs were modified based on our local experience. Unit costs were standardized for the geographic area and for prevailing wage rates and a percentage escalation was added for uncertainty.

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, since some projected projects may not require general contracting or significant design, GC soft costs (overhead & profit, bond and insurance, general conditions), design fees, owners project management fees and other potential fees are not included in these estimates. 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 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 Property Condition Assessment (PCA) of the Turkey Hill Elementary School located at 129 Northfield Road in Lunenburg, MA, on February 8, 2018. Overall, the property and improvements appeared to be in good to fair condition with respect to age, use and location.

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 PCA was performed on December 13, 2017, by Philip Russo, R.A., Matthew Quigley, PE, and Jason Mohre, Brian Dunn, AIA, NCARB and Scott Katzer, PE., CFEI, all of VERTEX. Weather conditions during the site reconnaissance were as follows:

| On-site Date | Weather Description | Average Temp. |
|------------------|---------------------|---------------|
| February 8, 2018 | Sunny | 35° 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 building has functioned as an elementary school building since construction in 1967. Only minor renovations reportedly have been performed over the years. The building was reported to serve as an emergency shelter for the town residents.

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.

- Jack Rodriquenz, DPW Director, Town of Lunenburg (Site Contact)
- Adam Burney, Land Use Director, Town of Lunenburg
- John Londa, Director of Facilities, Lunenburg Public Schools

4.5 PRE-SURVEY QUESTIONNAIRE AND REQUEST FOR DOCUMENTATION

Due to ownership of the building and property by the municipality, VERTEX opted not to issue a Pre-Survey Questionnaire and Request for Documentation (PSQ). Information relating to the property history was obtained from other sources as documented in 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 # 2503150005B) | Federal Emergency Management Agency | June 15, 1982 | | ✓ |
| Building Assessment & Space Needs Study | Tappe Architects | January 11, 2016 | | ✓ |
| Construction Drawings | Stoner Associates Architects | April 20, 1967 | ✓ | |

4.7 MUNICIPAL RESEARCH & CODE COMPLIANCE

A detailed analysis of whether or not the building and site is 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) 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.

4.8 SITE CHARACTERISTICS

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

Topography

The property was relatively flat, with crowns in pavements and landscaped areas provided for runoff of surface water.

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 C, defined as an area of minimal flooding.

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 located in Seismic Zone:

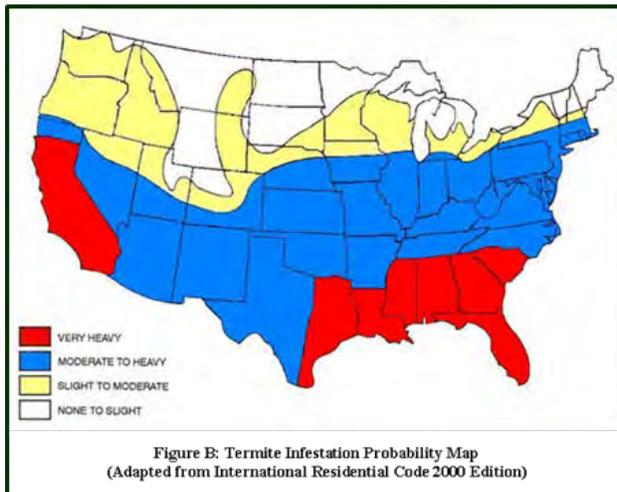
2A

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.

5.0 SYSTEM DESCRIPTION AND CONDITION

The following sub-sections describe the major building systems as observed during the PCA. 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 the west side of Northfield Road. The site was easily accessible from major area roadways. The site was located within five miles of Route 2. | G | |
| Parking | The property was snow covered at the time of our assessment. A few areas of exposed paving were observed and indicated areas of asphalt paving. Parking was provided on open surface lots on the east side of the building. Painted striping was provided to delineate parking stalls and directional markings. The site had a reported total of 69 surface parking spaces, two of which were specifically designated for handicapped use. | G | |

| SITE IMPROVEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--------------------|---|---------------------|--|--|--------------------|--|----------|--|-------------------|--|-------------------|--|---------|--|---------------------|--|--------------|--|--------------------|---|---------------|--|-----------|--|---------|--|-------------------|---------------------------------|--|--|--|--|--|---|--|--|--|--|--|--------|------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Asphalt Pavements | <p>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.</p> <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 border="1"> <thead> <tr> <th colspan="5">Observed ASPHALT Pavement Deficiencies</th> </tr> </thead> <tbody> <tr> <td></td> <td>Surface Weathering</td> <td></td> <td>Potholes</td> <td></td> <td>Transverse Cracks</td> </tr> <tr> <td></td> <td>Loss of Aggregate</td> <td></td> <td>Rutting</td> <td></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></td> <td>Heaving</td> <td></td> <td>Vegetation Growth</td> </tr> <tr> <td colspan="6">Conditions Observed were: Minor</td> </tr> <tr> <td colspan="6">Extent of observed deficiencies: Isolated Areas</td> </tr> </tbody> </table> <p><i>We did not observe any asphalt conditions that appeared to require immediate repairs; however, 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 | | | | | | Surface Weathering | | Potholes | | Transverse Cracks | | Loss of Aggregate | | Rutting | | Longitudinal Cracks | | Map Cracking | | Alligator Cracking | X | Random Cracks | | Birdbaths | | Heaving | | Vegetation Growth | Conditions Observed were: Minor | | | | | | Extent of observed deficiencies: Isolated Areas | | | | | | G to F | 1, 2 |
| Observed ASPHALT Pavement Deficiencies | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Surface Weathering | | Potholes | | Transverse Cracks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Loss of Aggregate | | Rutting | | Longitudinal Cracks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Map Cracking | | Alligator Cracking | X | Random Cracks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Birdbaths | | Heaving | | Vegetation Growth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conditions Observed were: Minor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Extent of observed deficiencies: Isolated Areas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Concrete Pavements | Not Applicable. | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sidewalks | The property was snow covered at the time of our assessment. A few areas of exposed sidewalk were observed and indicated areas | G | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| SITE IMPROVEMENTS | | | |
|-------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>of asphalt at the sides and cast-in-place (C-I-P) concrete at the front building entrance.</p> <p><i>The observed asphalt and concrete sidewalks appeared to be in good overall condition requiring routine cleaning, repairs and maintenance during the evaluation term.</i></p> | | |
| Curbs | <p>Concrete and extruded asphalt curbing was installed around the east side of the site.</p> <p><i>The curbing appeared to be in good overall condition requiring routine maintenance during the evaluation term.</i></p> | G | |
| Fencing | <p>A chain link fence was observed at the southeast corner of the property at the playground. The fence provided security.</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 | Not Applicable. | N/A | |
| Drainage | <p>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.</p> <p><i>Rooftop drain discharges, inlets and drainage collection structures were visible, free from debris, and appeared to be in good overall condition. Regular inspection and maintenance of drainage components and clearing of the inlets and drainage paths will be required during the evaluation term as part of routine maintenance.</i></p> | G | |
| Utilities | Electric, water, natural gas, sanitary and storm sewer services were provided to the site. | G | |

| SITE IMPROVEMENTS | | | |
|-------------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <ul style="list-style-type: none"> • Water provider: Lunenburg Water District • Electric provider: Unitil • Natural gas provider: National Grid • Sanitary sewer provider: Town of Lunenburg • Storm sewer provider: Town of Lunenburg | | |
| 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 above the secondary entrance doors.</p> <p><i>The site lighting fixtures appeared to be in good overall condition. VERTEX did not visit the site at night to observe the operation of the site lighting.</i></p> | G | |
| Landscaping | <p>The property was snow covered at the time of our assessment. A few areas of exposed landscaping were observed and indicated areas of grass and shrubs along the perimeter of the building.</p> <p><i>The observed landscaping elements appeared to be in good overall condition and were well-maintained.</i></p> | G | |
| Recreational Facilities | <p>The site was furnished with a playground. The playground was located in the southeast corner of the site and had a limited amount of chain link fencing at its perimeter. The equipment included climbing bars, swings, slides, poles and bleachers. The equipment was constructed of vinyl-coated metal.</p> <p><i>The recreational areas and associated equipment appeared to be in good overall condition requiring routine repairs and general maintenance during the evaluation term.</i></p> | G | |

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>According to the provided foundation plans, the building's foundation system consisted of conventional strip and spread footings with steel reinforcement. The exterior concrete masonry unit (CMU) and brick masonry walls bear on the concrete foundation along with the steel columns. 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> <p><i>We observed exposed rusted steel reinforcing and spalled concrete on the front of the building at the corner of the gymnasium. The exposed reinforcing had minor surface rust and did not appear to have loss of section. The exposed reinforcing is not an immediate structural concern; however, we recommend the reinforcing be cleaned and the concrete patched to prevent accelerated deterioration.</i></p> | G | 3 |
| Floors | <p>The building was constructed with a cast-in-place concrete floor slab at the grade level. According to the building plans, the floor section consisted of a cast-in-place concrete slab 3-inches in thickness. The slab was placed over a vapor barrier, which was underlain by tamped</p> | G | |

| BUILDING STRUCTURE & SHELL | | | |
|----------------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>fill. The slabs reportedly were reinforced with 6-inch by 6-inch welded wire mesh.</p> <p>The upper floor consisted of composite floor deck systems with metal lath and 2 1/2-inch thick cast-in-place concrete slabs reinforced with 6-inch by 6-inch welded wire mesh. The floor systems typically were supported by open web structural steel joists.</p> <p><i>The floor slabs 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> | | |
| Super-structure | <p>Based on our review of provided documents, the building structure consisted of a structural steel frame, with a cast-in-place concrete floor slab at the lowest level. At the exterior walls, the concrete masonry units (CMU) was infilled between the steel columns.</p> <p>The roof deck consisted of a combination of metal deck and tectum panels supported by steel bulb tees. The roof decks were supported by open web steel joists and steel trusses.</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> <p><i>At a stairwell leading down to the gymnasium we observed several cracks in the CMU wall. The CMU wall was an interior partition wall and did not appear to be load bearing. The minor cracks are not a structural concern at this time.</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 with exposed aggregate panels as accents in the fenestration bays. The connecting corridors and front entry area were clad with metal storefront systems. The brick walls were topped with metal fascias.</p> <p><i>The observed wall assemblies and trim elements appeared to be in good condition in most areas. We did observe significant areas of damage or deterioration and evidence of wall leakage was reported and observed at the interior and south façade of the gymnasium wing. According to the Site contact, John Londa, the gutters were removed from the gymnasium around 2010 as there were issues with the gutters and leaders becoming detached and striking light fixtures below. Since the gutters were removed water has been flowing over the clerestory window assemblies and appears to have resulted in multiple water leaks at the precast concrete sills. (Photos 154-163). Snow guards were installed to prevent ice falling but the water infiltration issue remained. Deterioration of the window sills, the metal clerestory frames, and the masonry below (interior and exterior) are in need of repair early in the evaluation term. A budgetary estimate of cost is provided in Table 1.</i></p> <p><i>A similar condition exists at the northwest corner of the Cafetorium wing. The precast concrete clerestory sill appears to be suffering from spalling and deterioration of the mortar at the intersection with the brick wall below, most likely due to water infiltration at the sill. (Photos 164-167). The precast concrete sill joints appear to be protruding outboard of the wall plane at the location of the window</i></p> | F | 4 |
| | | | |

| BUILDING EXTERIOR | | | |
|-------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p><i>framing with missing mortar and damage to the underside of the sill evident in Photo 166. A budgetary estimate of cost is provided in Table 1.</i></p> <p><i>VERTEX did observe some damage and areas of potential water infiltration at the fascia at the top of the metal storefront systems in the connecting corridors and the front administration area. (Photos 170-175). The bus drop-off canopies appear to have some limited water intrusion most likely due to the roof draining system in that area. VERTEX recommends that these repairs be made as soon as possible to prevent water infiltration into the wall assemblies and canopy structures. A budgetary estimate of cost is included in Table 1.</i></p> | | 11 |
| 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 joints appeared to be flexible and smooth; however, the caulk appeared to be somewhat discolored and somewhat chalky in texture. Due to the estimated RUL of the sealants, replacement should be anticipated during the evaluation term. A budgetary estimate of cost is included in Table 1.</i></p> <p><i>Observed caulk joints at wall penetrations (window and door openings) appeared to be cracked and brittle with significant deterioration and failure. Replacement will be required early in the evaluation term. A budgetary estimate of cost is provided in Table 1.</i></p> | P | 5 6 |
| Windows | <p>The windows for the building were comprised of three primary types; the classroom windows (fixed middle lite with operable hopper windows above and below), the clerestory windows at the gymnasium and cafetorium wings, and the metal storefront systems at the main entry and the connecting corridors. All of the window systems appear to be from the original construction of the building. It is recommended that all of the windows be replaced based on their</p> | P | |

| BUILDING EXTERIOR | | | |
|--------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>age, condition and lack of insulated glass units. See above for additional comments regarding the clerestory windows.</p> <p><i>The window units appeared to be in fair to poor overall condition and have surpassed their useful lives. Many of the units appeared to require significant repairs and renovations to make them operable. Based on the age, apparent condition and estimated RUL of the windows, replacements are recommended during the evaluation term. A budgetary allowance for replacement of windows with insulated glass alternatives is presented in Table 1.</i></p> | | 7, 8, 9 |
| Exterior Doors | <p>The main entrance doors to the building typically were hollow metal style swing doors with half glass vision panels set in metal frames. Metal service doors provided building access at the back-of-house areas and at the secondary building entrances.</p> <p><i>The exterior entrance doors and the associated storefront systems appeared to be in good condition. While the doors were in good condition VERTEX observed a lack of appropriate weather stripping at each door that will significantly add to energy consumption. It is recommended that weather stripping be added at each door. Due to the minimal aggregate quantity and associated cost, this item is considered to be routine maintenance.</i></p> | G | |
| Porches | Not Applicable. | N/A | |
| Exterior Stairs | <p>Exterior stairs were observed on the east facade and were constructed of concrete assemblies with closed risers and metal handrails. <i>The exterior stairs appeared to be in good condition requiring routine repairs and maintenance during the evaluation term.</i></p> | G | |

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>Safe access to the roof areas was not provided to VERTEX as the result of an ice storm that occurred during the previous day and evening. As a result, we used information gained from aerial photographs, observations from the ground, building interior observations, lower roofs observed from adjacent upper floor level, and information provided from the Site Contact to assess the roof conditions. VERTEX did gain access via a roof hatch in the classroom wing but was unable to safely maneuver around the roofs.</p> <p>The low-slope/flat roof system at the building was constructed of metal decking supported by open-web steel joists. The roof covering appeared to be an EPDM elastomeric single-ply roofing membrane but was unconfirmed due to the ice and snow that covered the roofs. According to the Site Contact the roofs were installed in sections between 1996 and 1998 with the gymnasium roof installed in 1998.</p> <p>The roof generally had metal base and edge flashing that was installed over the top of the original edge flashing. At low roof to wall intersections it appeared that the flashing was the original copper flashing.</p> <p>Pitched roofs at the gymnasium wing of the building were supported with steel framing. The roof covering appeared to consist of asphalt roll roofing (from aerial photos). See above for issues pertaining to</p> | P | |

| ROOF | | | |
|------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>the removed gutters and subsequent damage at the south façade of the Gym.</p> <p>We requested a copy of the warranty, but none had been provided at the time of this report. Any active warranties should be provided, so that transfer provisions and warranty limitations can be reviewed.</p> <p>According to the Site Contact an annual roof inspection is performed by a local roofer who inspects the roofs and performs minor repairs/maintenance as deemed necessary.</p> <p><i>No evidence of active leaks was observed, and no active leaks were reported. We did not observe evidence of staining or deterioration of interior finishes attributable to former (historical) roof leaks. Based on the age, observed condition and estimated RUL of the roof covering, replacement should be expected during the evaluation term. An estimated cost for this item is included in Table 1. Roof replacement costs were escalated by 25 percent due to removal and re-installation of existing solar panel array at the time of roof replacement.</i></p> | | 10 |
| Roof Drainage | <p>The 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. Due to the roof being covered in ice visual inspection was limited.</p> <p>The Gym roof was equipped with perimeter gutters and downspouts, which discharged to the landscaped areas and paved areas at the base of the exterior walls. See above for issues pertaining to the south facade of the gymnasium wing.</p> <p><i>The roof drains appeared to be functioning adequately. Ponding water or evidence of significant ponded areas was not observed on the roof. According to the Site Contact there were no current or recent</i></p> | F | |

| ROOF | | | |
|------------------------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <i>issues (outside of the south Gym wall as previously discussed above) that were associated with the roof drainage.</i> | | |
| Skylights & Roof Accessories | <p>The building included two glass skylights over the stairways at the ends of the corridors. They appeared to be in good condition with no reports of leaks.</p> <p>Two solar arrays located on the Classroom wing and the Administration Area (Photos 179 and 183) were located on the building roof. Due to the ice and snow visual inspection of the panel systems was limited.</p> <p>Reportedly, the solar arrays were installed and are owned by Nexamp under a 15-year agreement. The panels were installed and came on line in June of 2010 and the agreement terminates in 2025, where at that time the ownership of the panels become the property of the school district. The school district reportedly pays an escalation fee of three percent per year for the cost of electricity from the panels and locks in the cost at the 10-year mark. Currently the school pays 8.8 percent per kw (in year eight). Reportedly the agreement allows for a one-time removal and re-installation of the panels (at Nexamp's expense) during the 15-year agreement for the purpose of replacing the roofing system (there are currently seven years remaining).</p> | F | |
| Roof Access | <p>Fixed access was provided via a wooden ships ladder through a roof hatch in the second-floor custodial room of the Classroom wing. It is recommended that the wooden ladder be replaced with an appropriately sized metal or fiberglass ladder system.</p> <p><i>Due to the minimal aggregate quantity and associated cost, this item is considered to be routine maintenance.</i></p> | F | |
| 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 # |
| Public Areas | <p>Public areas at the building included corridors, lobby and administration offices. Public area interior finishes at the building included a mixture of the following.</p> <p>Floor Coverings: Resilient tile/ Vinyl asbestos tile, slate</p> <p>Wall Coverings: Painted CMU, ceramic tile, slate and exposed brick</p> <p>Ceiling Coverings: Painted plaster/drywall, suspended grid with acoustical ceiling tile</p> <p><i>The interior components within the public areas appeared to be in generally good to fair overall condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including replacement of vinyl asbestos floor tile and older ceiling systems (concealed spline</i></p> | G to F | 12, 13, 14, 15, 17 |

| BUILDING INTERIOR | | | |
|------------------------|---|-----------------|------------------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <i>with acoustical tiles), re-painting of CMU wall finishes and re-staining of wood casework, paneling and doors.</i> | | |
| Administrative Offices | <p>Finishes in the offices were reportedly replaced in 2016-2017 and include new VCT, carpet squares, acoustical ceiling tiles and lighting fixtures. Other finishes included painted CMU walls with some stained wood paneling/casework, and painted plaster ceilings.</p> <p><i>The interior components within the office areas appeared to be in generally good condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including re-staining of wood casework, paneling and doors.</i></p> | G to F | 15 |
| Classrooms | <p>Finishes in the classrooms typically were resilient tile/vinyl asbestos tile floors, glaze faced and painted CMU walls with some stained wood paneling and suspended acoustical ceiling systems and painted plaster ceilings. Some of the classrooms were furnished with (wood) folding partitions.</p> <p><i>The interior components within the classrooms appeared to be in generally good to fair overall condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including replacement of vinyl asbestos floor tile, concealed spline ceiling systems and a folding partition, re-painting of CMU wall and plaster ceiling finishes and re-staining of wood casework, paneling and doors.</i></p> | G to F | 12, 13, 14, 15, 16, 17 |
| Kitchen-Cafetorium | <p>Finishes in the Kitchen-Cafetorium typically were vinyl asbestos tile (Cafetorium) and quarry tile flooring (kitchen), painted CMU walls (Cafetorium) and glaze-faced CMU (kitchen), and exposed underside of structure above with acoustical panels (Tectum). The cafetorium included a stage with a stained wood floor. The kitchen included stainless steel shelving and food preparation</p> | G to F | |

| BUILDING INTERIOR | | | |
|-------------------|--|--------------------|-------------------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>tables and had commercial appliances including reach in coolers, freezers, ranges, ovens, cooktops other assorted equipment.</p> <p><i>The interior components within the kitchen-cafeterium appeared to be in generally good to fair overall condition; however, based on the age and RUL of the finishes, renovation should be expected during the evaluation term including replacement of VAT flooring and re-painting of CMU walls.</i></p> <p><i>The majority of the kitchen appliances and walk-in freezer and cooler were newer and appeared to be in generally good condition. Based on the RUL of appliances, some replacements should be expected during the evaluation term. A budgetary allowance for selected replacement of cost for this item is included in Table 1.</i></p> | | <p>12, 14</p> <p>19</p> |
| Gymnasium | <p>Finishes in the gymnasium typically was stained wood strip flooring, painted CMU walls, and exposed underside of structure above with acoustical panels (Tectum). The gymnasium included folding bleachers and a folding partition.</p> <p><i>The observed interior finishes in the gymnasium appeared to be in good condition however; based on the observed condition, age and estimated RUL of the painted surfaces, renovation of walls including cleaning and painting will be required during the evaluation term. A budgetary estimate of cost is provided in Table 1.</i></p> | G | 14 |
| Locker Rooms | <p>Finishes in the Girls and Boys Locker Rooms typically were quarry tile flooring, painted CMU walls, and painted plaster ceilings.</p> <p><i>The interior components within the locker rooms appeared to be in generally good to fair overall condition; however, based on the age and condition of the finishes, renovation should be expected</i></p> | G to F | 13, 14 |

| BUILDING INTERIOR | | | |
|-------------------|--|-----------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <i>during the evaluation term including re-painting of CMU walls, lockers and plaster ceilings.</i> | | |
| Corridors | <p>Finishes in the corridors typically were resilient tile/vinyl asbestos tile flooring, glaze-faced CMU, painted CMU, and acoustical ceiling tiles (newer 2 x 2 and older concealed spline with acoustical tiles). The corridors included painted metal lockers.</p> <p><i>The interior components within the corridors appeared to be in generally good to fair overall condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including replacement of VAT flooring and older ceiling systems and re-painting of CMU walls and metal lockers.</i></p> | G to F | 12, 14, 15, 17 |
| Stairs | <p>Observed stairs were constructed with steel assemblies with closed risers and metal handrails. The stairwells typically had glaze-faced CMU walls and concrete treads with steel nosing's.</p> <p><i>The interior components within the stairway appeared to be in generally good to fair condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including replacement of concealed spline acoustical ceilings and VAT flooring.</i></p> | G to F | 12, 17 |
| Restrooms | <p>Typical restroom finishes at the building included quarry tile flooring, glaze-faced CMU walls and painted plaster ceilings. Toilet rooms included composite toilet partitions.</p> <p><i>The restrooms appeared to be in good to fair condition; however, based on the age and condition of the finishes, renovation should be expected during the evaluation term including re-painting of ceilings.</i></p> | G to F | 13 |

| BUILDING INTERIOR | | | |
|-----------------------------------|--|-----------------|-------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| Interior Doors | <p>Typical interior door assemblies included solid core stained wood doors in steel frames with accessible hardware. Reportedly all of the hardware was upgraded with accessible hardware in 2008.</p> <p><i>The interior door assemblies appeared to be in generally good to fair overall condition. However, based on the age and condition of the assemblies, replacement of some of the assemblies should be expected during the evaluation term. A budgetary estimate of cost for this item is included in Table 1.</i></p> | G to F | 18 |
| Hazardous Material Considerations | <p>As part of this assessment, VERTEX conducted a general, visual survey for hazardous materials. The findings of that assessment are included in a letter report attached in Appendix C.</p> <p><i>The letter report provides some general order of magnitude costs for next steps and actions that will be required prior to renovations. The aggregate sum of these items is included in Table 1 as an immediate repair.</i></p> | | 20 |

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>The building did not have a central air conditioning system. Selected classroom and office spaces were cooled by window units approximately 8000 BTUH in size. According to the Site Contact, the units are approximately 10-15 years old.</p> <p>The facility utilizes AHU's to provide heating and ventilation airflow for the gym, cafeteria and office areas. Each AHU is located either above the ceiling of the corridors or suspended from beneath the roof structure within the facility. Specific nameplate data was not available but according to available mechanical drawings and discussions with the Site Contact, the AHU's are rated for approximately 5,000 to 10,000 cubic feet per minute (cfm) each and manufactured in 1967. Each AHU was reported to have a supply and exhaust fan plenum section; hot water heating coil section and a filter section typically with 1-inch thick pleated filters.</p> <p>The AHU located in the Boiler Room was reported by the Site Contact to be abandoned.</p> <p>Cabinet type unit ventilators provide heating and ventilation airflow in their respective classroom areas. Ceiling unit ventilators and exhaust fans provide heating and ventilation airflow in the classroom corridors. The unit ventilators were typically manufactured by Trane in 1967.</p> <p><i>The observed interior ventilation air handling units appeared to be in fair to poor condition with evidence of general wear, corrosion and noisy operation. Due to the age, observed condition and estimated RUL of the observed units, replacement of the AHU equipment and associated components is expected during the evaluation term. A budgetary estimate of cost for HVAC replacements is included in Table 1.</i></p> <p><i>It should be noted that the current location of a majority of the AHU's is such that access to this equipment for routine maintenance</i></p> | F to P | 21 |

| MECHANICAL SYSTEMS | | | |
|--------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p><i>is extremely difficult. In addition, should major work be required such as replacement of coils and/or fan assemblies, it will likely be required to remove and replace portions of the adjacent ceilings and/or interior walls to access the respective equipment. This equipment should be relocated to a mechanical room or an appropriate easily accessible ground location at such a time when the equipment is to be replaced. In addition, except for select wall air conditioning systems, no central air conditioning system was provided at the building. Should a central air conditioning be desired for the facility, new mechanical equipment and space to install this equipment as well as upgrades to the electrical system to support such equipment will be required. Due to the various types, configurations and locations for such equipment as well as potential reconfiguration of select spaces to accommodate new HVAC equipment and upgrade of the electrical system, associated costs for these types of issues cannot be predicted, and no budget is included for them Table 1.</i></p> <p><i>The observed window units appeared to be in good to fair condition with evidence of general wear. Due to the age, observed condition and estimated RUL of the observed units, replacement is expected during the evaluation term. Due to the limited aggregate quantity, this item is considered Routine Maintenance.</i></p> | | |
| Heating | <p>Two (2) gas-fired hot water boilers, each located in its respective boiler room provide heating hot water to respective ventilation AHU, baseboard radiators and cabinet unit ventilator heating coils. Information regarding each boiler per available nameplate data and discussions with the Site Contact are as follows:</p> <ul style="list-style-type: none"> • Boiler 1 – Dual fired (natural gas/fuel oil) high efficiency boiler, manufactured by Buderus in 2004. 2,309 MBH input / 1,951 MBH output • Boiler 2 - Gas-fired condensing boiler, manufactured by Viemann in 2002. 1,726 MBH input / 1,498.6 MBH output | G to F | |

| MECHANICAL SYSTEMS | | | |
|--------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>Heating hot water is distributed to the hot water coils via a total of four (4) base mounted hot water pumps located in the Boiler Room each manufactured by TACO and installed around at the same time of their respective boiler installation in 2002 and 2004. Two (2) of the pumps are rated for 7.5 horsepower (hp) each. The other two (2) pumps are rated for 3 (hp) each. Each pump is controlled via its respective variable frequency drive (VFD) which was reported to have been installed in 2015.</p> <p>Each boiler is routinely inspected by Combustion Service Company of New England. According to the inspection tags, the last inspection occurred on 7/20/2017.</p> <p>Four (4) 375-gallon fuel oil storage tanks were located in the Boiler Room. According to the Site Contact, these tanks are not utilized.</p> <p><i>The condition of the ventilation AHUs is discussed above in Section 5.6, Mechanical Systems, Air-Conditioning.</i></p> <p><i>The observed boilers and hot water pumps appeared to be in good overall condition requiring routine inspection and maintenance during the evaluation term.</i></p> <p><i>The hot water baseboard radiators appeared to be in good to fair condition. Due to the age and estimated RUL of the units; replacement is expected during the evaluation term. A budgetary allowance of cost for these items is included in Table 1.</i></p> | | 22 |
| Ventilation | <p>Mechanical ventilation to the classrooms was provided by the various ventilation AHU's and associated exhaust fans. Ventilation was supplied to each corridor via operable windows located in the respective area and exhausted via wall mounted exhaust grilles located within each corridor to exhaust fans located on the roof.</p> | G to F | |

| MECHANICAL SYSTEMS | | | |
|--------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>Bathrooms were provided with exhaust by powered centrifugal ventilation units mounted on the roof.</p> <p>The cafetorium kitchen was equipped with an exhaust hood with discharge at the roof level through a fan powered central duct. The hood was last inspected by Cochrane Ventilation, Inc. in August 2017.</p> <p>Passive ventilation was provided by operable windows and natural air infiltration.</p> <p><i>Additional information relating to the condition of the ventilation AHUs is discussed above in Section 5.6, Mechanical Systems, Air-Conditioning.</i></p> <p><i>Indoor air quality was not studied as part of this assessment. Observed exhaust and air movement equipment appeared to be in good to fair condition. Renovation of selected ventilation equipment including fan motor replacement, lubrication and general repairs should be expected throughout the evaluation term as part of Routine Maintenance.</i></p> | | |
| Control Systems | <p>The heating equipment was generally controlled by wall mounted analog thermostats.</p> <p>The building utilizes a JAVA web-based operating system. The original building utilized pneumatic controls which were reportedly replaced with DDC in 2004 for the Boiler Room equipment only. According to the site contact the system allowed for central station manipulation and set-point temperatures of the boilers and on-off times of the larger ventilation (AHU). The existing radiators, unit ventilators, air handling units and exhaust fans operate via pneumatic controls.</p> | G to F | |

| MECHANICAL SYSTEMS | | | |
|--------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <i>The observed control systems appeared to be in good overall condition. Installation of updated software and additional programmable controls at the time major equipment is replaced could offer a measure of improved control and building comfort as well as energy savings.</i> | | |

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 | Power was supplied via underground lines from a pad-mounted transformer located outside the building. | G | |
| Main Switchgear | The switchgear units were located in the main electrical area located on the mezzanine level above the Boiler Room. The main electrical service switchgear provided 1,200-amp, 240/120-volt, 3-phase, 4-wire, alternating current (AC). Existing equipment observed was manufactured by Square D and reportedly was original to the building. A photo-voltaic (PV) solar array installed in 2010 was located on the roof of the building and provides up to 106 KW of electrical | G to F | |

| ELECTRICAL SYSTEMS | | | |
|--------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>power to the facility. According to the Site Contact, the solar system is owned and maintained by Satcon Solstice as part of a Power Purchase Agreement.</p> <p><i>The electrical equipment appeared to be in good condition, but has not been inspected, tested or serviced in recent years. As such, a thermographic inspection and associated repairs should be performed by a qualified electrician. An estimated cost for this type of inspection is included in Table 1 as an item of Immediate Repair. It should be noted that following the inspection, recommended actions may result in required shutdown of selected equipment for repairs, tightening of lugs or other maintenance related procedures. Associated costs for these types of issues cannot be predicted, and no budget is included for them Table 1.</i></p> | | 24 |
| | <p><i>The electrical equipment generally appeared to be in good condition but somewhat dated. The building is considered to have adequate capacity and power available for the current occupancy. The main electrical gear was accessible and was free from debris or stored materials. Due to the age of the existing original equipment, upgrade of the existing Square D electrical equipment should be anticipated during the evaluation term. Budgetary costs are included in Table 1.</i></p> <p><i>Should a central air conditioning and/or upgrades to existing life safety systems (i.e. fire sprinkler, fire alarm, etc.) be desired for the facility, upgrades to the electrical system to support such systems will be required. Due to the various types, configurations and locations for such equipment as well as potential reconfiguration of select spaces and upgrade of the electrical system, associated costs for these types of issues cannot be predicted, and no budget is included for them Table 1.</i></p> | | 25 |

| ELECTRICAL SYSTEMS | | | |
|----------------------------|---|--------------------|-----------------------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| Electrical Distribution | <p>Existing equipment observed was manufactured by Square D and reportedly was original to the building. Secondary electrical panels were observed at various locations in the building. Some electrical starters for exhaust fans were observed to be manufactured by GE.</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 and Romex.</p> <p><i>Missing breaker spare covers were observed in the electrical panel located in the Girls Locker Room area. Immediate engagement of a qualified electrician is required to correct these issues as a measure of improved safety. A budgetary estimate is included in Table 1 as an Immediate Repair.</i></p> <p><i>The electrical panels located in the Kitchen area were observed to be blocked by storage materials. This storage should be removed to allow clearances to associated electrical panels. A budgetary estimate is included in Table 1 as an Immediate Repair.</i></p> <p><i>Based on the age and condition of the distribution wiring, replacements should be anticipated during any future renovation as a measure of improved safety.</i></p> | G to F | 23 Included in 23 |
| Interior Lighting | <p>Lighting fixtures within building common areas and in office spaces typically were surface mounted fluorescent fixtures. Lighting in the classroom corridors were typically wall mounted or built-in fixtures installed above the lockers. Observed fluorescent units primarily included T-8 lamps with electronic ballasts. Lighting within the Gym area consisted of T-5 lamps.</p> | G to F | |

| ELECTRICAL SYSTEMS | | | |
|--------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <p>According to the Site Contact, the corridor lighting is budgeted to be replaced with LED fixtures in 2018.</p> <p><i>Lighting fixtures appeared to be in good overall condition requiring routine inspection, repairs and maintenance during the evaluation term but observed older fixtures and lamps are considered to be very inefficient with regard to energy use, making the building a potential candidate for additional energy savings.</i></p> | | |
| Emergency Power | <p>A Generac brand, 50 kVa, 40 kW emergency generator was located adjacent to the boiler room and provided power to life safety items including one boiler and associated hot water pumps. The generator was reported to have been manufactured and installed in 1998. According to maintenance staff representatives, the unit is exercised on a weekly basis, with a full load test scheduled for once a year. The unit was reportedly maintained by Weld Power. The unit is fueled by diesel and the 75-gallon tank is an integral part of the generator.</p> <p><i>The emergency generator appeared to be in good to fair condition. Based on the apparent age, condition and estimated RUL of the unit, replacement should be expected during the evaluation term. A budgetary estimate of cost for this item is included in Table 1.</i></p> <p><i>According to the Site Contact, the generator power transfer switch recently failed and will need to be replaced. Therefore, the facility is currently without a working generator. The parts have been ordered and are anticipated to be replaced and the generator tested within the next few weeks. This is considered an item of Routine Maintenance.</i></p> | G to F | 26 |

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 Lunenburg Water District’s main line. | G | |
| Domestic Water Distribution | <p>A 2-inch diameter main water service line entered the building at the boiler room. The domestic water meter was observed at the service connection at this location. A backflow prevention device was observed on the domestic main.</p> <p>In exposed locations, observed distribution piping for domestic water systems was constructed of copper.</p> <p><i>Active piping leaks were not reported or observed during the on-site visit.</i></p> <p><i>Shutoff valves for many of the individual plumbing fixtures were observed to be difficult to turn and close completely to isolate the respective fixtures and piping areas. Replacement of these valves should be completed. A budgetary estimate of cost for this item is included in Table 1.</i></p> | F | 27 |
| Hot Water Systems | A gas-fired boiler manufactured by Weil-McLain located in the Boiler Room provided domestic hot water for the building. According to the Site Contact, the boiler was installed in 2004. The boiler is rated for 175 MBH input / 153 MBH output. | G | |

| PLUMBING SYSTEMS | | | |
|------------------|---|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| | <i>The boiler appeared to be in good condition. Water pressure and volume were reported to be adequate for the building needs.</i> | | |
| Sanitary Sewer | <p>The sanitary wastes generated at the building were conveyed to underground piping, which discharged to the municipal sewer system owned and maintained by the Town of Lunenburg. According to the Site Contact, the building was originally designed to discharge to a septic system, but this septic system was removed, and the sanitary sewer piping has been connected to the city system since 2005.</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 side of the building near the main boiler room adjacent to the generator. The gas piping within the building was observed to be steel. The gas meter was located at the exterior wall of the building. | G | |

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 | <p>The building included two lifts. One was an inclined unit located adjacent to the gymnasium. The unit was manufactured by Garaventa in 2005 and was rated for one person or 495 pounds and its speed was rated at 13 feet per minute.</p> <p>The second lift was a vertical unit located in a classroom in the northwest corner of the school. The unit was manufactured by Savaria in 1998 and was rated for two people or 750 pounds.</p> <p><i>The inclined lift was last inspected in October 10, 2017. An Inspection Certificate was displayed on the lift and was not due to expire until October 31, 2019. The lift equipment and machinery appeared to be in generally good overall condition. A detailed evaluation of the lift equipment, floor-to-floor times, and other response and performance characteristics was not performed as part of this PCA.</i></p> <p><i>An Inspection Certificate was not located for the vertical lift. Immediate engagement of a qualified lift maintenance contractor is required to inspect the lift and obtain a current certificate of operation in accordance with local and state requirements. A budgetary allowance for this inspection is included in Table 1 as an item of Immediate Repair.</i></p> | G to F | 28 |
| | <p><i>The vertical lift was in operation at the time of our assessment; however, based on the age, observed condition and estimated RUL of the equipment, replacement of the vertical lift should be anticipated during the evaluation term. A generalized budget for this item is included in Table 1.</i></p> | | 29 |

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 | <p>No sprinkler system is currently installed at the facility. Any significant upgrades to the building may require the installation of an approved fire sprinkler system.</p> <p><i>Due to the various types, configurations and locations for such equipment as well as potential reconfiguration of select spaces to accommodate new fire protection systems, associated costs for these types of issues cannot be predicted, and no budget is included for them in Table 1. However, it should be noted that if the school undergoes significant renovations that exceed 33% or more of the floor area of the school, or at costs greater than 33% of the assessed value of the building, sprinklers will be required. As a general budgetary estimate, a value of \$4.54 per SF (approximately \$400,000) should be reserved for this upgrade.</i></p> | N/A | |
| Sprinkler Heads | Not Applicable. | N/A | |
| Specialty Suppression Systems | Not Applicable. | N/A | |
| Fire Hydrants | Municipal fire hydrants were located on site and along the access roads to the property. | G | |
| Fire Pump | Not Applicable. | N/A | |

| LIFE & FIRE SAFETY SYSTEMS | | | |
|-------------------------------|--|--------------------|----------------|
| Item | Description of System or Component | Overall G, F, P | Cost Item # |
| Standpipes & Hose Connections | Not Applicable. | N/A | |
| Emergency Lighting | <p>Emergency lighting fixtures were provided throughout the building. The office areas and corridors contained emergency lighting fixtures powered by the emergency generator.</p> <p><i>Emergency lighting units appeared to be in good condition; however, the emergency lighting units were not operated or tested as part of this PCA.</i></p> | G | |
| Illuminated Exit Signs | <p>Illuminated exit signs were provided throughout the building. The common spaces, corridors, stairwells and selected office areas contained exit light fixtures with battery backup power.</p> <p><i>Exit signs appeared to be in good condition; however, exit signs were not operated or tested as part of this PCA.</i></p> | G | |
| Alarm Systems | <p>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.</p> <p>A Honeywell FireLite Miniscan 4024 Model central alarm panel located in the boiler room monitored the system. In the event of an emergency, the panel notified a central monitoring station, which notified the fire department. The fire alarm panel was reportedly installed in 1990.</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 per the equipment tags was performed on August 23, 2016 by</i></p> | F | |

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 # |
| Garage | <p>The property included a free-standing two-bay garage located on the north side of the property, adjacent to the mechanical room. The garage was constructed in June 2016 and was approximately 1,200 square feet in size. The garage was founded on a concrete foundation with frost walls and a slab. Superstructure consisted of a pre-fabricated steel structure manufactured by Kirby. Exterior walls consisted of painted metal rib wall panels. Roof consisted of a pitched gable with painted metal rib roof panels. Vinyl-faced batt insulation was observed at the underside of the roof structure and at the interior side of the walls. The building included two overhead aluminum doors and one pedestrian metal door. The building was equipped with suspended LED lighting fixtures (four-foot strip type). An exterior wall-mounted light fixture was observed above the overhead doors. Electrical service was provided by the adjacent school building and an electrical distribution panel was observed in the garage.</p> <p><i>The garage appeared to be in good condition requiring routine repairs and maintenance during the evaluation term.</i></p> | G | |
| Annex Building | Not Applicable. | N/A | |
| Storage Shed | Not Applicable. | N/A | |

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. Title II of the ADA requires that owners of public buildings considered to be places of public accommodations remove those architectural barriers and communications barriers that are considered readily achievable in accordance with the resources available to the building ownership to allow use of the facility by the disabled. The Massachusetts Architectural Access Board (MAAB) Section 521 CMR is the standard designed to make public buildings and facilities accessible to, functional for, and safe for use by persons with disabilities.

As part of this PCA, VERTEX performed a “Baseline Evaluation” of ADA and MAAB requirements 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, we have attempted to evaluate the total cost of projected renovations identified in our assessment for calculation of MAAB ‘trigger’ requirements as outlined in CMR 521 Section 3 for Existing Buildings.

If the work being performed amounts to less than 30% of the full and fair cash value of the building and:

- a. if the work costs less than \$100,000, then only the work being performed is required to comply with 521 CMR, or
- b. if the work costs \$100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an accessible public entrance and an accessible toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR.

The value for full and fair cash value of the building will need to be provided by the Town of Lunenburg to appropriately calculate threshold values.

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? | ✓ | | |
| 2. | Have any ADA improvements been made to the property since original construction? | ✓ | | |
| 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 |
| 2. | Does the required number of van-accessible designated spaces appear to be provided? | | ✓ | ADA-1 |
| 3. | Are accessible spaces part of the shortest accessible route to an | ✓ | | |



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

| | | | | | |
|-------------------------------------|--|---|---|---|---|
| | 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? | ✓ | | | |
| C. Exterior Accessible Route | | | | | |
| 1. | Is an accessible route present from public transportation stops and municipal sidewalks on the property? | | | ✓ | |
| 2. | Are curb cut ramps present at transitions through curbs on an accessible route? | | ✓ | | <i>ADA-2, there is one curb cut but it is located in a remote location.</i> |
| 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? | ✓ | | | |



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

| E. Interior Accessible Routes and Amenities | | | | |
|---|--|---|---|---|
| 1. | Does an accessible route appear to connect with all public areas inside the building? | ✓ | | |
| 2. | Do accessible routes appear free of obstructions and/or protruding objects? | ✓ | | |
| 3. | Do ramps on accessible routes appear to have a compliant slope? | ✓ | | |
| 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? | | ✓ | ADA-3 |
| 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? | ✓ | | |
| 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? | | | ✓ <i>Unless the future use of the facility is changed</i> |
| 2. | Is accessible floor identification signage present on the hoistway sidewalls? | | | ✓ <i>to a facility that houses a shopping center, a</i> |
| 3. | Do the elevators have audible and visual arrival indicators at the entrances? | | | ✓ <i>shopping mall, the</i> |
| 4. | Do the elevator hoistway and car interior appear to have a minimum compliant clear floor area? | | | ✓ <i>professional office of a</i> |
| 5. | Do the elevator car doors have automatic re-opening devices to prevent | | | ✓ <i>health care provider, a terminal, depot, or other station used for</i> |

|  ASTM E2018-15 - Uniform Abbreviated Screening Checklist - 2010 Americans with Disabilities Act | | | | | |
|---|--|---|---|---|--|
| | closure on obstructions? | | | | <i>specified public transportation, an elevator is not required.</i> <i>An inclined and a vertical lift are provided in the building.</i> |
| 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? | | | ✓ | |
| 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 publicly-accessible toilet rooms appear to have a minimum compliant floor area? | | ✓ | | ADA-4 |
| 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? | ✓ | | | |
| 4. | Is the plumbing piping under lavatories configured to protect against contact? | ✓ | | | |
| 5. | Are grab bars provided at compliant locations around the toilet? | ✓ | | | |
| 6. | Do toilet stall doors appear to provide the minimum compliant clear width? | | ✓ | | ADA-4 |
| 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? | | ✓ | | ADA-4 |
| 9. | Do accessories and mirrors appear to be mounted at a compliant height? | ✓ | | | |
| I. Hospitality Guestrooms | | | | | |
| 1. | Does property management report the minimum required accessible guestrooms? | | | ✓ | |
| 2. | Does property management report the minimum required accessible guestrooms with roll-in showers? | | | ✓ | |

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.2489.17, dated September 29, 2017.

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. In some cases, additional study may be warranted to more fully assess concerns noted.

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 Property Condition Assessment (PCAs).

A Property Condition Assessment ("PCA") is the process by which VERTEX observes, researches and documents in a written report (the PCA 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 personnel 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 PCA Report.

This assignment was performed as a **Level II PCA**. For the purposes of clarification and comparison, VERTEX's levels of PCA service are defined as follows:

- **Level I PCA:** 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 PCA may be escalated to a more thorough Level II or Level III PCA following the initial site visit and evaluation, following discussion with the Client.
- ***Level II PCA: This assessment includes the Level I PCA, 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 PCA report discussion, or may be presented in a separate report.***
- **Level III PCA:** This assessment includes the Level I PCA, 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 PCA report discussion, or may be presented in a separate report, which may include test and evaluation data.

The visual observation portion of the PCA consisted 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. This portion of the PCA was 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.

VERTEX extrapolated representative findings to 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.

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 PCA:

- 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.
- 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.
- Provision of a warranty or guarantee of any systems or component's physical condition or use. A PCA 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.

TABLE 1

IMMEDIATE AND REPLACEMENT RESERVES COST ESTIMATES

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



| | |
|--------------|-------------------------------|
| Site Name: | Turkey Hill Elementary School |
| City, ST: | Lunenburg , MA |
| Age, Yrs: | 49 |
| Project No.: | 48237 |

| | |
|-------------------|--------|
| # Buildings: | 2 |
| Est. Building SF: | 67,573 |
| Eval. Term, Yrs: | 5 |
| CPI: | 2.50% |
| # Units: | NA |

| | Total | Per SF | Per SF/YR |
|---------------------------------|-------------|---------|-----------|
| Immediate Repairs \$: | \$1,748,872 | \$25.88 | |
| Short Term \$ (no inflation): | \$2,217,812 | \$32.82 | \$16.41 |
| Short Term \$ (inflated): | \$2,243,805 | \$33.21 | \$16.60 |
| Capital Needs \$ (no inflation) | \$5,006,693 | \$74.09 | \$14.82 |
| Capital Needs \$ (inflated) | \$5,211,973 | \$77.13 | \$15.43 |

| ITEM | | | | | | Immediate | Reserves |
|---------------------------|---------------|--|--------|------|------------|-----------|-----------|
| ITEM No. | PHOTO No. | DESCRIPTION | QTY | UNIT | UNIT COST | YEARS 0-1 | YEARS 1-5 |
| SITE DEVELOPMENT | | | | | | | |
| 1 | 13 thru 19 | Cut & patch deteriorated asphalt pavement areas | 1,493 | SF | \$6.65 | | \$9,928 |
| 2 | 13 thru 19 | Renew asphalt pavement surface, including crack sealing (moderate), seal coat and re-stripe | 40,618 | SF | \$0.27 | | \$10,967 |
| BUILDING STRUCTURE | | | | | | | |
| 3 | 142 | Repair spalled concrete, clean exposed and rusted steel reinforcement and patch concrete as required | 1 | LS | \$1,000.00 | | \$1,000 |
| BUILDING EXTERIOR | | | | | | | |
| 4 | 155 thru 168 | Brick - brick repair and replacement, less than 1000 SF of wall surface | 800 | SF | \$24.17 | | \$19,336 |
| 5 | 147, 153 | Cut out and replace sealants between expansion and control joints, brick | 2,470 | LF | \$6.29 | | \$15,536 |
| 6 | 177 thru 184 | Cut out and replace sealants between masonry and wall penetrations (perimeter of windows and doors) and window and skylight sealants | 516 | LF | \$4.30 | | \$2,219 |
| 7 | 143, 144, 145 | Replace windows, fixed metal framed continuous ribbon windows - double pane glass | 2,964 | SF | \$107.44 | | \$318,452 |
| 8 | 168-171, 180 | Replace windows, glazed storefronts - plate glass and metal frame | 1,482 | SF | \$72.86 | | \$107,979 |
| 9 | 149 thru 153 | Replace windows, operable-single hung and clerestory windows-double pane glass - Metal | 2,964 | SF | \$116.84 | | \$346,314 |

| SHORT TERM | | | | | RESERVE TOTAL |
|------------|-----------|-----------|--------|---------|---------------|
| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | |
| | \$4,964 | | | \$4,964 | \$9,928 |
| | | \$10,967 | | | \$10,967 |
| | | | | | |
| \$1,000 | | | | | \$1,000 |
| | | | | | |
| \$19,336 | | | | | \$19,336 |
| | | \$15,536 | | | \$15,536 |
| \$2,219 | | | | | \$2,219 |
| \$159,226 | \$159,226 | | | | \$318,452 |
| | | \$107,979 | | | \$107,979 |
| \$115,438 | \$115,438 | \$115,438 | | | \$346,314 |

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



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| ITEM | | | | | | Immediate | Reserves |
|--------------------------|------------------------------------|--|--------|------|----------------|-------------|-----------|
| ITEM No. | PHOTO No. | DESCRIPTION | QTY | UNIT | UNIT COST | YEARS 0-1 | YEARS 1-5 |
| ROOF | | | | | | | |
| 10 | 185 thru 190 | Remove existing roof and replace with single ply EPDM - 60 mil, fully adhered | 65,190 | SF | \$14.68 | | \$956,989 |
| 11 | 169 thru 172 | Replace perimeter metal flashing/counter-flashing systems | 264 | LF | \$15.19 | | \$4,010 |
| BUILDING INTERIOR | | | | | | | |
| 12 | 36, 69 | Replace existing VAT flooring with VCT resilient floor tile, vinyl composition tile | 49,000 | SF | \$4.89 | | \$239,610 |
| 13 | 63, 64, 66, 67 | Painting of ceilings, drywall/plaster | 4,800 | SF | \$1.10 | | \$5,280 |
| 14 | 35, 43, 45, 52, 53, 60, 66, 69, 71 | Painting of interior walls (CMU) and metal lockers | 45,000 | SF | \$1.45 | | \$65,250 |
| 15 | 55, 56, 57 | Casework, doors and partitions, refinishing, wood re-staining | 4,000 | SF | \$4.03 | | \$16,120 |
| 16 | - | Replace folding partition, Wood, Classroom 2nd Floor Room 208-210 | 1 | LS | \$16,000.00 | | \$16,000 |
| 17 | 53, 54 | Replace existing concealed spline acoustical tile system complete with new suspended 2 x 2 acoustical tile ceiling system | 49,160 | SF | \$7.66 | | \$376,566 |
| 18 | 38 | Allowance to remove and replace interior doors and frames with new assemblies (solid core wood doors with steel frame) as required | 12 | EA | \$1,880.20 | | \$22,562 |
| 19 | 71, 72 | Allowance for general replacement of some commercial kitchen appliances (including two double convection ovens) | 1 | LS | \$50,000.00 | | \$50,000 |
| 20 | 73 thru 84 | Budgetary allowance for evaluation and abatement of hazardous materials | 1 | LS | \$1,741,500.00 | \$1,741,500 | |

| SHORT TERM | | | | | RESERVE TOTAL |
|------------|-----------|-----------|----------|--------|---------------|
| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | |
| | | \$956,989 | | | \$956,989 |
| \$4,010 | | | | | \$4,010 |
| | | | | | |
| \$119,805 | \$119,805 | | | | \$239,610 |
| | | | \$5,280 | | \$5,280 |
| | | \$32,625 | \$32,625 | | \$65,250 |
| \$16,120 | | | | | \$16,120 |
| \$16,000 | | | | | \$16,000 |
| \$188,283 | \$188,283 | | | | \$376,566 |
| \$11,281 | \$11,281 | | | | \$22,562 |
| \$50,000 | | | | | \$50,000 |
| | | | | | \$0 |

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



| | |
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| Capital Needs \$ (inflated) | \$5,211,973 | \$77.13 | \$15.43 |

| ITEM | | | | | | Immediate | Reserves |
|---------------------------|--------------------|--|-------|--------|-------------|-----------|-------------|
| ITEM No. | PHOTO No. | DESCRIPTION | QTY | UNIT | UNIT COST | YEARS 0-1 | YEARS 1-5 |
| MECHANICAL SYSTEMS | | | | | | | |
| 21 | 77, 78, 80, 81, 82 | Replace constant volume ventilation air handling units and cabinet unit ventilators | 700 | Ton AC | \$2,896.45 | | \$2,027,515 |
| 22 | 109 | Budget for replacement of hot-water baseboard radiators and associated valves | 1,200 | LF | \$102.07 | | \$122,484 |
| ELECTRICAL SYSTEMS | | | | | | | |
| 23 | 98, 100, 101 | Engage qualified electrician for minor repairs, secure outlet covers/junction boxes, min charge | 1 | LS | \$500.00 | \$500 | |
| 24 | 96 thru 100 | Infrared testing and inspection of switchgear and service panels | 1 | LS | \$5,372.00 | \$5,372 | |
| 25 | 96, 97, 99 | Replace older Square D main switchgear | 1 | EA | \$20,910.28 | | \$20,910 |
| 26 | 111 | Replace emergency generator, diesel powered 50 kW | 1 | EA | \$34,246.50 | | \$34,247 |
| PLUMBING SYSTEMS | | | | | | | |
| 27 | 114 thru 118 | Budget for replacement of isolation valves | 100 | LS | \$537.20 | | \$53,720 |
| CONVEYANCE SYSTEMS | | | | | | | |
| 28 | 41, 42 | Engage lift service vendor to inspect and certify current lift operation, or provide current valid lift inspection certificate | 1 | LIFT | \$500.00 | \$500 | |
| 29 | 41, 42 | Install wheelchair lift, verticle - minimum | 1 | EA | \$13,698.60 | | \$13,699 |

| SHORT TERM | | | | | RESERVE TOTAL |
|------------|-----------|-----------|-----------|-----------|---------------|
| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | |
| | | | | | |
| \$405,503 | \$405,503 | \$405,503 | \$405,503 | \$405,503 | \$2,027,515 |
| \$24,497 | \$24,497 | \$24,497 | \$24,497 | \$24,497 | \$122,484 |
| | | | | | |
| | | | | | \$0 |
| | | | | | \$0 |
| \$20,910 | | | | | \$20,910 |
| | | | | \$34,247 | \$34,247 |
| | | | | | |
| \$10,744 | \$10,744 | \$10,744 | \$10,744 | \$10,744 | \$53,720 |
| | | | | | |
| | | | | | \$0 |
| \$13,699 | | | | | \$13,699 |

TABLE 2
IMPROVED ADA COMPLIANCE
PRIORITIES AND ESTIMATED COSTS

**TABLE 2
GENERAL ADA IMPROVEMENTS**

| Site Name: Turkey Hill Elementary School | | | | | # of ADA Items | | 5 |
|--|-------------|--|-----|------|----------------|-----------------|---|
| Site Location: Lunenburg, MA | | | | | | | |
| Building Age, yrs: 49 | | | | | | | |
| Project No.: 48237 | | | | | | | |
| ADA Observations | | | | | | | |
| Item # | Photo # | Description | QTY | Unit | Unit Cost | Total | |
| PARKING - EXTERIOR ROUTE - BUILDING ENTRANCES | | | | | | | |
| ADA- 1 | 115 thru 18 | Convert existing standard space to van accessible space | 1 | EA | \$772.00 | \$772 | |
| ADA- 2 | 1, 2 | Install curb cuts at or near parking stall locations along path of travel | 1 | EA | \$8,890.00 | \$8,890 | |
| INTERIOR ACCESSIBLE ROUTES - AMENITIES - INTERIOR DOORS - ELEVATORS | | | | | | | |
| ADA- 3 | 45 | Renovate handrails to extend past bottom and top risers, stairwells | 6 | EA | \$470.10 | \$2,821 | |
| TOILET ROOMS | | | | | | | |
| ADA- 4 | 46, 47 | Renovate restroom entrance & general configuration to compliant dimensions | 2 | LS | \$4,701.00 | \$9,402 | |
| ADA- 5 | 67, 68 | Install Roll-In Shower in locker room where other showers are provided | 2 | EA | \$8,730.00 | \$17,460 | |
| HOSPITALITY GUEST ROOMS | | | | | | | |
| Not Applicable | | | | | | | |
| TOTAL | | | | | | \$39,345 | |

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

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION



Photo #1: Partial east elevation (front of school building)



Photo #2: Main building entrance at east elevation . Note painted concrete curbing



Photo #3: Canopy at front of building



Photo #4: Overview of front of building (called east elevation). Note gymnasium in foreground



Photo #5: Partial north elevation (adjacent to mechanical room)



Photo #6: Partial north elevation. Note link (beyond) between building wings



Photo #7: Partial north elevation



Photo #8: Partial west elevation



Photo #9: Partial south elevation



Photo #10: Partial south elevation. Note link beyond between wings



Photo #11: Close-up view of link between wings.



Photo #12: South side of gymnasium



Photo #13: East side of gymnasium. Note asphalt paving and chain link fencing



Photo #14: View of concrete sidewalk at courtyard entrance



Photo #15: Accessible parking spaces adjacent to main building entrance. Note asphalt paving



Photo #16: View of landscaping with metal pole-mounted (site) lighting fixtures



Photo #17: View of asphalt-paved driveway and parking lot (east side of site)



Photo #18: View of asphalt-paved driveway (north side of site)



Photo #19: Close-up view of asphalt-paved sidewalk and curbing at north and east side of building



Photo #20: Garage at northwest corner of site. Pre-fabricated with painted metal rib siding



Photo #21: North and east elevations at garage. Note concrete foundation



Photo #22: Interior view of garage. Note steel framing with vinyl-faced batt insulation at walls and underside of roof

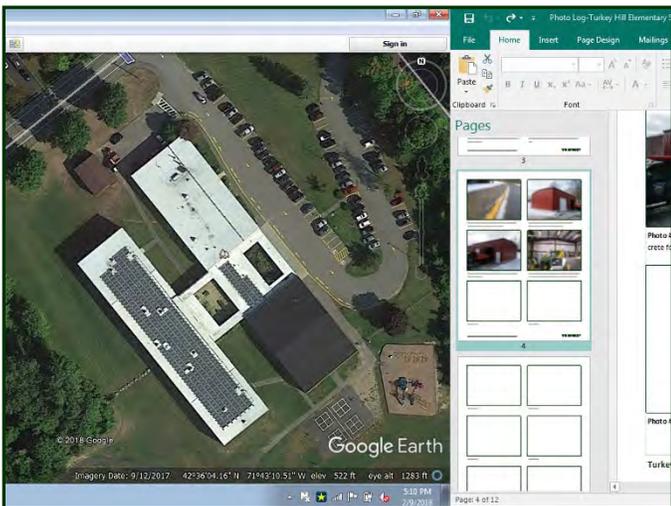


Photo #23: Google Earth image of site from September 2017



Photo #24: Playground equipment on south side of property

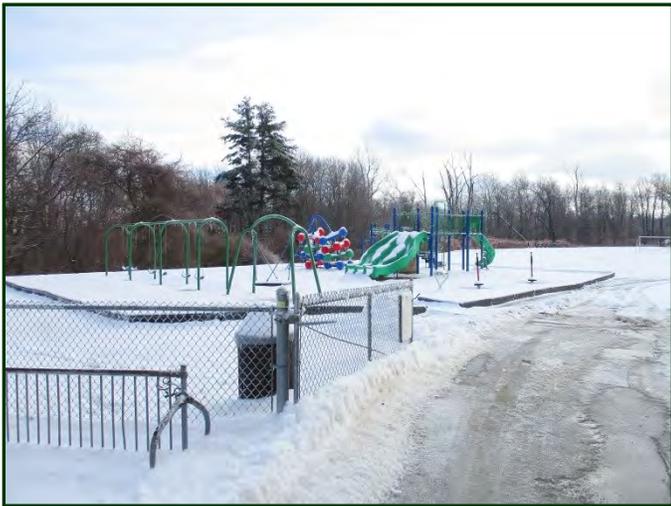


Photo #25: Close-up view of playground equipment. Note chain link fencing in foreground



Photo #26: Fire hydrant on site

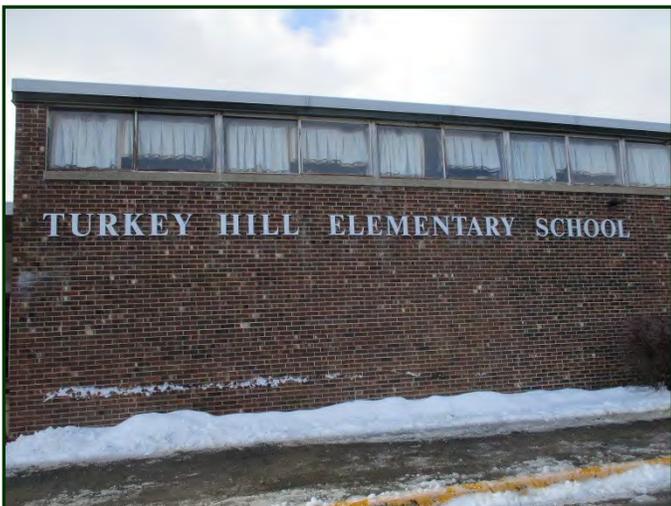


Photo #27: Building signage adjacent to main entrance (east elevation)

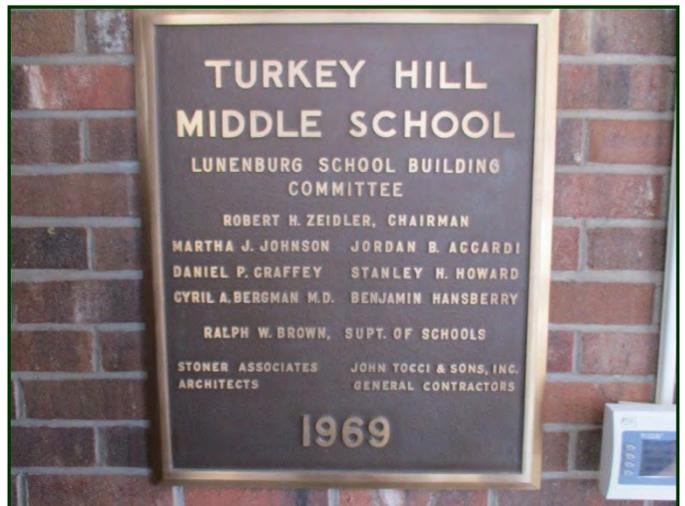


Photo #28: Wall plaque adjacent to main entrance from original construction



Photo #29: Interior view of main entrance doors



Photo #30: Hallway adjacent to main building entrance. Note cut stone flooring and wall veneer



Photo #31: Ramp at north link. Note exposed brick, resilient floor tile & suspended acoustical ceiling system



Photo #32: Hallway with ceramic tile at walls



Photo #33: Hallway with painted metal lockers. Note borrowed lights above lockers



Photo #34: Wall-mounted room signage with braille lettering



Photo #35: Ramp at Music Room with lack of level landing



Photo #36: Egress stairwell with metal pan construction and metal railings. Note glaze faced CMU walls and resilient

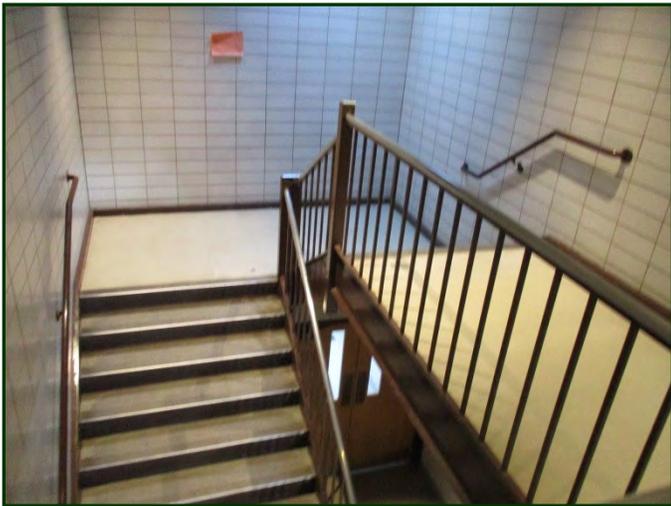


Photo #37: View of non-continuous (interrupted) handrail at interior handrail



Photo #38: Compartment door assembly with solid wood doors with vision panels. Note wedge holding doors open



Photo #39: Handrails at stairway less than 32 inches above stairs/landing

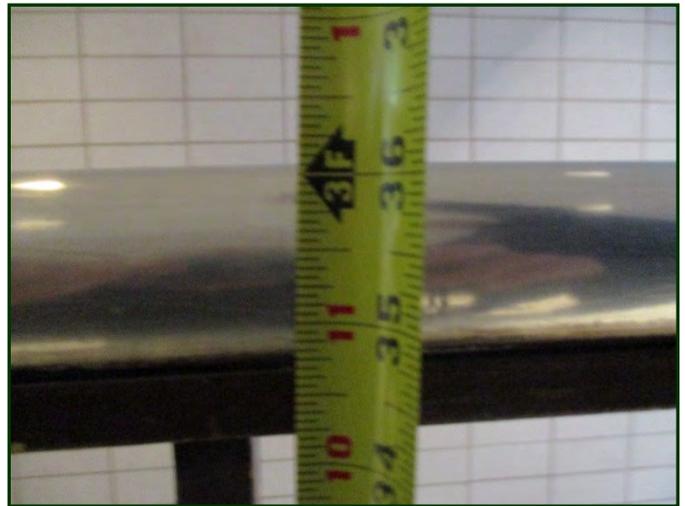


Photo #40: Guardrails at stair landing less than 42 inches above landing/floor level

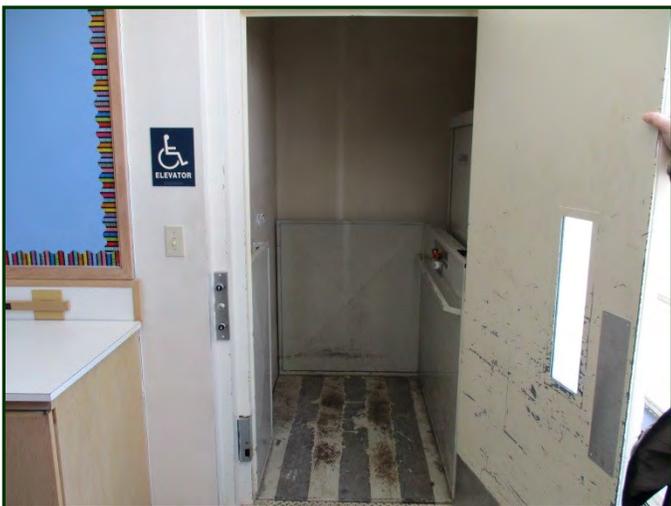


Photo #41: Platform lift at north side of school



Photo #42: Controls at platform lift



Photo #43: Chair lift at gymnasium stairs. Note painted CMU wall and resilient floor tile

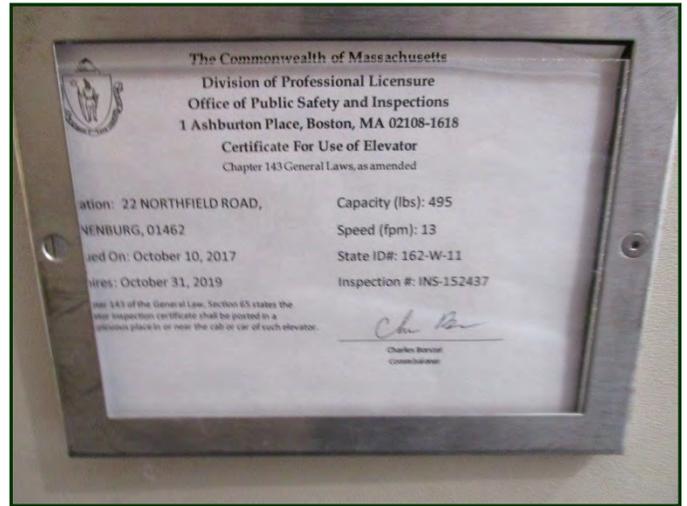


Photo #44: Current certificate of inspection mounted on chair lift

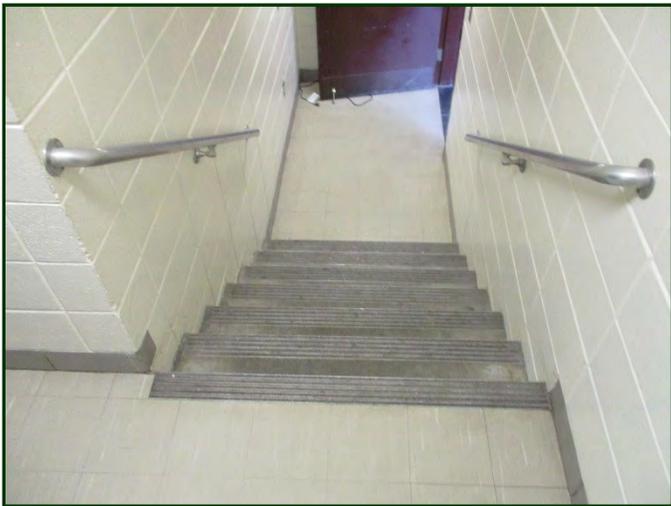


Photo #45: C-I-P concrete stairs at girls locker room



Photo #46: Men's accessible toilet room. Note lack of compliant rear grab bar and un-insulated piping under sink



Photo #47: From photo #46, note lack of compliant clearance (18 inches) at pull side of door



Photo #48: Urinals at boy's toilet room. Note terra cotta flooring and glaze faced CMU walls



Photo #49: Hand wash station at boy's toilet room



Photo #50: Composite toilet partitions at boy's toilet room



Photo #51: Toilet stall at boy's toilet room



Photo #52: Accessible water cooler



Photo #53: Classroom with older VAT flooring and painted plaster ceiling and concealed spline acoustical ceiling system



Photo #54: Close-up view of ceiling systems



Photo #55: Classroom with typical stained wood casework with laminate countertop. Note borrowed lights above



Photo #56: Close-up view of classroom casework. Note drinking fountain at sink

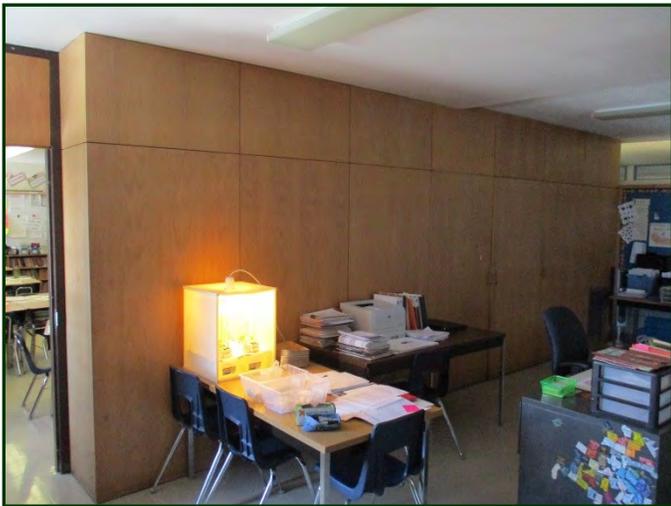


Photo #57: Classroom with folding partition (stained wood)



Photo #58: Typical classroom



Photo #59: Typical classroom

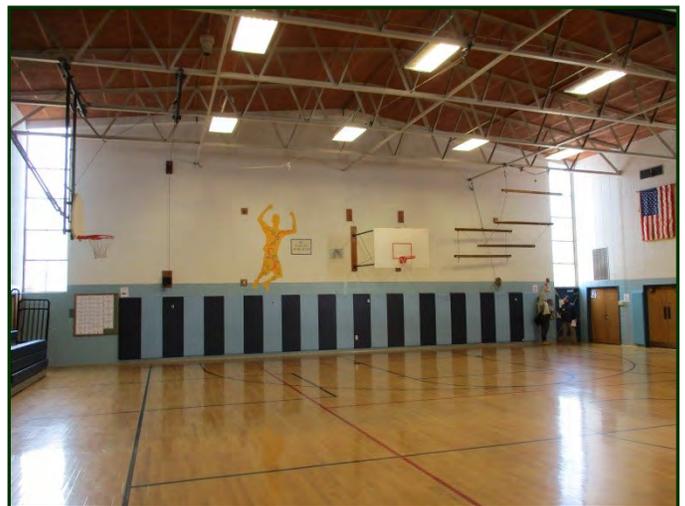


Photo #60: Gymnasium with stained strip wood flooring, exposed underside of structure above & painted CMU walls

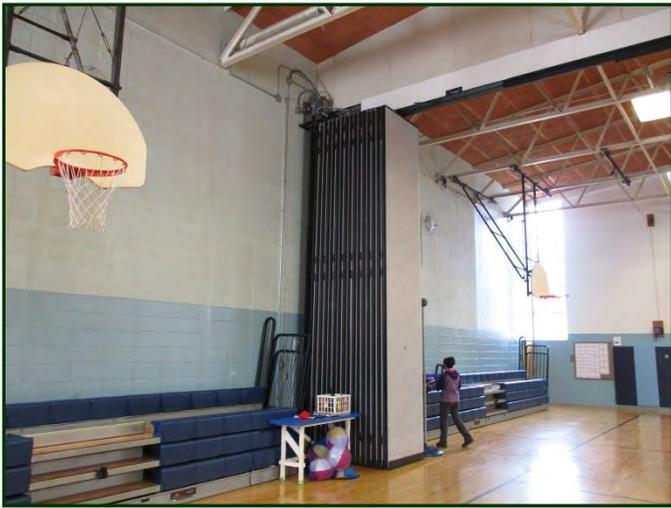


Photo #61: View of folding bleachers and folding partition



Photo #62: View of underside of roof structure with acoustic (Tectum) panels



Photo #63: Boy's locker room with terra cotta floor, painted plaster ceiling and painted metal lockers



Photo #64: Boy's shower room



Photo #65: Toilet room at Boy's Locker Room



Photo #66: Girl's Locker Room with rolling storage cabinets



Photo #67: Shower area at Girl's Locker Room



Photo #68: Shower stall at Girl's Locker Room. Note non-accessible stall



Photo #69: Cafetorium adjacent to main building entrance (east side of school). Note stage beyond



Photo #70: Underside of roof structure at Cafetorium with painted acoustical (Tectum) panels



Photo #71: Serving line at kitchen area



Photo #72: Food preparation area. Note quarry tile floor



Photo #73: Dishwashing area



Photo #74: Walk-in cooler



Photo #75: Teacher's Dining Room



Photo #76: Boiler Room



Photo #77: AHU in kitchen area



Photo #78: AHU in gym area



Photo #79: Typical wall AC units in classroom



Photo #80: Unit ventilator/heater in corridor



Photo #81: Typical cabinet unit ventilator in classroom



Photo #82: AHU in Boiler Room



Photo #83: Heating hot water Boilers



Photo #84: Fuel oil storage tanks



Photo #85: Heating hot water pumps



Photo #86: Heating hot water pump VFDs



Photo #87: Typical exhaust fan in utility room



Photo #88: Typical ventilation exhaust fans on roof



Photo #89: Ventilation in cafeteria under stage



Photo #90: Exhaust grilles located in corridors for ventilation



Photo #91: Cafeteria kitchen exhaust hood

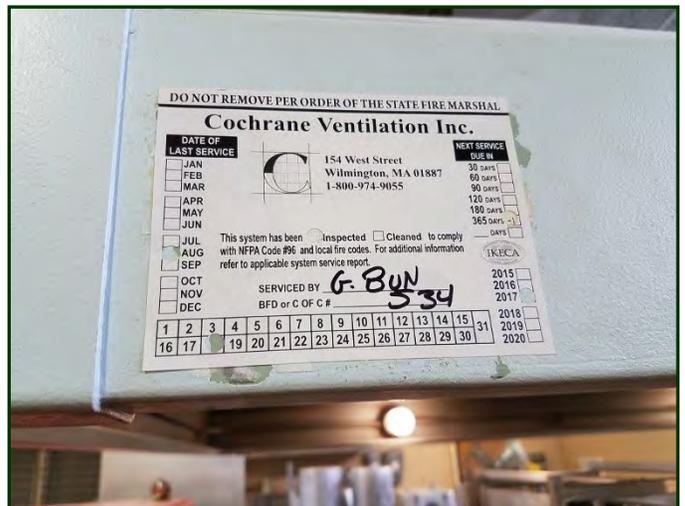


Photo #92: Cafeteria kitchen exhaust hood inspection tag



Photo #93: Typical wall mounted analog thermostat



Photo #94: DDC Control panel in Boiler Room



Photo #95: Pad mounted transformer



Photo #96: Main 1200-amp panelboard in Boiler Room



Photo #97: Typical electrical distribution panels in Boiler Room



Photo #98: Electrical panel in Girls Locker Room, missing spare breaker cover



Photo #99: Typical pneumatic starters for Gym ventilation equipment



Photo #100: Electrical panels in storage area blocked by materials



Photo #101: Kitchen electrical panels blocked by storage materials



Photo #102: Satcon PV solar equipment controls on exterior wall



Photo #103: Satcon solar distribution equipment in Boiler Room



Photo #104: Typical solar PV panels on roof

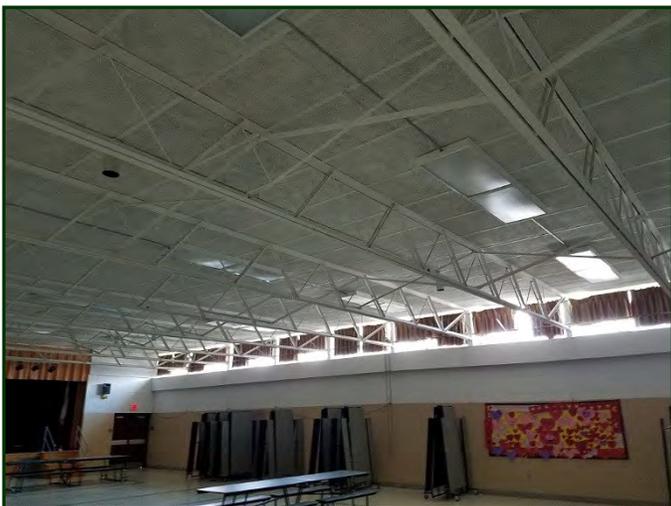


Photo #105: Typical cafeteria lighting



Photo #106: Library lighting



Photo #107: Typical classroom lighting



Photo #108: Typical corridor lighting



Photo #109: Typical hot water baseboard radiator

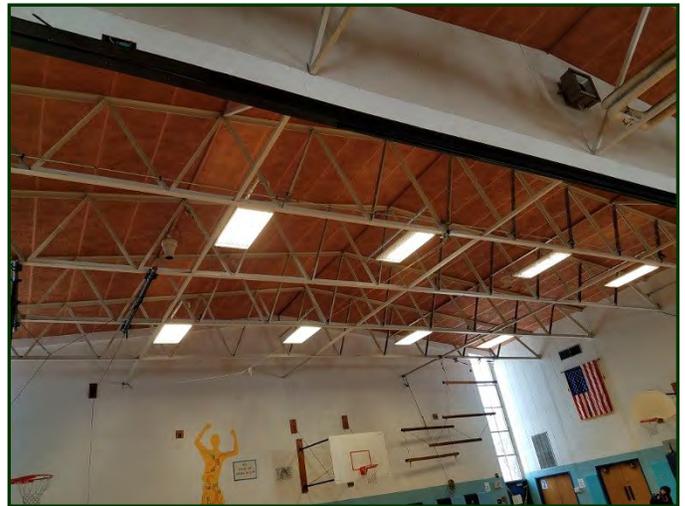


Photo #110: Gym T5 lighting



Photo #111: Generator and natural gas main



Photo #112: Generator transfer switch awaiting replacement



Photo #113: Main domestic water meter and backflow



Photo #114: Sink in 1st floor classroom



Photo #115: Shutoff valves under sink non operational



Photo #116: No valves associated with sink fixture



Photo #117: Typical sink in Boys bathroom

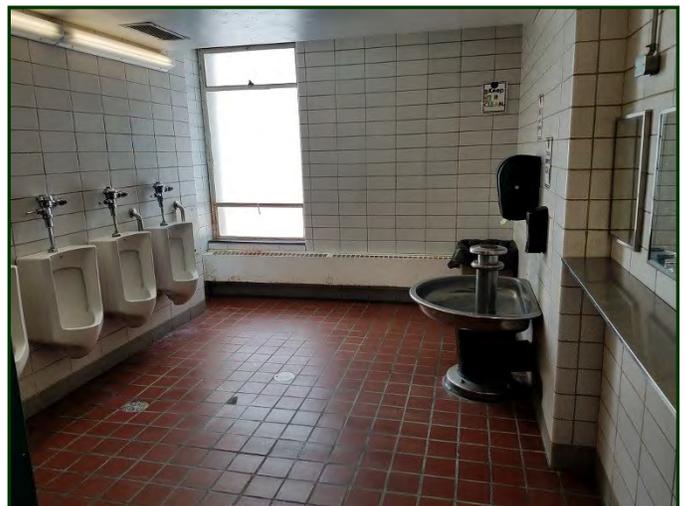


Photo #118: Typical plumbing fixtures in restroom



Photo #119: Domestic hot water boiler



Photo #120: Air compressor in boiler room



Photo #121: Typical exit sign



Photo #122: Emergency lighting in gym



Photo #123: Fire alarm panel in boiler room



Photo #124: Fire extinguisher and inspection tag



Photo #125: Photograph depicts general view of Side A of the Site Building



Photo #126: Photograph depicts general view of Side B of the Site Building



Photo #127: Photograph depicts general view of Side C of the Site Building



Photo #128: Photograph depicts general view of Classroom Hallway on the First Floor



Photo #129: Photograph depicts general view of 9" Floor Tile within Classroom



Photo #130: Photograph depicts general view of acoustical spline ceiling tiles within classroom



Photo #131: Photograph depicts general view of Classroom Hallway on the Second Floor



Photo #132: Photograph depicts general view of spray-on fireproofing on beam above the ceiling within a Classroom



Photo #133: Photograph depicts general view of suspect duct wrap insulation within air handler room adjacent to the



Photo #134: Photograph depicts general view of suspect fitting insulation within resource room adjacent to the Gym



Photo #135: Photograph depicts general view of Heating Oil ASTs within the Boiler Room



Photo #136: Photograph depicts general view of the Pad Mounted Transformer on the Exterior



Photo #137: View of the front elevation of the Turkey Hill School.



Photo #138: View of the steel framing supporting the roof in the gymnasium.



Photo #139: View of steel framing above the gymnasium.



Photo #140: View of cracked CMU blocks at the staircase leading to the gymnasium.



Photo #141: View of typical steel bar joist framing supporting the roof above the cafetorium.



Photo #142: View of exposed, rusted reinforcing on the front elevation.



Photo #143: East façade of the Cafeteria. The building entry is at the left.



Photo #144: East façade looking towards the south showing the Main Entry and the Gym at left.



Photo #145: The north courtyard looking south.



Photo #146: Classroom wing east façade. Note the electrical boxes for the PV Solar Array at the roof.



Photo #147: The west façade of the Cafeteria wing at the north courtyard.



Photo #148: The northwest corner of the Cafeteria wing.



Photo #149: The west façade of the Classroom wing.



Photo #150: The southwest corner of the Classroom wing.



Photo #151: The south façade of the Classroom wing.



Photo #152: The south courtyard looking north.



Photo #153: The west façade of the Gym.



Photo #154: The south façade of the Gym.



Photo #155: The southwest corner of the Gym.



Photo #156: Detail of the southwest corner of the Gym. Note the dripping water and efflorescence below the clere-



Photo #157: The clerestory and exposed aggregate inter-section at the south wall of the Gym.



Photo #158: Detail of the clerestory, note the deteriorated concrete at the sill joint and rust at the metal window frame.

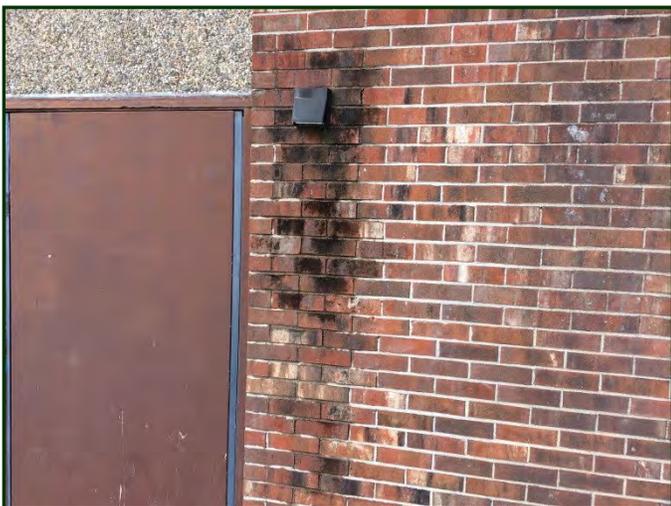


Photo #159: Evidence of potential water infiltration at a light fixture adjacent to the door on the south façade of the



Photo #160: The southeast corner of the Gym.

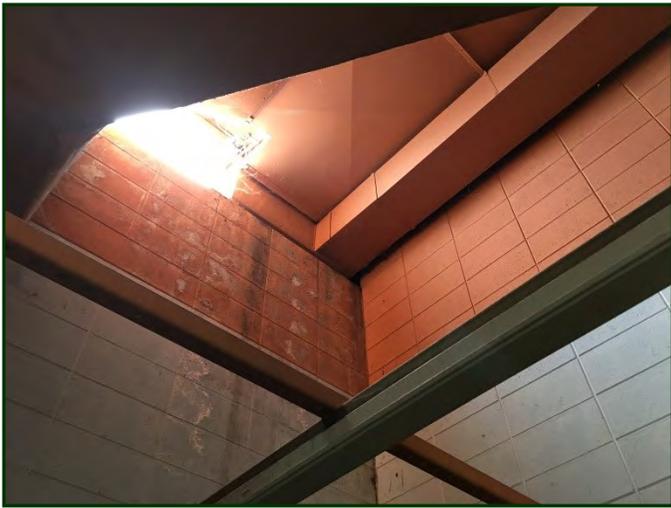


Photo #161:



Photo #162:



Photo #163: The interior side of the south clerestory at the Gym wing.



Photo #164: Detail of the concrete sills at the south façade of the Gym wing.



Photo #165: The northwest corner of the Cafeteria wing.



Photo #166: Detail of the precast concrete sill at the location shown in Photo 23.



Photo #167: Detail of the protruding concrete sills shown in Photo 23. Note the cracked and missing mortar under the



Photo #168: The head condition of the window shown in Photos 23-25. The glazing sealant appears brittle.



Photo #169: The connecting corridor from Admin to the Classroom wing.



Photo #170: Detail of the fascia from Photo 27. Note the damaged fascia at center.



Photo #171: The storefront system at the west façade of the Admin area.



Photo #172: Detail of Photo 29. Note the damaged fascia at center.



Photo #173: The canopy at the Bus Drop off at the Main Entry.



Photo #174: Detail of the fascia and leader at the front canopy. Note the damage at the fascia.



Photo #175: The underside of the entry canopy. Note previous repair work



Photo #176: One of the roof drain leaders at the front canopy. Note what appears to be heat trace at the downspout.

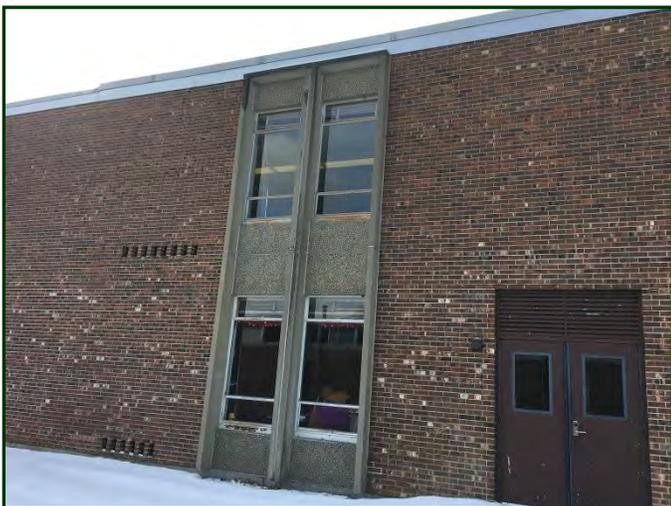


Photo #177: A typical window bay at the Classroom wing.



Photo #178: Detail of the exposed aggregate panels at the window bays.



Photo #179: Rusting and a vent at one of the Classroom windows.



Photo #180: Detail of a Classroom window bay at grade.



Photo #181: One of the storefront type window walls at the corridors.



Photo #182: Detail of a Classroom window illustrating the deteriorated glazing sealant.



Photo #183: Perimeter sealant at a window bay. Note the cracking of the sealant.



Photo #184: Perimeter sealant at one of the Classroom window bays. The sealant has past its useful life and is now separating

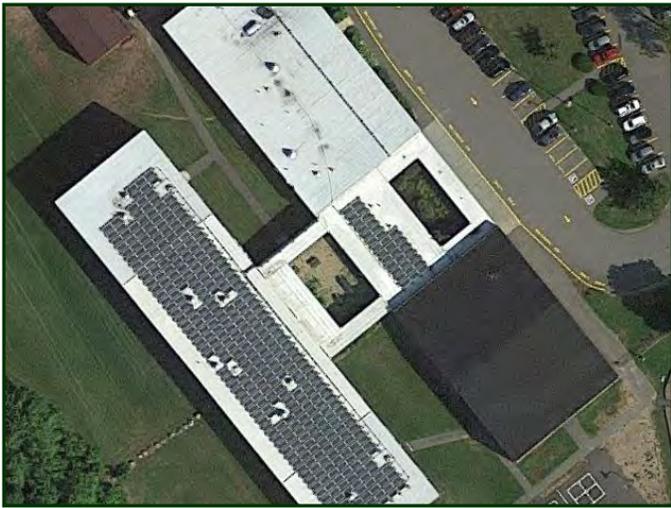


Photo #185: An aerial image of the roof.



Photo #186: The Admin area roof with solar panels.



Photo #187: The roof of the south connecting corridor



Photo #188: Views of the Gym, Corridor and Admin roofs.



Photo #189: The roof at the Cafeteria wing.



Photo #190: Detail photo of the roof membrane at the access hatch.



Photo #191: The Classroom wing roof looking north.



Photo #192: The Classroom wing looking east.



Photo #193: The Classroom wing roof looking south.



Photo #194: View of solar panels looking west.



Photo #195: Detail of the solar panels.



Photo #196: Detail of the ballast at the solar panels.

APPENDIX B
RELEVANT SUPPORTING DOCUMENTATION

Summary Table of ACBM

Turkey Hill Middle School
Lunenburg, Massachusetts
May 17, 2016

| Location | Material | Quantity Reported in 2013 3-Year Re-inspection | Quantity Observed in 2016 3-Year Re-inspection | Friable / Non-Friable | Material/Condition Assessment Code | Comments | Response Action Recommendation |
|--------------------|---|--|--|-----------------------|------------------------------------|--------------------------|---|
| Hall by Kitchen | 9" White Floor Tiles | 610 SF | 610 SF | Non-friable | 8 | 5 SF Damaged Floor Tile | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| | 9" Sage Green Floor Tiles | 50 SF | 50 SF | Non-friable | 5 | Good Condition | Maintain the material in good condition in accordance with the O&M Plan |
| Music Room | 9" White Floor Tiles | 920 SF | 920 SF | Non-friable | 5 | Good Condition | Maintain the material in good condition in accordance with the O&M Plan |
| Ramp to Music Room | 12" White Dotted Floor Tile and associated Black Mastic | Not Identified | 104 SF | Non-friable | 5 | Good Condition | Maintain the material in good condition in accordance with the O&M Plan |
| Cafe | 9" White Floor Tiles | 2976 SF | 2976 SF | Non-friable | 8 | 20 SF Damaged Floor Tile | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| | 9" Sage Green Floor Tiles | 384 SF | 384 SF | Non-friable | 5 | Good Condition | Maintain the material in good condition in accordance with the O&M Plan |
| Kitchen Office | 9" Sage Green Floor Tiles | 40 SF | 40 SF | Non-friable | 5 | Good Condition | Maintain the material in good condition in accordance with the O&M Plan |
| Food Storage | Transite Cement Board | 15 SF | 15 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Kitchen | Transite Cement Board | 6 SF | 6 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |

Material Condition/Assessment Code Definitions: According to the AHERA Regulation, 763.88 Assessment, the following categories are provided to assess the ACBM, suspected ACBM or assumed ACBM in the school building: (1) damaged or significantly damaged friable surfacing material, (2) damaged friable surfacing material, (3) significantly damaged friable surfacing material, (4) damaged or significantly damaged friable miscellaneous material, (5) ACBM with potential for damage, (6) ACBM with potential for significant damage, (7) any remaining friable known or suspect ACBM, or (8) damaged or significantly damaged non-friable ACBM (note that this category is not listed in the AHERA regulations but is provided for reference in this report.)

| Location | Material | Quantity Reported in 2013 3-Year Re-inspection | Quantity Observed in 2016 3-Year Re-inspection | Friable / Non-Friable | Material/Condition Assessment Code | Comments | Response Action Recommendation |
|--|--|--|--|-----------------------|------------------------------------|--------------------------------------|---|
| Teacher Lounge | 9" Sage Green Floor Tiles | 344 SF | 344 SF | Non-friable | 5 | Good Condition, under carpet | Maintain the material in good condition in accordance with the O&M Plan |
| Hall By Gym | 9" White Floor Tiles | 55 SF | 55 SF | Non-friable | 8 | 8 SF Damaged Floor Tile 1 Missing | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| Boys Locker Room | 9" White Floor Tiles | 50 SF | 50SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Reception | 9" White with Green Accent Floor Tiles | 235 SF | 235 SF | Non-friable | 5 | Good Condition, under carpet | Maintain the material in good condition in accordance with the O&M Plan |
| Nurses Office | 9" White with Green Accent Floor Tiles | 220 SF | 220 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Guidance Office formerly Assistant Principals Office | 9" White with Green Accent Floor Tiles | 180 SF | 180 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Copy Room | 9" White with Green Accent Floor Tiles | 135 SF | 135 SF | Non-friable | 5 | Good Condition, under carpet | Maintain the material in good condition in accordance with the O&M Plan |
| Principal's Office | 9" White w/ Green Accent Floor Tiles | 150 SF | 150 SF | Non-friable | 5 | Good condition, under carpet | Maintain the material in good condition in accordance with the O&M Plan |
| Guidance Suite | 9" White with Green Accent Floor Tiles | 375 SF | 375 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Hall by Library | 9" White Floor Tiles | 180 SF | 180 SF | Non-friable | 8 | 6 SF Damaged Floor Tile | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| Storage | 12" White Floor Tiles | 270 SF | 270 SF | Non-friable | 8 | 7 SF Damaged Floor Tile | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| | 9" White Floor Tiles | 80 SF | 80 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |

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|------------------------------|----------------------|--|--|-----------------------|------------------------------------|--|---|
| CR 106 | 9" White Floor Tiles | 830 SF | 830 SF | Non-friable | 8 | 3 SF Damaged Floor Tile | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 104 | 9" White Floor Tiles | 780 SF | 780 SF | Friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Hall by 1st Floor Classrooms | 9" White Floor Tiles | 3070 SF | 3070 SF | Non-friable | 8 | 10 SF Damaged Floor Tile by CR 109, 3 SF by CR 104, 4 SF by CR 105, 3 SF by CR 107, 4 SF by double doors, 2 SF by Boy's Room | Remove buckled and damaged floor tiles due to high traffic area. |
| | 9" Light Blue Tiles | 80 SF | 80 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 102 | 9" White Floor Tiles | 810 SF | 810 SF | Non-friable | 8 | 4 Floor Tiles missing | Replace missing floor tiles and maintain the material in good condition in accordance with the O&M Plan |
| Paper Storage 1st Floor | 9" White Floor Tiles | 360 SF | 360 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| | Transite Panel | 24 SF | 24 SF | Non-friable | 5 | Good condition, only accessible from exterior | Maintain the material in good condition in accordance with the O&M Plan |
| CR 101 | 9" White Floor Tiles | 360 SF | 360 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 103 | 9" White Floor Tiles | 360 SF | 360 SF | Non-friable | 8 | 1 SF Damaged Floor Tile at Pass Door to CR 101 | Repair damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| Library Office | 9" White Floor Tiles | 280 SF | 280 SF | Non-friable | 8 | 3 SF Damaged Floor Tile where wall was removed | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 105 | 9" White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 3 SF Damaged Floor Tile at Pass Door to CR 103, 1 SF Damaged Floor Tile at partition wall | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 107 | 9" White Floor Tiles | Not Identified | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |

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| Location | Material | Quantity Reported in 2013 3-Year Re-inspection | Quantity Observed in 2016 3-Year Re-inspection | Friable / Non-Friable | Material/Condition Assessment Code | Comments | Response Action Recommendation |
|-------------------------------|----------------------|--|--|-----------------------|------------------------------------|---|---|
| CR 109 | 9" White Floor Tiles | 1040 SF | NA | NA | NA | Abated Summer 2015 | NA |
| CR 111 | 9" White Floor Tiles | 810 SF | NA | NA | NA | Abated Summer 2015 | NA |
| CR 113 | 9" White Floor Tiles | 1040 SF | 1040 SF | Non-friable | 8 | 2 Floor Tiles lifting at window | Replace lifting floor tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 114 | 9" White Floor Tiles | 1110 SF | 1110 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 112 | 9" White Floor Tiles | 180 SF | NA | NA | NA | Abated Summer 2015 | NA |
| CR 110 | 9" White Floor Tiles | 1040 SF | NA | NA | NA | Abated Summer 2015 | NA |
| 2 nd Floor Hallway | 9" White Floor Tiles | 3000 SF | 3000 SF | Non-friable | 8 | 2 SF Damaged Floor Tile at Boy's Room, 4 SF Damaged Floor Tile at CR 209, 4 SF Damaged Floor Tile at CR 211 | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 216 | 9" White Floor Tiles | 810 SF | 810 SF | Non-friable | 8 | 4 SF Damaged Floor Tile on platform | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| 2 nd Floor Office | 9" White Floor Tiles | 365 SF | 365 SF | Non-friable | 5 | Good condition, under carpet | Maintain the material in good condition in accordance with the O&M Plan |
| CR 215 | 9" White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 213 | 9" White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 211 | 9" White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 209 | 9" White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 1 SF Damaged Floor Tile behind doorstop | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |

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| Location | Material | Quantity Reported in 2013 3-Year Re-inspection | Quantity Observed in 2016 3-Year Re-inspection | Friable / Non-Friable | Material/Condition Assessment Code | Comments | Response Action Recommendation |
|-------------------------------------|-----------------------|--|--|-----------------------|------------------------------------|--|---|
| CR 210 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 1 SF Damaged Floor Tile at Pass Door to 208 | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 207 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 205 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 203 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 1 SF Damaged Floor Tile at Pass Door to 201 | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 201 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Paper Storage 2 nd Floor | 9 " White Floor Tiles | 360 SF | 360 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| | Transite Panel | 48 SF | 48 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 202 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 204 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 206 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 2 SF Damaged Floor Tile at Pass Door to 204 | Repair damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 208 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| CR 212 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 1 SF Damaged Floor Tile in center of room | Repair damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| CR 214 | 9 " White Floor Tiles | 780 SF | 780 SF | Non-friable | 8 | 2 SF Damaged Floor Tile at Handicap Elevator | Replace damaged tiles and maintain the material in good condition in accordance with the O&M Plan |
| Girls Locker Hall | 9 " White Floor Tiles | 100 SF | 100 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |

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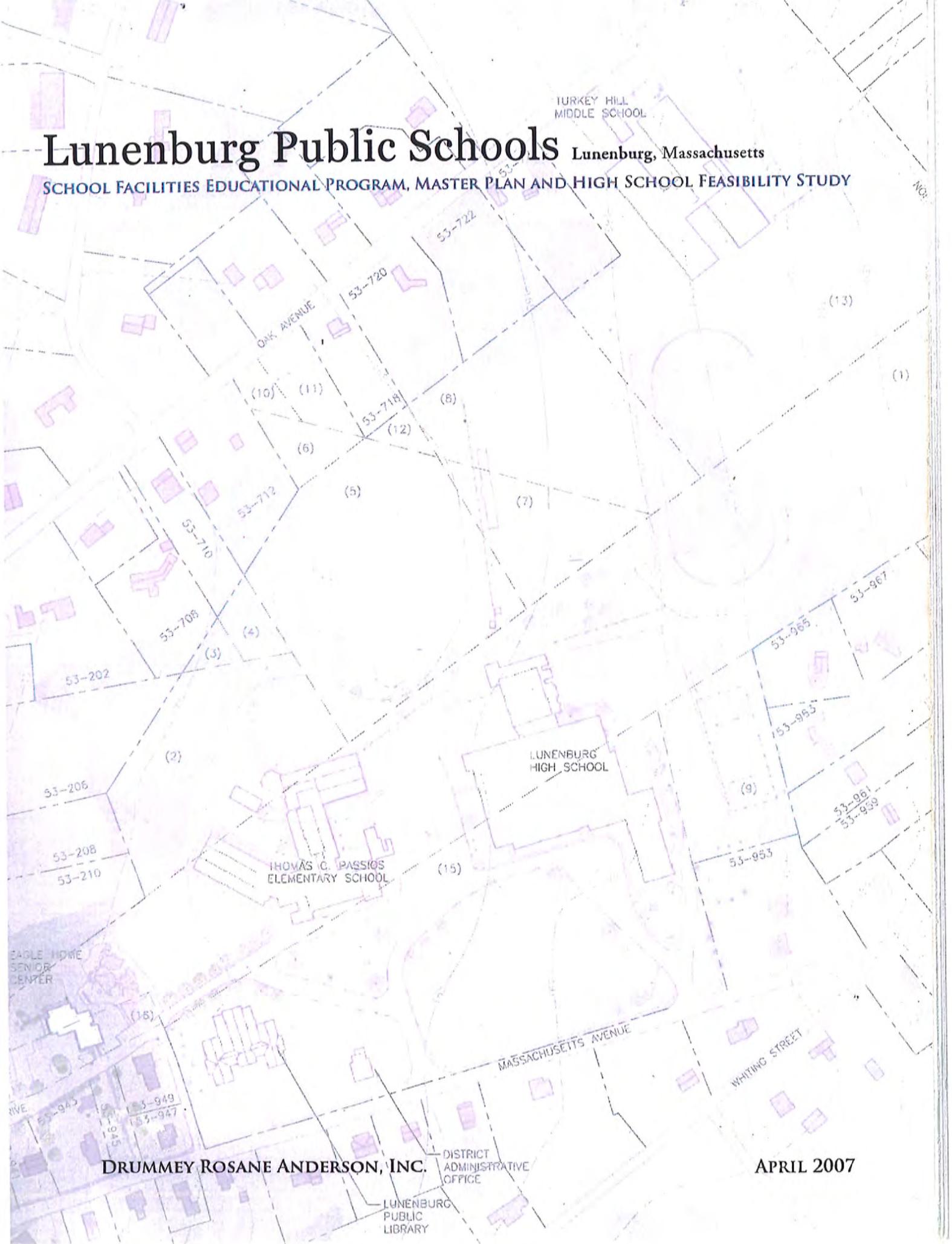
| Location | Material | Quantity Reported in 2013 3-Year Re-inspection | Quantity Observed in 2016 3-Year Re-inspection | Friable / Non-Friable | Material/Condition Assessment Code | Comments | Response Action Recommendation |
|--|-------------------------|--|--|-----------------------|------------------------------------|---|--|
| Girls Locker Office | 9" White Floor Tiles | 50 SF | 50 SF | Non-friable | 5 | Good condition | Maintain the material in good condition in accordance with the O&M Plan |
| Exterior | Exterior Window Glazing | 2000 LF | 2000 LF | Friable | 4 | Exterior Window Glazing is cracking in many locations throughout the exterior | HEPA vacuum any loose glazing around windows, re-glaze with non-ACM glazing to prevent additional delamination and replace windows as soon as economically feasible. |
| 1 st & 2 nd Floor Hallways | Spray-on Fireproofing | 3,396 SF | 3,396 SF | Friable | 5 | Good condition | Remove spray-on fireproofing as soon as economically feasible. |

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TURKEY HILL
MIDDLE SCHOOL

Lunenburg Public Schools Lunenburg, Massachusetts

SCHOOL FACILITIES EDUCATIONAL PROGRAM, MASTER PLAN AND HIGH SCHOOL FEASIBILITY STUDY



DRUMMEY ROSANE ANDERSON, INC.

DISTRICT
ADMINISTRATIVE
OFFICE

APRIL 2007

LUNENBURG
PUBLIC
LIBRARY

2.2 Turkey Hill Middle School

Constructed – 1967

CRITICAL REPAIRS

- Gymnasium bleachers need replacement
- Handicapped Accessibility a number of issues

NECESSARY REPAIRS

- Interior finishes in fair condition, re-painting should be considered.
- Asbestos containing materials VAT floor abatement required.
- Exterior Walls appear to be in sound condition, minor re-caulking required
- Exterior Windows in poor condition replacement required
- Kitchen Equipment beyond its expected service life
- HVAC system beyond its expected service life, replacement recommended (The Boiler Plant was replaced in 2003)
- Fire Alarm System needs upgrades doesn't comply with current codes

RECOMMENDED REPAIRS

- Replace existing elevator with new code compliant
- Electrical – insufficient power in the office and copy room needs upgrades

GRANDFATHERED

- Fire Protection - no sprinkler system, any significant renovation should include sprinkler system
- Roofing replaced in 1994 appears to be in fair condition.
- Electrical – update electrical distribution system
- Additional hallway lighting recommended



* Please see Appendix for full report

2.5 Capital Needs Upgrades Recommendations

Turkey Hill Middle School

| Item | Trade | Recommendations | Unit Cost | Qty | Cost | Priority |
|------------------------------------|----------|---|-----------|----------|-------------|-----------------|
| Roof | ARCH | Repair to roofing system at Entrance Canopy | LS | | \$30,000 | CR ¹ |
| Gym Floor | ARCH | Refinish Gymnasium Floor | LS | | \$12,000 | CR |
| H/P access | ARCH-HP | Replace main entry doors with wider doors. | LS | | \$7,000 | CR |
| H/P access | ARCH-HP | Replace double doors to provide 32" clear width | \$2,500 | 21.00 | \$52,500 | CR |
| H/P access | ARCH-HP | Replace door hardware | \$300 | 120.00 | \$36,000 | CR |
| H/P access | ARCH-HP | Interior Signage | LS | | \$2,500 | CR |
| H/P access | ARCH-HP | Modifications to the single accessible male and female toilet | LS | | \$40,000 | CR |
| H/P access | ELEC-HP | Provide accessible public telephone | LS | | \$600 | CR |
| H/P access | ARCH-HP | Make accessible counter for the Main Office | \$2,000 | 1.00 | \$2,000 | CR |
| H/P access | ARCH-HP | Modify Lockers (5%) | \$50 | 30.00 | \$1,500 | CR |
| H/P access | ARCH-HP | Modifications to the toilet located in the Nurse's Office | LS | | \$35,000 | CR |
| H/P access | Plumb-HP | Provide accessible Drinking Fountains | \$2,500 | 2.00 | \$5,000 | CR |
| H/P access | FF&E-HP | Provide accessible furniture in multiple locations | LS | | \$25,000 | CR |
| Equipment | ARCH | Replace Gymnasium Bleachers | LS | | \$35,000 | CR |
| Asbestos Abatement | ENVIRO | Misc. Asbestos Abatement as required for work on this list | LS | | \$35,000 | CR |
| Exterior Envelope | ARCH | Window System Replacement | \$65 | 9500.00 | \$617,500 | NR ¹ |
| Exterior Envelope | ARCH | Caulking replacement at C.J.'s and misc. masonry re-pointing | LS | | \$7,000 | NR |
| H/P access | ELEC-HP | Modifications and additional visual alarms | LS | | \$100,000 | NR |
| Kitchen Equipment | ARCH | Replace outdated Kitchen Equipment | LS | | \$95,000 | NR |
| Heating and Ventilation System | HVAC | Upgrade heating and ventilation which was not upgraded in 04-05 | \$22 | 67573.00 | \$1,486,806 | NR ¹ |
| Fire Alarm | ELEC | Update Fire Alarm System | LS | | \$150,000 | NR |
| Security | SEQ. | Provide new Property Protection / Surveillance Systems | LS | | \$75,000 | NR |
| Interior Finishes | ARCH | Repaint corridors and other common areas | LS | | \$30,000 | R |
| H/P access | ARCH-HP | Replace existing elevator with new code compliant | LS | | \$200,000 | R |
| H/P access | ARCH-HP | Misc. stair modifications, repairs | LS | | \$10,000 | R |
| H/P access | ARCH-HP | Access to Cafeteria Stage - Wheelchair Lift | \$16,000 | 1.00 | \$16,000 | R |
| H/P access | ARCH-HP | Access to Girls Locker Room - Wheelchair Lift | \$30,000 | 1.00 | \$30,000 | R |
| Plumbing | Plumb | Replace Plumbing Fixtures and Stop Valves | LS | | \$75,000 | G |
| Sprinkler System | FP | Upgrade existing system to be code compliant | \$12 | 67573.00 | \$810,876 | G |
| Electrical Distribution System | ELEC | Update the electrical Distribution and Lighting System | \$18 | 67573.00 | \$1,216,314 | G |
| Technology | TECH | Install new Network Voice / Data / Video Cabling Systems | LS | | \$227,500 | G |
| Technology | TECH | Provide new Voice / Phone System | LS | | \$55,000 | G |
| Technology | TECH | Provide new PA / Intercom System | LS | | \$39,500 | G |
| Technology | TECH | Provide new Master Clock System | LS | | \$28,000 | G |
| Technology | TECH | Provide new Video Head End System | LS | | \$30,000 | G |
| Technology | TECH | Provide new Local Sound Systems | LS | | \$35,000 | G |
| Electrical upgrades for Technology | T-ELEC | Back boxes, conduits and pathways for technology cabling | LS | | \$96,750 | G |
| Electrical upgrades for Technology | T-ELEC | Electrical receptacles for technology equipment | LS | | \$154,800 | G |

| | | |
|---------------------------------|-------------|---|
| Subtotal Critical Repairs - CR | \$319,100 | C |
| Subtotal Necessary Repairs - NR | \$2,531,108 | N |
| Subtotal Recommended - R | \$286,000 | R |
| Subtotal Grandfathered - G | \$2,768,740 | G |

| | | |
|-------------------------------|-------------|-------------|
| Subtotal: | \$5,904,946 | \$5,904,946 |
| Contingency (25%): | \$1,476,237 | |
| THMS Construction Cost Total: | \$7,381,183 | |

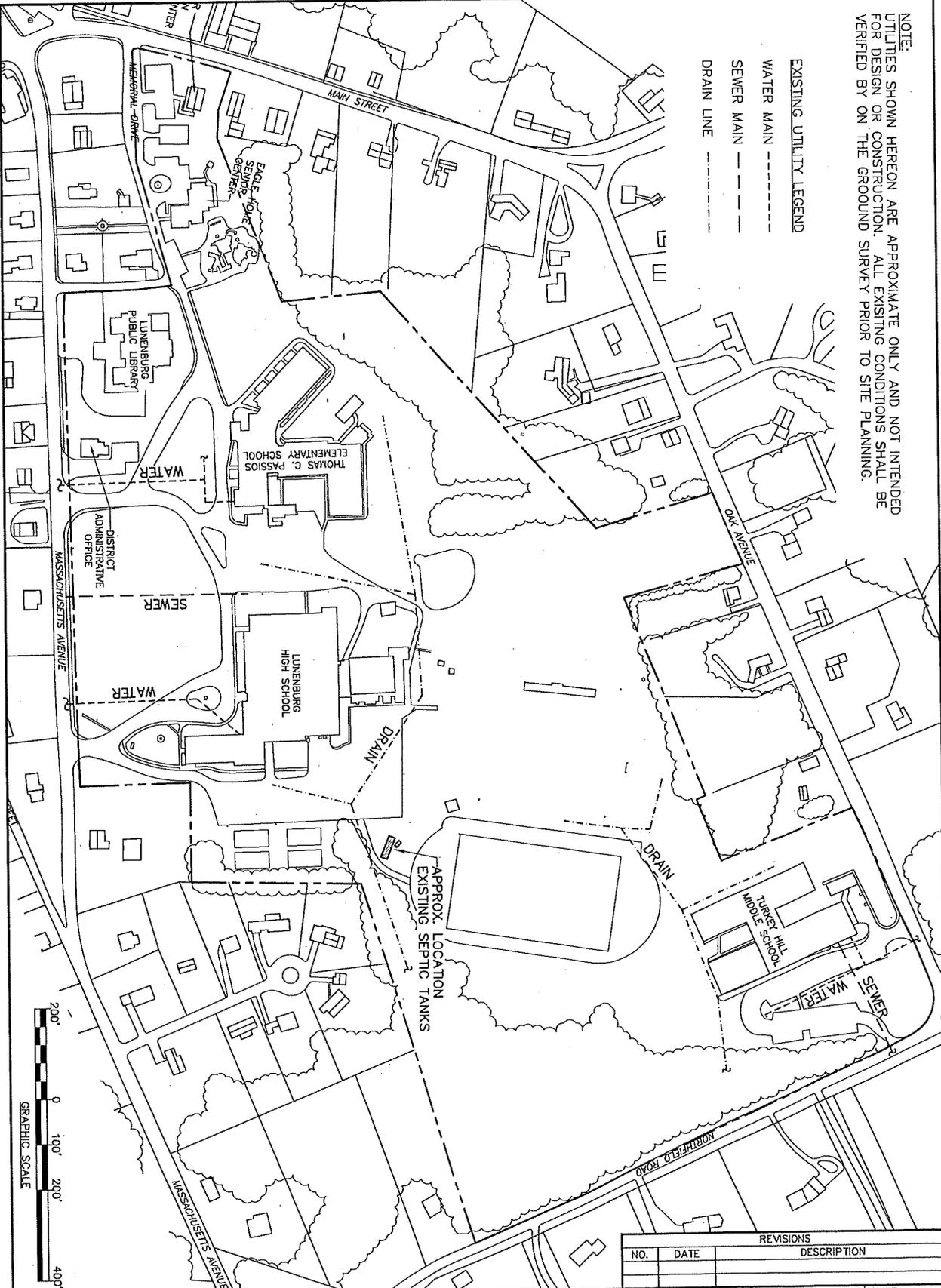
¹ Potential State Reimbursement Items. (reimbursement rate TBD)

The Massachusetts School Building Authority (MSBA) will reimburse communities for certain capital repair projects. The assumption at this time is that eligible projects will include repair/replacement of: roofs, windows and HVAC systems.

| | |
|-------------------------------|-------------|
| Subtotal: | \$2,134,106 |
| Contingency (25%) | \$533,527 |
| THMS Construction Cost Total: | \$2,667,633 |

NOTE:
 UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY AND NOT INTENDED FOR DESIGN OR CONSTRUCTION. ALL EXISTING CONDITIONS SHALL BE VERIFIED BY ON THE GROUND SURVEY PRIOR TO SITE PLANNING.

EXISTING UTILITY LEGEND
 WATER MAIN - - - - -
 SEWER MAIN - - - - -
 DRAIN LINE - - - - -



| REVISIONS | | |
|-----------|------|-------------|
| NO. | DATE | DESCRIPTION |
| | | |
| | | |

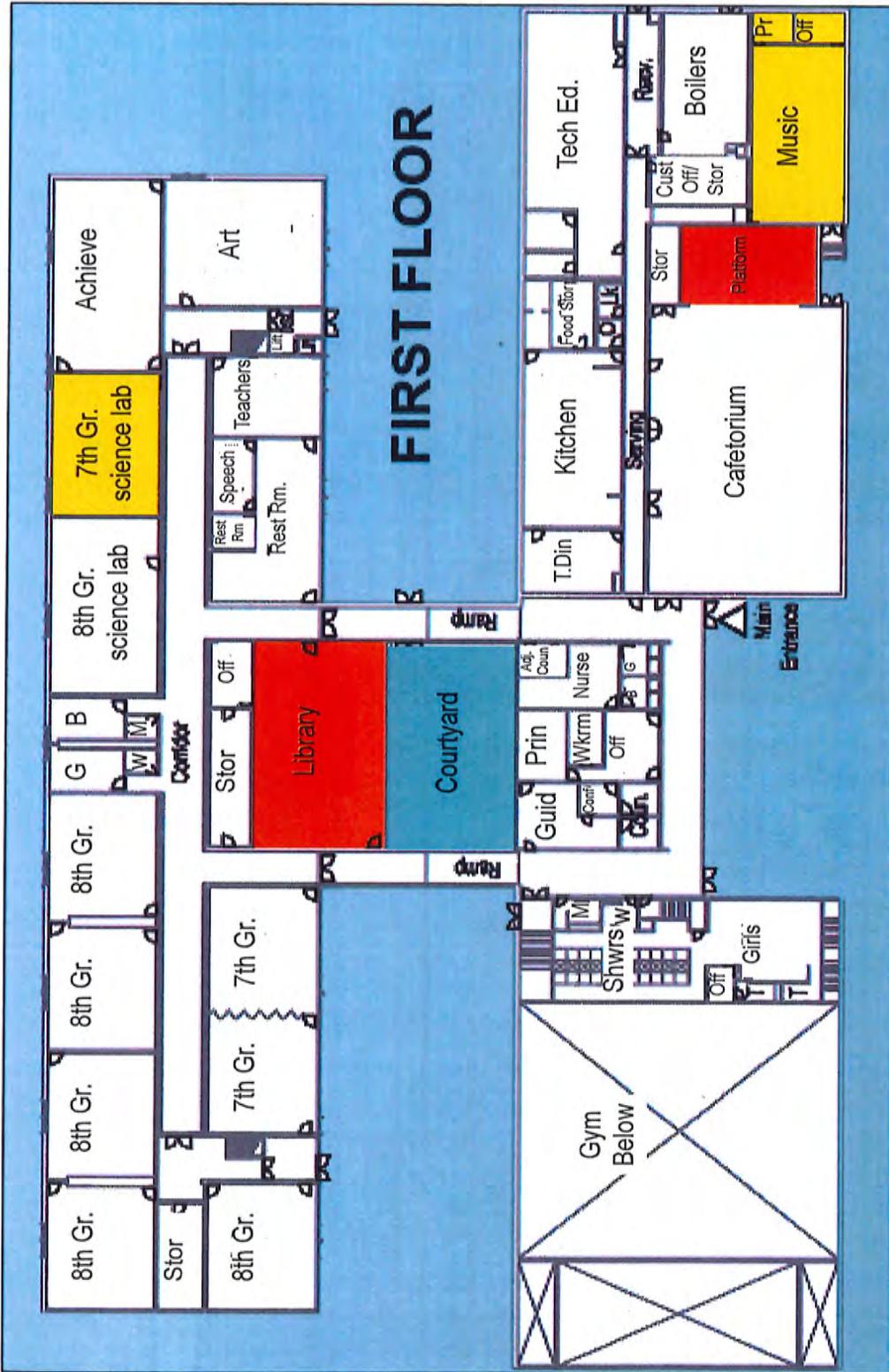
| | | |
|-------------------------|----------------------------------|-----------------------------|
| DATE: NOV 29, 2006 | DRWN BY: REO | SHEET: 1 OF: 1 |
| DESIGN BY: REO | CHKD BY: --- | |
| PROJECT NO. 96003.00 | CAD FILE: UTILITY-FEASIBILITY | |

HAMWEY ENGINEERING INC.
 Civil/Site Engineers
 14 MANNING AVENUE
 LEOMINSTER, MA 01453
 TEL.: 978-840-2964
 FAX: 978-840-3526

SHEET TITLE:
**LUNENBURG SCHOOLS
 FEASIBILITY STUDY
 SITE UTILITIES**

4.1 Existing Inventory of Spaces

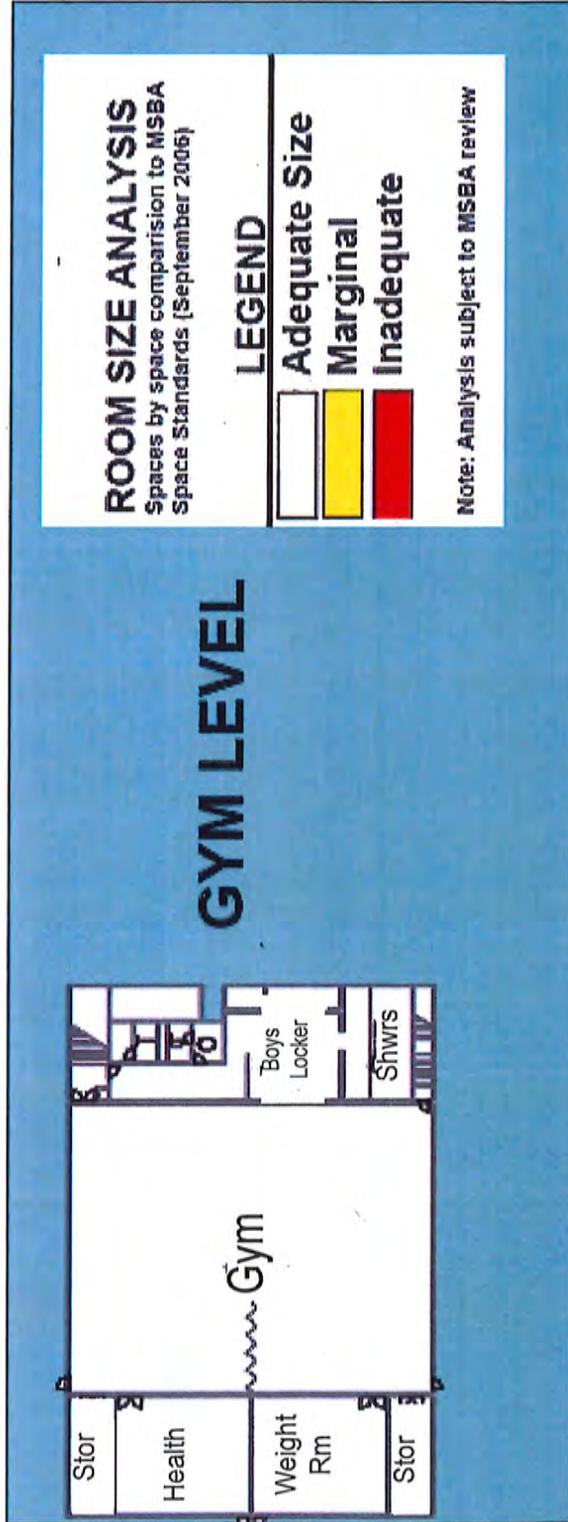
Turkey Hill Middle School



Lunenburg Public Schools - School Facilities Educational Program, Master Plan and High School Feasibility Study Drummey Rosane Anderson, Inc.

4.1 Existing Inventory of Spaces

Turkey Hill Middle School



4.2 Capacity & Educational Programming

Turkey Hill Middle School

Lunenburg Public Schools

MIDDLE SCHOOL

Program of Spaces, Based on Renovation / Addition Project

| Classrooms | Students | | Net SF Each | Qty | Net SF Total | Actual Net SF Total | Notes |
|---|-----------------|----------|-------------|------------|----------------|---------------------|--|
| | Per CR | Capacity | | | | | |
| Core Classrooms | 21.6 | 22 | 830 | 22 | 18,260 | 15,763 | |
| Science Labs | 0 | 2 | 1058.5 | 2 | 2,117 | 2,117 | Not used as homerooms |
| Classroom Totals: | | | | 475 | 20,377 | 17,880 | |
| Specialized Spaces | # people | | | | | | |
| Art | | | 1350 | 1 | 1,350 | 1,238 | Including storage and workroom |
| Music | | | 1700 | 2 | 3,400 | 1,177 | Including practice and ensemble |
| Tech Classroom | | | 1200 | 1 | 1,200 | - | |
| Tech Shop | | | 2000 | 1 | 2,000 | - | |
| Self-contained SPED Classroom | | | 950 | 1 | 950 | 1,276 | Including toilet |
| SPED Small Group/Resource Room | | | 500 | 3 | 1,500 | 3,328 | |
| Media Center/Library | | | 2850 | 1 | 2,850 | 2,162 | |
| Gymnasium | | | 5024 | 1 | 5,024 | 5,024 | Including storage and office |
| Ancillary PE Space | | | 3878 | 1 | 3,878 | 3,878 | Incl. storage, offices, locker rooms, etc. |
| Food Prep/Kitchen | | 475 | 1600 | 1 | 1,600 | 1,478 | |
| Cafetorium | | 317 | 4755 | 1 | 4,755 | 3,400 | 15 sf/student; 2/3 enrollment |
| Stage | | | 2000 | 1 | 2,000 | 677 | |
| Chair/Table Storage | | | 400 | 1 | 400 | 136 | |
| Staff Lunch Room | | 24 | 360 | 1 | 360 | 373 | |
| General Office | | | 1600 | 1 | 1,600 | 977 | |
| Nurse/Health | | | 800 | 1 | 800 | 448 | |
| Guidance | | | 1200 | 1 | 1,200 | 467 | |
| Teachers Workroom/Lounge | | 48 | 415 | 2 | 830 | 529 | Including toilet |
| Custodian/Maintenance | | | 1000 | 1 | 1,000 | 280 | |
| General Storage | | | 400 | 1 | 400 | 137 | Books |
| Net SF Subtotal (includes classrooms): | | | | | 57,474 | 49,046 | |
| Net/Gross difference | | | | | 24,126 | 18,527 | 29.6% of total |
| Gross SF Total: | | | | | 81,600* | 67,573 | *Max GSF per MSBA = 87,400 |
| | | | | 172 | | 163 | Gross Square Feet per Student Actual |

Turkey Hill Middle School

Turkey Hill Middle School building was constructed in 1967. There has been only minor renovation work performed over the years, but no significant renovations or additions. The modular classrooms located adjacent to the middle school building are currently not being used.

This building was constructed in Modernist Style typical of many schools in the 1960's. Construction of the building most closely resembles Massachusetts State Building Code 780 CMR sixth edition – Type 2c, unprotected, non-combustible, steel and concrete structure with masonry walls and metal roof deck. The facility is mixed use and contains Assembly (A-3) and Educational use occupancies. The issues associated with MAAB (Massachusetts Architectural Access Board) and ADA (Americans with Disabilities Act) are covered in a separate report.

Exterior brick/CMU walls are combination of solid un-insulated concrete masonry units with brick or CMU veneer. There are also precast concrete sill elements utilized at the window openings. The exterior envelop design also incorporated precast concrete panels and exposed concrete elements. Exposed metal structure was utilized at the Main entrance canopy. The brick veneer exterior walls appear to be in good condition. A few masonry control joints require re-caulking. The exterior metal canopy at the front entrance is in fair condition and will require cleaning and re-painting.

The exterior windows are all original single-glazed metal frames. Considering the poor conditions of the windows and rising energy costs the replacement of these windows with aluminum insulated window system should be considered a priority. Existing window and frame putty/caulking should be tested for asbestos in order to determine if special handling/abatement will be required during any future window replacement project.

The majority of the original roof construction was replaced/re-roofed in 1994. The Gymnasium roof was replaced in 1998 with Genflex Inc. roofing material. It appears that new insulation was used in conjunction with Genflex roofing system installed at the time. This roof appears to be in good condition. It would also be recommended to perform destructive testing to determine exact roofing system construction. Also infrared scan of the existing roof surface could be useful in assessment of any possible moisture damage. The roof leaks were reported to be present at the front entrance canopy areas. The metal gravel stops installed at the roof edges along the perimeter of the building appears to be in good condition.

Interior construction includes painted CMU and GWB walls, exposed brick and slate (Corridors and Main Entry). Floor materials include composition floor tile – vinyl asbestos tile (Academic Areas), ceramic mosaic tile (Bathroom areas), sealed concrete

(Storage, Mechanical rooms), carpet (Library, Admin). Ceilings include a combination of acoustical tile and plaster ceilings. The building partitions appear to be in good condition. The GWB and CMU wall surfaces require paint. Floor finish materials are in fair to poor conditions and therefore should be considered for replacement. The asbestos testing previously performed by the School Department (see AHERA report) determined that asbestos containing materials are located through the school building therefore special consideration should be given to proper asbestos containing materials removal/handling in case that the proposed construction activities may disturb these materials.

The corridor lockers have lighting fixtures incorporated in the sloped tops. The corridor lockers are in fair condition and should be considered for minor repair and re-painting. The casework installed thought the building appears to be beyond its expected service life with evidence of heavy wear and tear.

The Kitchen appears to be original and wear is showing, although the facilities appear clean and well maintained given their age. The Kitchen ceiling material should be considered for replacement with material appropriate for the food service application. Given the age of the equipment, we recommend that the foodservice professional review the kitchen during future planning.

T.C.Passios Elementary School

T.C.Passios (TCP) Elementary School building was constructed in 1951. A 9 classroom addition was built at approximately the same time utilizing similar construction type. The minor addition to the building originally constructed for the special needs program dates back to 1976. The modular classrooms located adjacent to the elementary school building are currently not being used.

This building was constructed in Modernist Style typical of many schools in the 1950's and 1960's. Construction of the building most closely resembles Massachusetts State Building Code 780 CMR sixth edition – Type 3a, protected, non-combustible, steel and concrete structure with masonry walls and wood roof deck. The facility is mixed use and contains Assembly (A-3) and Educational use occupancies.

The boiler room located in the TCP Elementary School Building is serving the adjacent High School Building as well. The two buildings are connected through the underground piping system. Issues associated with MAAB (Massachusetts Architectural Access Board) and ADA (Americans with Disabilities Act) are covered in a separate report.

Exterior brick/CMU walls are combination of solid un-insulated concrete masonry units (CMU) with brick or CMU veneer. There are also precast concrete sill elements utilized at the window openings. Metal panel cladding was utilized at exterior soffit and roof monitor areas. The brick veneer exterior walls appear to be in good condition. A few masonry control joints require re-caulking. The painted exterior CMU wall areas should

**TURKEY HILL MIDDLE SCHOOL
LUENBURG, MA**

PURPOSE

The purpose of this report is to describe in broad terms the structure of the existing building, to comment on the condition of the existing building, and on the feasibility of renovation and expansion of the facility.

SCOPE

1. Description of existing structure
2. Comments on the existing condition
3. Comments on the feasibility of renovation and expansion

BASIS OF THE REPORT

The report is based on the existing drawings prepared by Stoner Associates of Boston, MA dated April 1967, and a visual inspection of the facility on August 31, 2006.

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

BUILDING DESCRIPTION

The school is located at 129 Northfield Road in Lunenburg, MA. The structure is a single-story Area "A" with a gymnasium, cafeteria, administration, and boiler room; and a two-story Area "B" academic wing.

The foundations are typical cast-in-place concrete spread footings with an allowable bearing pressure of 2 t.s.f. The first floor concrete slabs-on-grade are typically three-inches (3") minimum on compacted fill.

There is an expansion joint located between Areas "A" and "B".

Area A has steel framing supporting a roof system of bulb tees, roof plank, and insulating fill. There is an area of roof at administration where the roof system has one and one-half inch (1 ½") deep, 20 gage steel deck.

The gymnasium has deep trusses with sloping top chord and an overall depth of 7'-6" at center, supporting the roof system.

The auditorium has long span steel joists and columns in Area "A" that are typically six-inch (6") wide flange.

There is an upper level floor at the girls locker room consisting of steel joists spaced at 2'-0" on center supporting metal lath and concrete to a depth of two and one-half inches (2 ½") with wire weld fabric mesh reinforcement.

Area "B" has six-inch (6") wide flange columns at the exterior and six-inch (6") tube steel columns at interior corridor wall locations.

The steel framed structure has girders supporting steel joists at 2'-0" on center supporting lath and reinforced concrete fill with an overall depth of two and one-half inches (2 ½"). The roof framing has steel joists at 4'-9" and 5'-4" on center supporting one and one-half inch (1 ½") deep, 20 gage galvanized steel deck.

There are two (2) expansion joints approximately 64-feet from each gable end.

Exterior walls are typically veneer brick with air space tied to eight-inch (8") concrete masonry block back up.

Interior walls are typically masonry with structural glazed tile on the corridor site.

EXISTING CONDITIONS

There are no indications of any foundation settlement and the primary structures and exterior masonry are in sound condition.

There is concern that a drifted snow condition at the low entrance and connector roofs adjacent to the cafeteria, gymnasium, and academic wings could overstress the roof deck and supporting elements.

There are no apparent lateral load resisting elements; such as bracing, shear walls, or moment frames. This was typical at the time of construction with no mandatory code loading requirements. There are, however, structural and non-structural elements that can contribute to the current code requirements for resistance to wind loading in force at the time of construction. Under any major renovation scheme, the capacity of these elements needs to be checked.

RECOMMENDATIONS

With no concerns regarding the primary structural elements and exterior envelope, the only recommendation for any structural upgrading would be a check on the existing roof deck at the low roof adjacent to the high walls to resist current drifted snow code loading requirements. This would only need to be done under an upgrade of the facility as noted in the next paragraph.

FEASIBILITY OF RENOVATION AND EXPANSION OF THE STRUCTURE

There is no capacity for any vertical expansion and any proposed additions need to be kept structurally separate from the existing structures.

The cost of any proposed additions and renovations are likely to exceed 50 percent of the assessed property value and the structure will need to be in compliance with 780 CMR Chapter 34 "Repair, Alteration, Addition, and Change of Use of Existing Buildings" of the Massachusetts State Building Code. The intent of the 780 CMR, Chapter 34 is to permit repairs or alterations to existing buildings without requiring full compliance with the Code for new construction.

Assuming no major structural renovations are made to the existing building and any additions are structurally separated from the existing building, the existing structures could be classified as being in Structural Hazard Category 2, as defined in 780 CMR, Chapter 34. At a minimum, the existing structures have to be investigated for the presence of special earthquake hazards, such as parapets, un-reinforced/un-braced masonry walls, and precast connections. All such hazards that are present have to be corrected. In this case, it implies that all the interior masonry has to be adequately clipped or braced to the structural framing members for lateral stability.

EXECUTIVE SUMMARY

The facility is in a sound structural condition with no evidence of distress.

Any addition needs to be kept structurally separate from the existing and any major upgrade would likely necessitate the addition of seismic restraints to the existing masonry walls and lateral resistance needs to be checked.

This report is based on the reference to the current Massachusetts State Building Code, 6th Edition, which will soon be revised to adopt IBC with an addendum.

It is unlikely that this revision will have a major impact on any of the structural issues referenced in this report.

Turkey Hill Middle School

Natural Gas: A 6" natural gas service provides natural gas to the building for the boilers and kitchen. The service is provided by Keyspan Energy Services.

Oil: There are four 330 gallon #2 oil tanks located within the boiler room. These tanks were replaced in 2003 and are in good condition.

Electrical: There is a 1200 amp electrical service serving the building with a back up emergency generator.

Site Lighting: Currently only one 1000 watt light serves the parking lot and the coverage is partially blocked by an existing tree. There was a project planned to install 7 poles and associated lighting for the parking lot but funding is not available. There are currently seven building mounted 150 watt high pressure sodium lights, three serving the front and four serving the back of the building. These lights are controlled by a time clock. The existing site lighting is functional but inadequate in the parking lot to provide security.

Potable Water and Sewer: Municipal water and sewer serves this building. The sewer line was installed in 2004. The septic tank was abandoned but not filled. Water service is provided for domestic water use only.

Lunenburg High School

Natural Gas: The natural gas service runs from the Oak Avenue line then runs exposed over the roof of LHS. The service is provided by Keyspan Energy Services.

Electrical: Electrical service runs under the parking lot from PES. See PES electrical utility description for details.

Potable Water and Sewer: Municipal water and sewer serves this building. The sewer line was installed in 2004. The septic tank was abandoned. Plans to crush and fill the tank exist as part of the track and field complex development. Water service is provided for domestic water use only.

Building Systems

Passios Elementary School

General: Other than the central boiler plant, which was recently replaced, the building systems in Passios Elementary School are at the end of their useful life. Most all components are in operating condition but all the systems are at a point where failure can occur at anytime. When a major renovation occurs all of the equipment should be budgeted for replacement.

Turkey Hill Middle School

General: Turkey Hill Middle School is the newest of the three schools at approximately 35 years old. Other than the boiler plant, the MEP and FP systems are original. They are at the end of their useful life and when a major renovation occurs all of the equipment should be budgeted for replacement.

Heating: Classroom heating and ventilation is provided by unit ventilators, which are original to the building. They have pneumatic controlled zone valves. The unit ventilator are beyond their useful life. The UV in the health room is failed while the UV in other areas are operational but on the verge of failure.

A number of the AHUs in the building are difficult to access due to the fact that they are located high in the air. The gym air handlers are located approximately 15 ft above the floor in a small storage room. The locker room AHUs are extremely difficult to access requiring walking a long unguarded catwalk above a ceiling and for this reason reportedly get very little maintenance.

There is asbestos at all elbows and valves of the heating piping throughout the building.

Ventilation: Classroom ventilation is provided by Unit Ventilators. Gymnasium and auditorium ventilation is provided by AHUs. Roof mounted exhaust fans serve groups of classrooms. The only source of ventilation air in the office area is the operable windows; there is no mechanical ventilation.

There is an existing dust collector within the industrial arts room, which is functional. It has not been used in a number of years.

This equipment is at the end of its useful life and the complete ventilation system should be replaced as part of any major renovation.

Central Boiler Plant: Two boiler plant serving THMS underwent a major rehab in 2003. At that time two new boilers, new pumps, piping, controls and appurtenances were installed. Also a new DHW boiler and tanks were installed. The boiler plant is in good working condition and it should be reused during any renovation or replacement.

Plumbing: The plumbing system is original to the building. Stop valves are failed in most locations throughout the building. It is reported that even minor repairs are a major issue because there are very few working stop valves in the building. There are cross connections between the DHW and CW system. One of the know causes of this cross connection is the dish sprayer within the kitchen.

Locker room showers are not used by the school and so very little maintenance is performed on them. However the showers are integral to the building being an emergency shelter.

Any major renovation should encompass complete replacement of plumbing fixtures and replacement of all potable water, and above slab sewer and vent piping. It may be possible to reuse the under slab piping depending upon the extent of the renovations.

Controls: The boiler plant has a new DDC controls system installed in 2003, which serves the boiler room equipment. The thermostats, zone valves and air handlers throughout the school are still served by the pneumatic control system. The pneumatic system is at the end of its useful life and should be replaced.

Generator: A new emergency generator was installed circa 1998. This generator runs emergency lighting, kitchen, one boiler, phone system. This building is currently the emergency shelter for the town. (To the best of the Director of Maintenance's knowledge a full test was never performed to verify that this generator powers all required equipment for the emergency shelter following the boiler room renovation.)

Electrical: 1,200 Amp service to the school. The electrical equipment is original to the building.

There is insufficient power in the office and copy room. When window AC in principal's office is on there is a tendency to trip the circuit breaker serving this area.

Lighting: Currently the entire school is T-12 fluorescent fixtures. Currently the school department plans to upgrade to T-8 fixtures within the 2006-2007 operating budget. There is insufficient lighting in the hallways. During a major renovation all lighting should be replaced and the hallway lighting should be increased.

Kitchen: The kitchen hood and make up air unit are original to the building. They are in working condition but at the end of their useful life.

Fire Protection: There is no sprinkler system within the building. During any major renovation a new code compliant sprinkler system should be installed.

Fire Alarm System: There is limited alarm system. Most exit lights have been retrofitted with energy efficient LEDs lamps. Some of the exit lights are on switched circuits. The fire alarm system does not comply with current code and an upgrade or replacement should be included as part of a renovation project.

Security: There is a partial security system in the building. The system monitors 4 zones: the Main Office, Music Room, Library and Industrial Arts.

Kessler McGuinness & Associates, LLC



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LUNENBURG PUBLIC SCHOOLS

EXECUTIVE SUMMARY: Accessibility Issues Audit

4 October 2006

Kessler McGuinness & Associates was retained by DRA Architects, Inc. to conduct an access issues audit of the Lunenburg High School, Turkey Hill Middle School, and Thomas C. Passios Elementary School. The purpose of this report is to identify the architectural barrier removal requirements to ensure full compliance with all state and federal accessible design and construction requirements, including:

- *Americans with Disabilities Act (ADA) Title II "program access"* requirements. This requires that architectural barriers be removed, when necessary, to provide full access to a public entity's programs and services.
- *ADA Accessibility Guidelines (ADAAG)*, the accessible design and construction standards referenced for both ADA Title II and Title III. These are the federal accessible design and construction standards for all new construction and alterations to existing facilities.
- *521 CMR: Rules and Regulations of the Massachusetts Architectural Access Board*. These regulations are incorporated by reference into the Massachusetts State Building Code and are enforceable as part of the building code.

Barrier Removal Triggers

There are different triggers that require removal of some or all architectural barriers from an existing building. Those that are relevant to the Lunenburg Public Schools are:

1. **ADA (Title II)**. Title II of the ADA requires that "*...no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be*

TURKEY HILL MIDDLE SCHOOL

Parking

There are an inadequate number of accessible parking spaces and no accessible van parking. There is also no accessible route from the parking lot to the school.



Exterior Accessible Route

There are no accessible exterior routes connecting the school's entrance with the accessible parking and public sidewalks.

The path between the parking lot and the school is cracked and uneven.



Entrances

The Main Entrance has narrow doors, with less than 32" clear width. The door bell is outside accessible reach range. There is no visual component to the intercom.



Fire Alarms

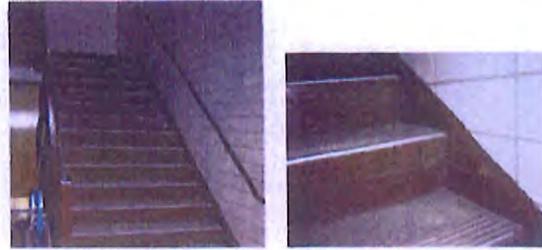
The visual alarms located too low. The visual alarms should be at 80" above the floor or 6" below the ceiling, whichever is lower.



TURKEY HILL MIDDLE SCHOOL

Stairs

The stairs between floors have abrupt nosings. The inside rails are not continuous and do not extend.



Handrails

The inside handrails on the stairs are not continuous and do not extend.

Lifts

There are two lifts in the school.

The inclined wheel chair lift going to the gym. The further use of this lift should be reviewed for it might be blocking an egress route.



The vertical lift connecting the two floors is not recessed into the floor, and the ramp has no level landing at the lift entrance.

Door Clear Width

Most double doors are too narrow. These need to have at least one leaf with a minimum 32" clear width.

The Principal's Office door is too narrow.



Door Hardware

Most doors are equipped with knob-type hardware which require with grasping and/or twisting.



Clear Maneuvering Space

The doors on the Library and Principle's Office do not provide adequate clear maneuvering space.

TURKEY HILL MIDDLE SCHOOL

Thresholds

The 2nd floor bathroom has a threshold exceeding the ½" maximum height.

Signage

There is no signage directing to the lifts.
There are also no tactile/Braille EXIT signs.

Toilets

There are no accessible toilet rooms in the school.

There are Men's and Women's toilet rooms labeled as "accessible."

The Women's "accessible" toilet room has a narrow door with knob-type hardware. The flush valve is located on the narrow side of the stall. The back grab bar is smaller than the required 42" length. There is also a shelf that protrudes more than 4".

The Men's "accessible" toilet room has the toilet bowl at less than 18" from the wall and there is no maneuvering space at the entrance.

The boys' and girls' toilet rooms on the 2nd floor have no accessible elements. Most sinks have exposed piping which should be insulated.

Telephones

The public telephone is above the maximum allowable reaching height.



TURKEY HILL MIDDLE SCHOOL

Drinking Fountain

The drinking fountain on the first floor protrudes onto the hallway. There are no high and low water fountains.



Lockers

There are no accessible lockers in the school.



School Office

The Main Office has no accessible counter section. There is a protruding shelf inside the office. The hardware on the door is knob-type.



Nurse's Office

The Nurse's Office has a toilet room with no accessible elements.



TURKEY HILL MIDDLE SCHOOL

Library

There is inadequate clear maneuvering space at the entrance.

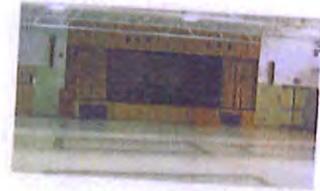
The one table meant to be accessible does not provide adequate knee clearance. There is an insufficient amount of accessible desks.

There are no accessible computer stations.



Cafeteria

There is a stage in the cafeteria which is not accessible from the floor. The double doors leading to the lunch line are too narrow and heavy requiring more than 5 pounds to operate.



Gymnasium

There is no accessible seating in the gym. There is also no accessible route between the gym EXIT and the athletic fields.



Locker rooms

There are no accessible locker rooms. The Girls' locker room is only reachable by stairs.



TURKEY HILL MIDDLE SCHOOL

Classrooms

Most classroom desks are not accessible. It is required that 5% of all desks in a classroom, and at least 1, to be accessible.



There are no accessible sinks.



Music Room

There is a ramp between the hallway and the Music room which exceeds the maximum slope of 8.3%.

There is no level landing at the door.

There is also no clear maneuvering space at the pull side of the door. The doors between the Music Room and the stage are too narrow.



Art Classroom

There are no accessible sinks in the Art classroom.

Egress

There is no accessible egress from the school. Effective July 2006, 521 CMR requires all public means of egress to provide accessible route. This issue will require attention in major renovations.



APPENDIX C

VISUAL HAZARDOUS MATERIALS SURVEY



February 21, 2018

Ms. Heather R. Lemieux, Town Manager
Town of Lunenburg
17 Main Street
P.O. Box 135
Lunenburg, MA 01462

Reference: Hazardous Materials Visual Assessment
Turkey Hill Elementary School
129 Northfield Road
Lunenburg, MA 01462
VERTEX Project No. 48237

Dear Ms. Lemieux:

The Vertex Companies, Inc. (VERTEX) is pleased to provide you with this letter report summarizing the visual hazardous materials assessment performed at the Turkey Hill Elementary School (the Site).

The Turkey Hill Elementary School is a one-story brick and concrete masonry unit (CMU) building reportedly constructed in 1968. Interior finish materials generally include various colored 9" and 12" floor tile, plaster or painted wallboard walls, plastered or painted wallboard ceilings and/or acoustical splined ceiling tile. Exterior finish materials generally include a brick finished façade with a flat rubber membrane roof.

The following sections identify suspect asbestos-containing materials (ACMs), suspect lead based painted (LBP) surfaces, and regulated materials/universal wastes identified during the assessment.

Suspect Asbestos Containing Materials (ACMs) Assessment

VERTEX was provided with an Asbestos Hazard Emergency Response Act (AHERA) 3-Year Reinspection Report for the site building prepared by Cardno/ATC dated May 17, 2016.

Review of the 2016 Cardno/ATC 3-Year Reinspection Report revealed the following asbestos-containing building materials (ACBMs) present at the school:

- Various Colored 9" Floor Tile and Associated Mastics
- 12" x 12" White/Black Floor Tile
- Cement Board Paneling
- Spray-on Fireproofing
- Exterior Window Glazing

Additional review of the laboratory report from the ATC 2013 Inspection indicated that the black flooring mastic was determined asbestos-containing and the 9" Tan Floor Tile was not determined asbestos-containing. Additional sampling is recommended for the asbestos content determination within the various colored 9" Floor Tiles and associated mastics at the school.

Review of the 2016 Cardno/ATC 3-Year Reinspection Report revealed the following building materials not to contain asbestos at the school:

- Textured Ceiling
- Mudded Fittings on Fiberglass Pipe Insulation
- Plaster Skim Coat
- Plaster Base Coat
- Yellow Covebase Mastic
- Brown Covebase Mastic
- 1' x 1' Textured Ceiling Tile
- 1' x 1' Smooth Ceiling Tile
- 1' x 1' Dotted Ceiling Tile
- Glue Duabs associated with 1' x 1' Ceiling Tile
- Sheetrock
- Textured Portico Ceiling
- Tectum Board
- 12" White/Tan Fleck Floor Tile
- 12" White Dotted Floor Tile

It should be noted that under the AHERA regulations ACBMs are only identified within the school building, other ACMs may be associated with the school that do not fall under AHERA ACBM definition. Examples of materials which have been found to contain asbestos include but are not limited to exterior window caulking, window glazing, and roofing material. Prior to school renovations any suspect materials not sampled or listed within the school's Asbestos Management Plan (AMP), must be tested prior to disturbance.

Based on the age of the site building (1968) it is likely that additional ACMs are present at the site building. Known or suspect ACMs observed and assumed to be present during the assessment included:

- Various Colored 9" Floor Tile and Associated Mastics
- Joint Compound
- Cement Board Paneling
- Fire Doors
- Duct Insulation
- Pipe Fitting Insulation
- Hardwood Flooring Paper
- Exterior Window Glazing
- Exterior Window Caulking
- Exterior Door Caulking
- Foundation and Waterporofing Mastics
- Roofing Materials (i.e. tar and gravel assumed under rubber membrane, etc.)

At the time of the assessment, the suspect ACMs identified were observed to be in fair to good condition. Please refer to Attachment A which includes photographic documentation of the suspect ACMs identified during the assessment.

Suspect Lead Based Painted Surfaces Assessment

Based on the age of the site building (1968) it likely that LBPs are present at the site building. Various colored painted surfaces were observed to be in fair to good condition on the interior and fair to poor condition on the exterior. Please refer to Attachment A which includes photographic documentation of the suspect LBP surfaces identified during the assessment.

Regulated Materials/Universal Waste Assessment

The following regulated materials/universal wastes were identified during the visual assessment:

- Fluorescent Light Bulbs
- Poly-Chlorinated Biphenyl (PCB)/Non-PCB Light Ballasts
- Emergency Light/Exit Sign Batteries
- Four (4) 275-Gallon Fuel Oil Above Ground Storage Tanks in the Boiler Room
- 75-Gallon Fuel Oil Above Ground Storage Tank associated with Generator
- Pad-mounted PCB/Non-PCB Tranformer
- Window Mounted Air Conditioners

Recommendations

Based on the visual assessment conducted, VERTEX offers the following recommendations:

Prior to any renovation or demolition activities, sampling of suspect ACMs that may be disturbed would need to be conducted in applicable areas to determine asbestos content. A comprehensive ACM survey is required to be conducted to comply with the Environmental Protection Agency (EPA) National Emission Standard for Hazardous Air Pollutants (NESHAPs) 40 CFR Part 61. Until these materials have been sampled and determined to be non-asbestos containing, these materials should be managed in place as presumed asbestos-containing materials (PACMs).

The General Contractor is required to comply with all applicable Federal, Commonwealth and local Regulations concerning lead-based paint located on surfaces that will be impacted. The General Contractor is required to ensure the protection of workers performing any related demolition work that will affect lead painted surfaces as well as protecting the public and the environment from exposure to lead dust. It is the General Contractor's responsibility to ensure that all applicable regulations are followed. This may include but may not be limited to air quality testing, medical screening of workers, dust barriers, testing of waste for disposal requirements, etc. In addition, composite samples of painted surfaces, including wood, require testing by the Toxicity Characteristics Leaching Procedure (TCLP) for waste classification in accordance with disposal requirements of the EPA. The General Contractor is required to comply with all applicable Federal, Commonwealth and local Regulations concerning lead-based paint located on surfaces that will be affected.

Identified regulated materials/universal wastes are required be properly packaged, removed and disposed/recycled in accordance with federal, state and local regulations if renovation and/or demolition is planned to disturb.

Estimated Costs

- Preparation of a Lead Based Paint Operations and Maintenance Plan: \$500.00
- Comprehensive Pre-Renovation/Demolition Survey: \$12,000.00
- Abatement of Identified /Assumed ACMs and Regulated Materials: \$1,300,000.00*
- Environmental Consulting/Clearance Inspections/Monitoring: \$429,000.00*

**The Estimated Costs for Abatement and Consulting provided above will be dependent on the findings of a Comprehensive Pre-Renovation/Demolition Survey as well as the Selected Contractor schedule.*

Limitations

Professional opinions presented in this summary letter are based on information made available to VERTEX either by review of data provided by others or data gained by VERTEX personnel.

Conditions described in this summary letter were observed at the time of the inspection, unless otherwise stated.

VERTEX observed only the conditions and locations described in the summary letter at the time indicated.

This survey was limited to a visual assessment only and should not be utilized for renovation and/or demolition activities.

Please do not hesitate to contact us at your convenience, should you have any questions or comments regarding this summary letter or our recommendations.

Sincerely,
The Vertex Companies, Inc.

A handwritten signature in black ink, appearing to read 'JM', with a long horizontal line extending to the right.

Jason Mohre
Senior Project Manager

Attachments:
Photographic Documentation

ATTACHMENT A

VERTEX[®]



Photo #1: Photograph depicts general view of Side A of the Site Building



Photo #2: Photograph depicts general view of Side B of the Site Building



Photo #3: Photograph depicts general view of Side C of the Site Building



Photo #4: Photograph depicts general view of Classroom Hallway on the First Floor



Photo #5: Photograph depicts general view of 9" Floor Tile within Classroom



Photo #6: Photograph depicts general view of acoustical spline ceiling tiles within classroom



Photo #7: Photograph depicts general view of Classroom Hallway on the Second Floor



Photo #8: Photograph depicts general view of spray-on fireproofing on beam above the ceiling within a Classroom



Photo #9: Photograph depicts general view of suspect duct wrap insulation within air handler room adjacent to the Gym



Photo #10: Photograph depicts general view of suspect fitting insulation within resource room adjacent to the Gym



Photo #11: Photograph depicts general view of Heating Oil ASTs within the Boiler Room



Photo #12: Photograph depicts general view of the Pad Mounted Transformer on the Exterior

APPENDIX D

STAFF QUALIFICATIONS



Brian Dunn, AIA
Forensic Architect

[bdunn@vertexeng.com / 203-517-4917]

Expertise:

Loss Control
Construction Defect
Owner's Representation
Architecture
Litigation Support & Expert
Testimony (Construction)
Property Claim - Personal
Property Condition
Assessments
Litigation Support & Expert
Testimony
Consultation
Builder's Risk Claim
Design Plans
Premise Liability Claim

Education/Training:

Architecture, Boston Architectural College, B.Arch, 2008

Biography:

Mr. Dunn possesses over 25 years of experience in the construction and design industries with an emphasis on preventing and solving issues related to the built environment. As a design professional Mr. Dunn has garnered expertise in all phases from the initial concept generation to the delivery of the completed building, including post occupancy analysis. He has been responsible for the successful coordination of the various disciplines that make up the finished product including site work.

Mr. Dunn provides valuable services to clients by performing on site inspections and construction document reviews as it pertains to litigation matters and pre-construction loss prevention reviews. Through his use of modern technology and his knowledge of myriad construction types and materials he is able to deliver accurate analyses and provide forward thinking solutions for clients that encompass their specific needs. He is adept at finding the source of problem and then providing the appropriate response that yields the best outcomes for clients.

Mr. Dunn's background in the construction and utility industries prior to him becoming an architect has given him experience with the technical aspects of construction not typically found in the architecture profession. It is this background that has led him to be proficient in the detailing of buildings and his ability to produce solutions to problems that arise during the course of construction in a timely manner as necessitated once projects have broken ground. In post construction analysis he is able to examine conditions from large scale proportions down to minute details, interpret those findings, and communicate to clients the scope of the issue and how best to remedy that particular situation to the satisfaction of the client.

Licenses/Certifications:

Registered Architect, CT, 13888
Registered Architect, MD, 18019
Registered Architect, NY, pending
NCARB

Associations:

American Institute of Architects- AIA
Chamber of Commerce Ridgfield CT Advisory Council (2016)



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

[enelson@vertexeng.com / 484-487-2727]

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

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

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, remodeling and re-development, property acquisition, lender due diligence and financial needs assessments and development of replacement reserves for numerous property types.

Licenses/Certifications:

Professional Engineer (PE) – Civil, DE, 10924
Professional Engineer (PE) – Civil, IL, 62.049214
Professional Engineer (PE) – Civil, IN, PE19500266
Professional Engineer (PE) – Civil, MD, 27232
Professional Engineer (PE) – Civil, NJ, 24GE03972000
Professional Engineer (PE) – Civil, NY, 754035
Professional Engineer (PE) – Civil, PA, PE050115E
Professional Engineer (PE) – Civil, WI, 31086-6
Professional Engineer (PE) – Civil, NC, 041964
Professional Engineer (PE) - Civil, AZ, 62072
LEED® AP
Certified Energy Auditor
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:

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



Jason Mohre
Senior Project Manager

[jmohre@vertexeng.com / 6016]



Expertise:

Asbestos
 Indoor Air Quality
 Industrial Hygiene
 Investigations & Remediation
 Lead
 Mold
 O&M Program
 LEED Assessment & Certification
 Environmental
 Green Building
 Compliance Audits
 Database Review
 Environmental Portfolio Reviews
 Peer Review
 Phase I ESAs
 Phase II LSI
 Transaction Screen
 Claim Investigation
 Biology
 Environmental Health & Safety
 Environmental Permitting
 Groundwater & Soil Characterization
 Hazardous Materials/Waste PCB
 Remedial Design & Feasibility Studies
 Remediation & Construction Management
 Site Characterization
 UST Removal
 Vapor Intrusion Investigations & Remediation
 Water & Wastewater
 Sustainability Consulting

Education/Training:

A.S., Environmental Technology, Cape Cod Community College (CCCC)
 B.A., Earth & Geographical Studies, University of Massachusetts
 Hydrogeology Certificate, UMASS Boston
 Water Supply Certificate, CCCC/Massachusetts Maritime Academy (MMA)
 Coastal Zone Management Certificate, CCCC
 Wastewater Technology Certificate, CCCC/MMA
 Geographical Information Systems Certificate, CCCC/MMA

Special Training:

NIOSH 582 Equivalent: Air Sampling & Analysis for Asbestos Training
 American Industrial Hygiene Association, PAT Program Participant
 Institute for Environmental Education Asbestos Management Planner Training
 Institute for Environmental Education, Asbestos Project Monitor Training
 Institute for Environmental Education Asbestos Inspector Training

Biography:

Mr. Mohre has over 15 years of experience in the environmental industry. Field expertise includes Asbestos Inspections, Indoor Air Quality Assessments, Hazardous Material building surveys and Water Intrusion/Mold Cause and Origin Investigations as well as on-site project management related to remedial action oversight, Phase I Environmental Site Assessments (ESAs), Commercial Property Transaction Screens, and Phase II Subsurface Investigations.

Mr. Mohre is currently responsible for managing industrial hygiene projects involving asbestos abatement, mold remediation and indoor air quality. Management tasks include: asbestos inspections; indoor air quality assessments; site investigations; cause and origin determinations; delineation of contaminated media; development of remediation strategies; and oversight and management of contractors. He also provides comprehensive investigative reports, remedial protocols, and operational plans.

Mr. Mohre also works closely with the other divisions of the VERTEX Companies which include environmental site investigations for insurance claims, property development/redevelopment, and/ or property transactions.

Licenses/Certifications:

Asbestos Inspector, RI, AAC-0828IS, expire January, 2013
 Asbestos Inspector, MA, AI000262, expire January, 2013
 Asbestos Inspector, NH, AI 000370, expire January, 2013
 Asbestos Management Planner, NH, AM 000370, expire January, 2013
 Asbestos Management Planner, MA, AP000080, expire January, 2013
 Asbestos Project Monitor, MA, AM000144, expire January, 2012
 8 Hour OSHA HAZWOPER Refresher Certification, Annual
 OSHA 40 Hour HAZWOPER Training



Matthew Quigley, PE
Forensic Engineer

[mquigley@vertexeng.com / 781.952.6070]

Highlights:

Professional Engineer (PE),
Structural
Passed 16 HR. Structural
Engineering (SE) Exam
B.S. Civil Engineering

Expertise:

Civil/Structural
Structural
Damages
Design Plans
Property Claim - Commercial
Property Claim - Personal

Education/Training:

B.S., Civil Engineering, Northeastern University, 2010

Special Training:

SEAMASS - Wind and Waves
SEAMASS - Structural Forensics: Lessons Learned

Biography:

Mr. Quigley has a strong background in structural engineering analysis and design, building envelope review and design and construction administration services. He is a licensed engineer in 5 states and has experience with consultation and design of concrete, steel, masonry, and wood structural systems in residential and commercial applications. He is experienced in state and federal building codes and implementation through forensic analysis of failures and design of new structures.

He has experience in the evaluation, design and rehabilitation of historic structures including structural reinforcement, building envelope renovation and building code upgrades. His responsibilities include evaluating historic materials, designing to match existing material strengths and aesthetics, coordinating with historic commission requirements, implementing building code upgrades for historic structures and review and approval of construction materials and implementation.

Mr. Quigley uses these skills and experience as an integral member of the forensic engineering division within VERTEX to provide cause and origin investigations, damage assessments, and repair and design recommendations for structural and building envelope components on residential and commercial applications.

Licenses/Certifications:

Professional Engineer (PE) – Structural, MA, 51620
Professional Engineer (PE) – Structural, CT, 31035
Professional Engineer (PE) – Structural, NH, 15152
Professional Engineer (PE) – Structural, VT, 123335
Professional Engineer (PE) – Structural, RI, 11959
Professional Engineer (PE), NY, 097406
OSHA 10
Structural Safety Assessment Program Inspector, CA, 74255

Associations:

- American Concrete Institute (ACI)
- American Society for Testing and Materials (ATM)
- American Institute of Steel Construction (AISC)

Presentations:

Presentation and training: *"Expansion and Control Joints"* as part of



Philip Russo, R.A.
Project Manager

[prusso@vertexeng.com / 617-830-1542]

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

Education/Training:

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

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 governmental 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.

Licenses/Certifications:

Registered Architect, MA, MA#9077
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



Scott Katzer, PE
Division Manager / Senior Forensic Engineer

[skatzer@vertexeng.com / 954-626-8893]

Highlights:

Mechanical Engineering Degree
Professional Engineer
Expert with many building related components
Nationwide Due Diligence Experience
Registered Professional Engineer in 12 States
Performed Numerous Forensic Investigations
Expert Consultant, Litigation Experience
Construction Defect
Nationwide Property Condition Assessments Expertise
Project Management Experience Nationwide
Experience in Hospital Facilities
MEP Systems

Expertise:

Litigation Support & Expert Testimony (Insurance Support)
Indoor Air Quality
Mold
PCA
Construction Defect
Construction Management
Catastrophe Claim
Contract Claim
Owner's Representation
Electrical Consulting
Litigation Support & Expert Testimony (Construction)
Commissioning
Construction Claim Analysis & Prep
Property Claim - Personal Reconstruction/Restoration
Tenant Improvement
Mechanical
Feasibility Studies
Construction Due Diligence
Property Condition Assessments
Litigation Support & Expert Testimony (Air Quality)
Energy Management System Design, Installation & Support
Peer Review
Claim Investigation
Vapor Intrusion Investigations & Remediation

Education/Training:

B.S., Mechanical Engineering, Northeastern University, Boston, MA, 1992

Special Training:

Florida Wind Mitigation Inspection Training
Water Vapor Diffusion
Florida Professional Engineering Rules & Ethics
Concrete Deficiencies, Causes & Evaluation
Exterior Insulation & Finish Systems (EIFS)
Property Claim Training
Seismic Damage
Building Envelope & Stucco
Vibration Damage
Construction Defect Disputes & Litigation
National Association of Fire Investigators
Role of Cool Thermal Storage in Sustainable Design
Florida Wind Mitigation Inspection

Biography:

Mr. Katzer is a Senior Engineer and Florida Division Manager. He earned a B.S. in Mechanical Engineering from Northeastern University and is a licensed professional mechanical engineer, Certified Fire & Explosion Investigator (CFEI) and a Haag certified residential roof inspector.

Mr. Katzer's engineering experience encompasses a wide variety of building issues. He is an experienced mechanical engineer in the evaluation and design of healthcare, institutional, commercial, residential and industrial technically complex projects, as well as the investigation and analysis of building related components including heating, ventilating and air conditioning (HVAC), electrical, plumbing, fire protection, building envelope and indoor air quality (IAQ) issues. He is also experienced in the evaluation of buildings relating to identifying and mitigating the risks associated with hurricanes and similar catastrophic events.

Licenses/Certifications:

Professional Engineer (PE) - Mechanical, FL, 52678
Professional Engineer (PE) - Mechanical, GA, 26933
Professional Engineer (PE) - Mechanical, MA, 46899
Professional Engineer (PE) - Mechanical, CA, 33806
Professional Engineer (PE) - Mechanical, IL, 062060482
Professional Engineer (PE) - Mechanical, TX, 101536
Professional Engineer (PE) - Mechanical, NC, 035481
Professional Engineer (PE) - Mechanical, NY, 092091-1
Professional Engineer (PE) - Mechanical, CT, 30928
Professional Engineer (PE) - Mechanical, NV, 023556
Professional Engineer (PE) - Mechanical, CO, PE.0050936
Professional Engineer (PE) - Mechanical, NJ, 24GE05277500
Certified Fire & Explosion Investigator (CFEI), National, 20278-11429
Haag Certified Inspector - Residential Roofs, HCI #201302562

Fire and Explosives
Fire - Origin & Cause
Damages
PCS
Other
Invoice Review
Litigation Support & Expert
Testimony
Consultation
Subrogation
Design Plans
Product Liability Claim
Property Claim - Commercial
Infrared Thermography
Survey

OSHA 10, 360training.com

Associations:

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), No. 8160171

International Association of Fire Investigators member, No. 1310698

Presentations:

June 2015: Presented "From 5 to 5000 gallons, What to Look for in a Brewery Space" to the American Homebrewers Association, National Conference in San Diego, California.

June 2015/May 2014: Presented "Water Vapor Diffusion" to The Vertex Companies and Engle Martin & Associates in Fort Lauderdale, Florida.

April 2013/October 2012: Presented "Living with Engineers" to North Broward Preparatory School in Coral Springs, Florida and Olympic Heights High School STEM Program Board of Directors in Boca Raton, Florida.

June 2008: Presented "Hurricane Mitigation for Mission Critical Facilities" at the 7x24 Exchange Conference in Boca Raton, Florida.