

DRAFT REPORT

EVALUATION AND ASSESSMENT EMERSON ELEMENTARY SCHOOLS 27 RHODODENDRON ROAD FITZWILLIAM, NEW HAMPSHIRE



NOVEMBER 29, 2017

The H.L. Turner Group Inc.

Monadnock School District
Emerson Elementary School
27 Rhododendron Road
Fitzwilliam, New Hampshire

October 2017

Facility Assessment

On October 5, 2017, representatives from The H.L. Turner Group Inc. (TTG) of Concord, New Hampshire, Paul M. Becht, P.E. and Dan Hall, AIA, visited the Emerson Elementary School for the purpose of performing an overall assessment of the school building. During the assessment we were accompanied by the District's Facility Director, Mr. David LaPointe. The purpose of this assessment was to identify any existing deficiencies in the building, including life safety issues, that the Town should plan to address. The report gives an overview of the architectural features of the building, including the exterior façade, roof, and interior finishes, as well as an overview of the major mechanical and electrical equipment. Also discussed are accessibility and critical life safety issues at the school.

Accurate and concise condition assessment data is essential for proper planning for maintenance and capital improvements. This condition assessment is intended for use by the Monadnock School District as a tool for budget planning for the allocation of resources on a priority basis. It is hoped that by determining the nature and extent of problems, and providing options for corrective action, items may be addressed before more serious damage or failure can occur. The purpose of this facility audit is to report conditions that are in need of repairs and upgrade, conditions that do not comply with current building and safety codes, and confirm that the facility operates as designed structurally, mechanically, and electrically.

Project Objectives

- To provide an accurate accounting of all items that may be classified as deferred maintenance or capital repair/improvements.
- To calculate opinions of cost for all identified maintenance and capital improvement items using an established method of construction and cost estimating data.



It is the intention that the results of this facility audit will ultimately be used to identify a prioritization of capital repair and replacement projects for the Emerson Elementary School.

LIMITATIONS: The H.L. Turner Group Inc. (TTG) has prepared this report for the Monadnock School District based on visual observations only, and therefore it did not involve destructive demolition, scientific testing, or any other tests. The information/data in this report has been provided in general accordance with accepted Engineering/Architectural consulting practices, and TTG makes no warrantee, either expressed or implied, on the conclusions or cost estimates/opinions of cost provided.

Introduction

The original Emerson Elementary School built in 1925 consisted of an “L” shaped, two-level footprint, with a gross area of approximately 6,600 square feet. In 1950 an addition was constructed to provide more classroom space. Approximately 5,550 square feet was added bringing the total area to 12,150 square feet. Finally in the late 1990’s, a large 16,000 square foot addition was constructed that included a new 5,000 square foot, multi-purpose room (Gym, Cafeteria and Performance Venue). With this latest addition, the total area of the school grew to over 28,000 square feet. The school has approximately 250 students from pre-kindergarten through grade 6. The original building is wood framed construction with a full basement which currently houses the library, boiler/utility rooms and a few office spaces. Prior to the last addition, the basement served as the cafeteria. The additions built in 1950 and in 1999 are slab-on-grade construction with 2 x 6 wood framed walls and wood roof trusses. The exception is the roof of the multi-purpose room which is framed with open web steel bar joists.

Exterior Notes

The school has its own well system that provides potable water to the building. In addition to the water storage tank, there is also a water treatment system in the basement mechanical space. There is an underground cistern with a separate pump house on the north side that provides water for a building-wide sprinkler system. The school has an on-site septic tank and leaching field. There are also a series of underground propane tanks just off the southwest corner of the building. The underground propane is used for heating. A pair of above ground propane tanks are situated adjacent to the building near the kitchen and used for cooking and hot water needs.



The exterior of the school is sided with vinyl clapboard siding, vinyl corner boards and soffits. The fascias and rake are clad in aluminum. There are a few areas where the clapboards are cracked, particularly along the bottom, most likely from landscaping equipment or in some cases from snow removal. There is also some evidence of mildew growth along the bottom edges of the north facing gym walls. In general, the siding is in very good condition. On the north side of the building at the corner of the multi-purpose room, the corner board has dropped a few inches and there is an open gap. This should be repaired to prevent the intrusion of water, insects, etc.

On the north side of the kitchen there is an elevated wood framed platform in front of a set of double doors supported off the gable end of the building. The double doors provide access into the attic space in order to service some mechanical equipment over the kitchen. The wood platform has no permanent stair or ladder access and does not have any guardrails around the perimeter. This entire means of access into the attic should be re-designed with personnel safety in mind.

There was daylight visible between the door leafs of the main entry into the vestibule on the north side of the building. There were also gaps along the bottom of the doors. The astragals and weather seals should be replaced to help prevent cold air from infiltrating the vestibule. There is an entry door on the east side of the building just to the south of the multi-purpose room. The paint on the wood posts that support the entry canopy is peeling at the bottom where the posts contact the concrete slab. The posts should be scraped and painted and any rotted sections of trim should be replaced.

We observed hornets entering and exiting the exterior wall system at the northeast corner of the gym at the eave.

The pump room's double door frame and door leaves need to be repainted.

Roofs

All the roofs are covered with asphalt shingles. The wing on the west side over the original school building and on the north side adjacent to the main entry has recently been re-shingled with architectural type asphalt shingles. These are in excellent condition. The majority of the roof over the 1950 and 1999 wings; however, is covered with three tab asphalt shingles. The valleys are covered with continuous metal valley flashing placed on

top of the shingles. The three tab style shingles are in poor condition as we observed missing shingles, mildew staining and lichen growth. We estimated that approximately 20,000 square feet of roof shingles will require replacement in the next 4 to 5 years. There is faux standing seam EPDM membrane roof over the chair storage room that appears to be in good condition; however some of the glued-on seam strips are missing.

There is heat tape on the roof edge at the main entry lobby and along the north edge of the roof adjacent to the main entry. This indicates ice dam issues, lack of insulation in these areas, or improper ventilation and air flow.

Interior

The ceilings throughout most of the educational areas are acoustical ceiling tile. The tiles are vinyl faced foam panels and standard fine fissured panels. The tiles are in fairly good condition with no excessive staining. We observed minor sagging in some of the 2 x 4 tiles. The classrooms in the newest addition have hard, gypsum ceilings. The tectum paneling in the multi-purpose room is in good condition.

The floors are primarily covered with vinyl composition tile (VCT). The VCT is in fairly good condition throughout the building. One classroom in particular on the south side of the 1999 addition, has large gaps between some of the floor tiles. Other tiles have been replaced within this same classroom indicating an issue with slab movement or slab cracking. This should be further investigated before the floor is replaced. We observed some cracked tiles in the storage room of the multi-purpose room. The tile in the mechanical area of the original wing has seen frequent water, based on heavy staining observed in this area. The staff areas have carpeting, which was in fair condition with typical wear patterns in high traffic areas. The carpeted areas should be replaced in the next five years. The bathrooms in the original wing has ceramic tile which is in good condition other than needing cleaning in some spots.

The walls in the original wing of the school are plaster and lath, while the walls in the 1950's and 1999 wing are painted drywall. All appear to be in good condition.

The windows in the 1925 wing, including the library at the lower level, are vinyl replacement double-hung windows. Some have transom units above. These appear to be in good condition. The windows in the 1950's wing are hopper-style, steel framed windows with an

infill band of Kalwall directly above the window glass. The Kalwall panel extends up above the ceiling level and there is a gap between the ceiling panel and the window unit. The hopper-style windows are leaky and do not provide a good seal. These windows along with the Kalwall inserts should be replaced within the next 2 to 3 years. The Kalwall components can be replaced with an insulated metal panel and the window should be upgraded to a new energy efficient unit. The 1999 wing is a combination of vinyl double-hung windows, awning windows in the kitchen, and fixed style windows in the multi-purpose room. These windows are about 18 years old and the flashings, j-trim, etc., all are in good condition with no leaking or failed seals observed. These windows should be adequate for the next 8 to 10 years.

All the bathrooms need to be updated with modern fixtures and finishes. There are ADA accessible gang bathrooms throughout the building, but a few additional miscellaneous ADA related items are needed such as vertical grab bars and pipe guards. The individual toilet rooms are accessible as well, with the exception of the vanities in the original bathroom of the 1925 wing.

Egress and Accessibility

The building appears to be code compliant. Raised areas such as the gym stage are ramped. The level changes between building phases are achieved through ramping of the corridor floors. There are automatic door operators at the main entrance and there is a wheelchair lift in the building for access to the library space in the basement.

From the main corridor there is a set of stairs that lead to the lower level to the library and some offices. The stairs are wood framed with vinyl risers and treads, which are in good condition. The stair guard railings do not comply with current code requirements in terms of height and baluster opening requirements. Also, they do not provide the current code required extensions at the top and bottom. The railings on this stairway should be upgraded in the next 2 to 3 years.

The original main entry to the school on the west side has a set of concrete stairs. The stairs are very steep and shallow and do not comply with current code for acceptable rise and run dimensions. Although this entry is no longer used for access into the building, it does serve as an emergency egress path. Eventually the stairs should be reconfigured to meet code requirements.

Building Systems

The lighting consists mostly of ceiling mounted 2 x 4 recessed or surface mounted fluorescent fixtures throughout the building. The lighting is adequate for the short-term, but eventually the lighting should be changed to LED from the current and outdated fluorescent fixtures. Some of the wire observed in the attic spaces was Romex type wiring. As wiring is changed and systems are upgraded, the wiring should be changed to BX type metal clad cable in order to bring it to current code. The fire alarm panel was an addressable type Silent Knight System by Honeywell. The system was recently upgraded and is satisfactory.

We observed some residential type dehumidifiers in the library. Commercial type humidifiers should be installed in the lower level to take care of high humidity levels.

The entire building is sprinkled. The sprinkler piping in the attic spaces are glycol filled to prevent freezing.

Heating in all but the 1999 addition to the school, including the corridors, is through hot water piping and fin tube radiators. In the classrooms, some of the fin tube is covered by shelving and bookcases which cuts down on its effectiveness. In the library there are fin tube sections behind some of the bookshelves. Even though an attempt has been made to limit the placement of books in front of the fin tube radiators, there is some blockage, reducing the efficiency of these units. In other locations there are dented or blocked covers that should be addressed for better air flow. The original boiler was replaced in 1987 with a three module, oil-fired boiler with three circulator pumps. Several years ago, the boiler was converted over to burn natural gas. Rooftop fans exhaust air from the bathrooms and classrooms, but there was a lack of fresh air supply to the original and 1990's addition.

When the latest addition was constructed in late 1999/early 2000, the designers included large Energy Recovery Ventilators (ERV's) in the attic for heating. The energy recovery process is based on the process of exchanging the energy contained in the normally exhausted air and using it to pre-condition incoming air. Three large units were installed in the attic space in the new addition, one near the multi-purpose room, and two in the corridor that runs east/west over the addition. A fourth unit was added in the attic over the original 1925 section of the building. All ERV's have exhaust hoods on the roof.

Hot water supply and return lines run from the original 1925 boiler room all the way to heating coils in the ERV ductwork, as well as to heating coils in ceiling mounted heaters over the entry doors of the new addition. Some of this piping hangs below the drop ceiling. It would be advantageous to locate a boiler in the 1999 wing to allow for removal of this unsightly piping that hangs below the ceiling.

The school lacks cooling apart from window units in various locations. A central cooling system or a variable refrigerant flow system (VRF) could be installed in each classroom. Also, there appears to be a lack of fresh air being supplied to the building and that would be addressed with the addition of a central cooling system.

Recommendations

Short-Term

Repairs, renovations, and upgrades that should be completed within the next two to three years:

- Minor repairs to siding and corner boards\$500
- Repair door seals on entry doors at main vestibule\$800
- Paint pump room doors\$300
- Seal small holes and other areas to prevent hornets and other insects
from entering building\$500
- Minor ceiling tile replacements throughout building\$1,000
- Replace floor tile in one of the 1999 classrooms.....\$4,500
- Replace railing on stair from main corridor to basement.....\$8,000
- Replace steel framed hopper-style windows and Kalwall panels in
1950's addition..... \$115,000 to \$125,000
- Perform bathroom upgrades throughout \$100,000 to \$125,000

The expenditure required to address the above list is estimated to be between \$230,600 and \$265,600.

Mid-Term

Repairs, renovations, and upgrades that should be completed within the next five to six years:

- Reconfigure platform to access attic over kitchen. Add handrail and stair or ladder access \$6,000
- Replace roof shingles for approximately 20,000 square feet (200 squares @ \$400 per square) \$80,000
- Investigate attic insulation. Add insulation where lacking and insure there is good air flow between eave and ridge to help prevent ice dams \$4,000
- Upgrade lighting to LED's throughout..... \$125,000 to \$150,000
- Provide better humidification for lower level, in particular the library \$15,000 to \$20,000
- Replace some of the older fin tube radiators \$20,000 to \$30,000
- Provide a VRF type cooling in classrooms and other areas of the school and provide additional fresh air into the building \$350,000 to \$375,000

The expenditure required to address the above list is estimated to be between \$600,000 to \$665,000.

Long-Term

Repairs, renovations, and upgrades that should be completed within the next 10 to 12 years:

- Reconfigure entry stairs on west side of building (i.e. original entry to school) \$100,000 to \$120,000
- Add new boiler in 1999 wing to supply ERV's and eliminate long runs of piping from original boiler room..... \$125,000 to \$150,000

The expenditure required to address the above list is estimated to be approximately \$225,000 to \$270,000.



Main entry to Emerson Elementary School.



Former main entry on east side. Stairs are non-compliant.



1950 wing on south side with newly shingled roof.



Most of the roofing needs to be replaced.



Gap in trim on north side allows water to penetrate.



Platform to access HVAC unit over kitchen. No handrail makes this particularly dangerous.



Posts at west entrance needed paint and showed signs of wood rot.



Door on east side is rusting and note poor condition of pavement.



Typical fin tube radiators in older sections of school.



Fin tube radiators with vented covers.



Fin tube radiators in corridor.



Fin tube behind bookshelves of library.



Drinking fountain extends out into corridor and creates an obstruction.



Old hopper-style windows with Kalwall panels above.



Old double-hung style windows in section of original school.



Note exposed sprinkler and heating pipes below ceiling.



Fire alarm panel in original section of school.



Typical gang bathroom.



Drop ceilings need to be replaced and upgraded.



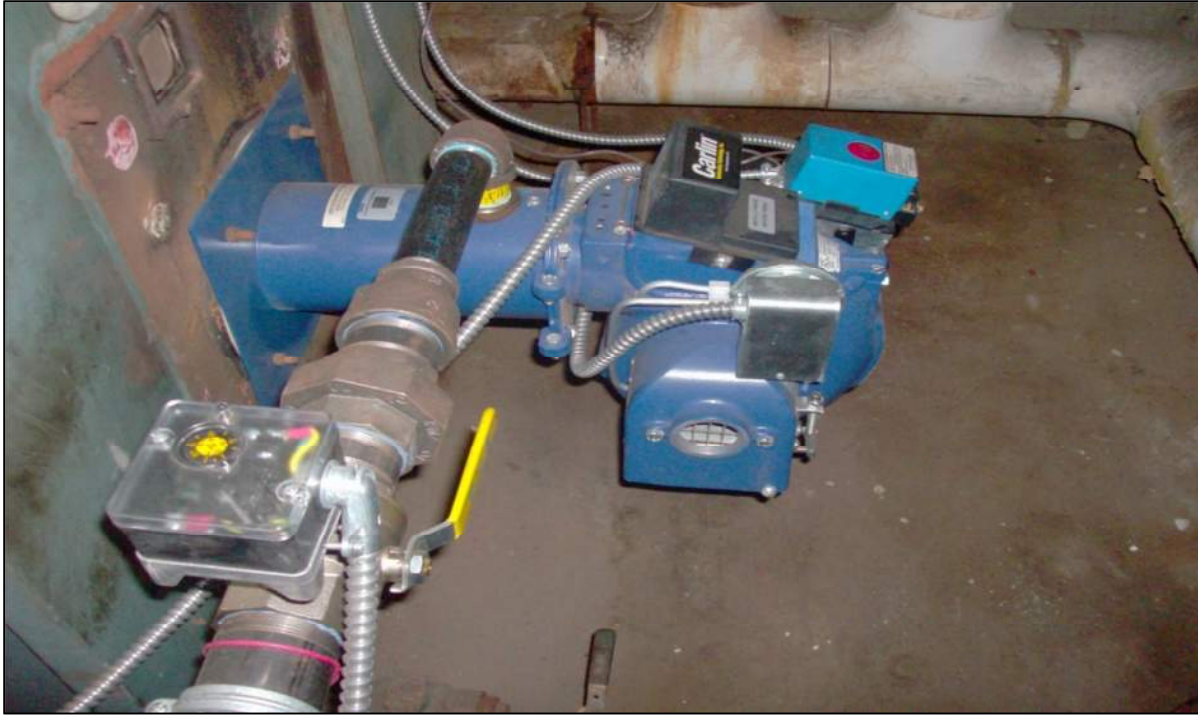
VCT flooring in 1950's addition. Note gaps in tile and past areas of tile replacement.



Stairway into basement with non-compliant handrail.



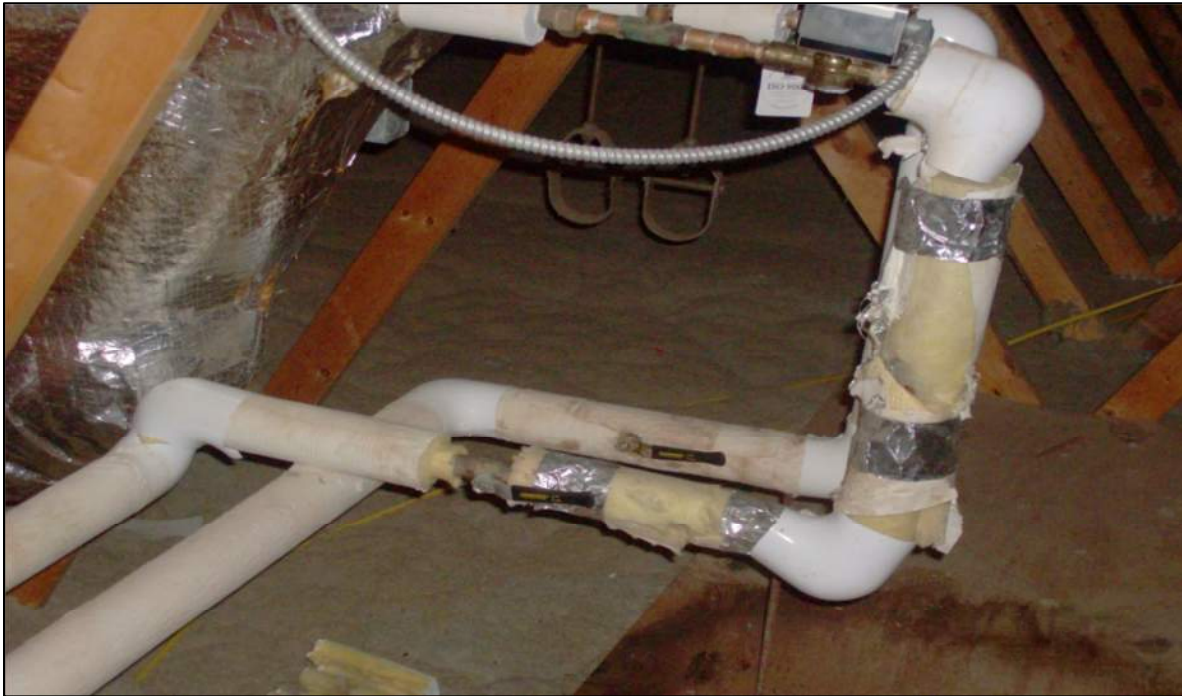
Area adjacent to Gym used for storage of chairs. Note damaged walls and baseboard.



New gas-fired burner on furnace.



Two of three circulating pumps should be upgraded.



Section of heating piping in attic with no insulation.



Original pipe insulation removed, but not properly replaced.