

# FINAL REPORT

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## EVALUATION AND ASSESSMENT GILSUM ELEMENTARY SCHOOLS 640 NH ROUTE 10 GILSUM, NEW HAMPSHIRE

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OCTOBER 20, 2017

The H.L. Turner Group Inc.

ARCHITECTS ■ ENGINEERS ■ BUILDING SCIENTISTS

Monadnock School District  
Gilsum Elementary School  
640 NH Route 10  
Gilsum, 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 Gilsum 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 and Adrienne Noel, School Principal. 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 the 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 Gilsum 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 Gilsum Elementary School consisted of two 24-foot x 32-foot classrooms (currently the music room and library) that were joined by a 56-foot long connector that housed offices, mechanical space, and bathrooms. The date of the original building is unknown but it is believed to date back to the early 1930's or 40's. In the mid to late 1970's, a 56-foot wide by 85-foot addition was constructed between the two original classrooms. This addition added two classrooms to the west side along with a small kitchen (currently the nurse's office) and some new bathroom facilities. This was followed in the late 1980's with another addition of two classrooms on the south side of the building. In 1995/1996 the latest addition was constructed to the north, including the gymnasium, kitchen, and dining area. The latest addition brought the total usable space of the current school to 16,600 square feet. The school has around 50 to 60 students from pre-kindergarten through grade 6. The original building including all the additions are wood framed construction and the only section with a full basement is the addition built in the 1980's. The original school and the 1970's addition are built over a crawl space, while the newest addition is a slab-on-grade.

### **Exterior Notes**

The school has its own well system that provides potable water to the building. There is an underground cistern that provides water for a building-wide sprinkler system. There is also an on-site septic tank and leaching field. Drainage is collected in catch basins throughout the site and is directed to a drainage system along Route 10. There is also an underground oil storage tank.



The exterior of the school is sided in a combination of split-rib CMU on the 1970's section, wood clapboards on the 1995 addition, and vinyl clapboards on the 1980's addition and the original building. There is mildew growth on the north and east facing walls and other areas that do not receive adequate sunlight. On the sidewall of the dining room within the courtyard there is an area of water damaged clapboards.

The central courtyard area enclosed by the latest addition and the addition built in the late 1970's are prone to a lot of icing in winter months. Since the roofs all shed towards the courtyard, drainage off the roof was the cause. Gutters were added to alleviate the issue but icing can still be a problem at times. We also noted heat tape was installed along the edge of the courtyard roof and in the gutters to alleviate ice dams and to keep runoff from freezing at the edge of the roof and in the gutters. The area is a constant problem for maintenance trying to keep the area reasonably clear of snow and insure the egress paths are not blocked. But since there is really no place to pile the snow, it must be removed from the courtyard. Lack of insulation or insulation installed in such a manner that it blocks good air flow from the eaves to the ridge may be a contributing factor.

The handicapped ramp exit from the library on the south side of the building is a myriad of back and forth ramps. A better option or layout should be explored. The sill of the door from the library leading to this ramp is in need of new flashing, as water can easily penetrate between the vinyl and the original siding material. The ramp itself needs some wood deck maintenance and railing touch-up paint.

On the north side of the music room (one of the original classrooms) the door is rusted along the bottom and should be repainted. The handrail on the stair is badly rusted and is not constructed per Code. The steel end post had been hit by a vehicle and was out of plane.

Hornets were nesting in the south facing windows of the 1970's wing and in other areas in the courtyard. The holes should be insect proofed with screens or additional caulking or sealants.

It was reported that the two west facing doors of classrooms 1 and 2, in the 1970's addition, leak quite heavily during a driving rain. Water puddles on the floor inside the door. Apparently some new seals have been installed, but this has not completely solved the problem. This should be further investigated to determine the cause and addressed to



extend the life of the floor and door itself. It may be that the doors may require replacement.

The ceiling wood and trim at the entry porch outside the dining hall need re-staining or painting, and in some areas the wood needs replacement where it is rotted. The porch ceiling lights are mounted to pieces of OSB with is not aesthetically pleasing. It appears a large light was replaced with new smaller units and a piece of OSB was installed to cover the hole and mount the new light. If budget allows, the OSB should be removed and replaced with something a bit more pleasing. The cedar shakes on the walls of the porch area are in good shape. They will need re-staining in another three to four years.

### **Roofs**

All the roofs are covered with an architectural shingle. As observed from the ground, many of the shingles, particularly on the south and west facing sides, are curling, are in poor condition, and appear to be in need of replacement within the next two to three years. The shingles on the north and east sides did not exhibit this curling, but all the shingles should be replaced at the same time. On the east side of the building adjacent to the music room there is an exit from the corridor of the 1995 wing. There is a small canopy roof over the door and the siding adjacent to this canopy roof had heavy mildew staining and possibly some rot. It is apparent that this canopy roof needs better water/snow shedding capabilities to help prevent this staining and deterioration of the wood.

The soffit and fascia trim of the 1970's portion of the building is badly peeling and needs repainting. Some boards are rotted and need replacement. An alternative to repainting is wrapping the trim in break metal. We also observed the fascia trim splice joints around the 1995 addition are separating and need to be covered with a cap piece to seal the joint from water penetration.

### **Interior**

There are no interior stairs, with the exception of the stairs to the basement of the 1980's addition. This area is mostly used for storage. There is a small residential type dehumidifier running in the basement, which is damp, and has a slight musty odor. We recommend increasing air circulation in the basement area and a better means of humidification.



The ceilings consist mostly of acoustical ceiling tile (ACT) throughout the educational areas. Many of the tiles are cracked, sagged, or have areas of staining. Most of the ceiling tile throughout the building, with the exception of the 1990's wing should be replaced. The tectum and wood paneled ceilings in the gymnasium are in good condition.

The floors are primarily covered with vinyl composition tile (VCT), except in some of the original areas such as the music room and library which are covered in wood. The VCT is in good condition with some minor cracking at the building joint between the 1970's section and 1995 section. Ceramic tiles can be found in the bathrooms and kitchen. With the exception of some cleaning in spots, the ceramic tile is in good condition.

The walls are painted drywall in the 1980's and 1995 wing and are in good condition. The painted CMU walls in the 1970's wing are also in good condition.

The windows in the 1970's wing are metal clad sliding window units that appear to be nearing the end of their useful life. These include windows in the classrooms as well as the windows in the administrative offices. Exterior joint sealants need re-touching in some areas. The windows in the original section of the building have been replaced with vinyl units and are in good condition. The windows in the 1995 wing are wood windows with vinyl cladding on the outside. These windows appear to be in good condition. The windows in the 1980's wings are double-hung, wood windows and these are in good condition as well.

In the 1970's addition, the room originally designated as the kitchen is now used for the nurse's station. This room requires general upgrades to improve functionality.

There was some confusion surrounding the operation of the movable basketball backboard in the gymnasium. The backboard was supported from the roof trusses and installed with a wire rope winch to enable the backboard to be lifted up towards the ceiling, thus getting it up and out of the way when the stage is being used. Apparently the staff was warned not to operate the backboard because reportedly the roof trusses have not been reinforced to take the load from the backboard in the horizontal position. This warrants further investigation.



## **Egress and Accessibility**

In general, the building appears to be code compliant. Raised areas such as the stage, music room, and library are ramped, although the ramps in the older section of the school may be slightly steeper than ADA guidelines stipulate. All ramps that are not in compliance with current ADA guidelines should be re-configured. There are no handicap accessible stalls in the main gang bathrooms, but there are several individual bathrooms throughout the building that are ADA accessible, which is acceptable by code for an existing building. However, it is recommended that in the long-term, the bathroom should be reconfigured and upgraded to meet ADA accessibility codes.

## **Building Systems**

The lighting is adequate throughout the building but eventually the lighting should be changed to LED from the current fluorescent fixtures. Wiring throughout most of the building is romex. 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 is over 20 years old and should be considered for replacement in the next five years.

Upon entering the boiler room we noticed the room was excessively overheated. Consideration should be given for exhausting the room. There was some question whether adequate intake air was being provided, as we observed the intake duct was blocked by stacked goods. There are two oil-fired boilers; the newest boiler was part of the late 1990's addition. It is a H.B. Smith Boiler with a rated output of 644,000 BTU's. We recommend the District consider a new boiler plant within the next 10 years. In the future, dual circulating pumps should be considered for redundancy and they should be fitted with variable frequency drives for better control.

There is a large 8,000 CFM Air Handling Unit over the stage area for supplying the gymnasium, along with a large centrally located exhaust fan. The corridors of the newest wing have ceiling mounted cabinet unit heaters, and the dining area has fin tube heaters and unit ventilators supplied with hot water from the boiler room. The heating system in this newest addition is in good working order. The unit ventilators in the 1970's wing are beyond their useful life and should be replaced. Some of the exterior air intake grills have been blocked with foam panels up against the outside of the building. This has been done in an attempt to block cold air from entering the unit up into the building as the unit



dampers are no longer functional. The remainder of the building was heated with hot water baseboard type heaters and they reportedly were satisfactory. Other than the gymnasium, the building does not have a fresh air intake. We did observe some exhaust air ducts pulling air from the bathrooms, but in general more building wide ventilation is needed. Any system installed should take advantage of capturing the energy in the exhaust air through an energy recovery ventilator. Temperature swings throughout the building due to poor HVAC system operations was mentioned during our site visit. Install a new, expandable control system that controls the equipment globally with remote access of set points and alarms. Ideally, for the long-term, consideration should be given to incorporating air conditioning into any new system being considered for the building.

## **Recommendations**

### **Short-Term**

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

- Replace the roof shingles on the entire building (approximately 166 square feet at \$400 per square for materials and labor = \$66,400).
- Clean the siding of mold and mildew (\$1,000).
- Replace all water damaged clapboards and siding (\$1,500).
- Repair door sill at library door that exits to handicap ramp (\$250).
- Replace all damaged boards on the ADA ramp on the south side of the building and renew finishes as required (\$2,000).
- Scrape and paint wood trim on the 1970's wing or wrap the fascia in break metal (\$3,000).
- Exterior of building; general exterior painting (\$5,000).
- Seal gaps under window sills or install screening so they are insect proof (\$1,200).
- Repaint the rusted door at the music room (\$300).
- Investigate basketball hoop in gymnasium and determine if there are structural issues preventing it from being retracted (\$1,500).
- Install new windows in the 1970's wing which included classrooms 1 and 2, the administration offices, and improve wall insulation (\$30,000).
- Replace doors and frames in rooms 1 and 2 (\$4,000).



- Re-stain the porch ceiling and cedar siding along the porch. Replace any damaged or deteriorated ceiling boards (\$2,500).
- Investigate insulation levels in the attic and insure all insulation is installed properly to provide proper airflow from the eaves to the ridge (\$1,000).
- Install new ACT ceilings (tiles and suspension grids) in all areas of the school with the exception of the late 1990's wing (8,000 square feet @ \$4.50 per square foot = \$36,000).
- Remove the old unit ventilators in the 1970's addition, replace with a new heating system, and upgrade entire HVAC system throughout all sections with the exception of the 1990's wing (\$275,000 to \$325,000).

The total expenditure required to address the above list is estimated to be \$430,650 to 480,650.

### **Mid-Term**

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

- Replace the fire alarm system (\$40,000 to \$50,000).
- Replace railing on exterior stairway at music room (\$3,000 to \$4,000).
- Reconfigure the roof canopy over the door on the east side of the building to improve the shedding of water and install new roofing (\$4,000 to \$5,000).
- Replace all light fixtures with new LED energy efficient fixtures and sensor switches. (\$125,000 to \$150,000).
- Improve air flow in basement area and improve dehumidification of the space (\$15,000 to \$20,000).
- Install school wide air conditioning (\$200,000 to \$250,000).

The expenditure required to address the above list is estimated to be between \$387,000 and \$479,000.

### **Long-Term**

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

- Install a new expandable control system for the HVAC equipment that controls the equipment globally with remote access of set points and alarms (\$100,000 to \$125,000).
- Upgrade the heating system with a new boiler plant and revise the heating system to include a dual pump system with a variable speed drive for more efficient operation, and a back-up in case of pump failure (\$140,000 to \$160,000).
- Upgrade Nurse's Station (\$75,000 to \$80,000).
- Remodel bathrooms and reconfigure to meet ADA accessibility guidelines (\$120,000 to \$135,000).
- New ADA accessible ramp from south side of building (\$20,000 to \$25,000).
- Reconstruct all interior ramps that do not meet current ADA guidelines (\$20,000 to \$25,000).
- Reconfigure central courtyard to alleviate icing and snow build-up issues (\$200,000 to \$250,000).
- Upgrade building wiring to meet electrical code (\$100,000 to \$125,000).

The expenditure required to address the above list is estimated to be approximately \$775,000 to \$925,000.



Courtyard area. Note multiple roof slopes directed toward courtyard.



Typical casement type metal windows in 1970's wing in need of replacement.





Discolored and cracked ceiling tile, typical in many locations.



ADA ramp on south side of building with multiple switchbacks.





Mold growth on vinyl siding. Damage from “weed whacker”.



Unit ventilator grille blocked with foam panel.



One of two doors that leak during driving rains.



Door at Music Room. Door needs painting and railing should be replaced.





Canopy over door on east side. Note mildew and rotted siding.



Fascia board on 1970's wing needs paint or break metal covering.





Poor condition of roof shingles on west side near courtyard.



Roof at courtyard. Note rotted siding along slope of roof.





Two oil-fired boilers.



Hot water circulating pumps.

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