



FACILITIES CONDITION ASSESSMENT

Rivendell Interstate School District

Rivendell Academy East & West Wings | Samuel Morey Elementary | Westshire Elementary

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Prepared by:



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Project No. 2507

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FACILITIES CONDITION ASSESSMENTS

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 - Architectural Analysis Report
 - MEP/FP Analysis Report
- Samuel Morey Elementary School
 - Architectural Analysis Report
 - MEP/FP Analysis Report
- Westshire Elementary School
 - Architectural Analysis Report
 - MEP/FP Analysis Report

OPINION OF PROBABLE COST

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- Main Construction Cost Summary
- Detailed Construction Cost

INTRODUCTION

Project Scope

The following Facilities Conditions Assessment was conducted by Freeman French Freeman (Architecture) and L.N. Consulting (Mechanical Electrical Plumbing and Fire Protection Engineering) for the Rivendell Interstate School District (RISD). The buildings to be assessed are listed immediately following the “Introduction” section of this report and includes four buildings totaling approximately 127,500 square feet. This report is intended to provide greater detail to supplement the general conditions assessment information contained in the 2023 Bureau Veritas reports for all four buildings.

This assessment reviews the state of the existing Architectural and MEP/FP systems at the time of our team’s site visits to identify major deficiencies. An opinion of probable costs for systems requiring repair or renewal has been provided by PM&C and is included at the end of this report. Narrative descriptions of recommendations were used to generate the opinion of probable cost.

The FCA report is intended to serve as a guide to assist RISD with capital planning and management, resource allocation, and a means to illustrate budgetary and other needs associated with the maintenance of building assets.

The assessment includes field observations of four buildings. Conditions noted in the assessment are consistent with observations at the time of inspection. It is not the purpose of this assessment to determine the underlying causes of the observed deficiencies. Further evaluation or analysis by other professionals may be required. Observations for Model Codes and Accessibility compliance are general in nature and not intended to identify every deficiency.

The assessment of each building is divided into three categories with major subcategories as follows:

1. Architectural Assessment
 - a. General comments
 - b. Construction information
 - c. Code assumptions
 - d. Life Safety findings
 - e. Accessibility findings
 - f. Interior Conditions
 - g. Exterior Conditions
2. Mechanical, Plumbing, and Fire Protection Systems Assessment
 - a. Existing Building Mechanical / Plumbing Infrastructure
 - b. Mechanical / Plumbing Overview
 - c. Existing Conditions
 - d. Infrastructure Recommendations

3. Electrical Assessment

- a. Electrical Distribution
- b. Lighting
- c. Fire Alarm
- d. Telecommunications
- e. Electrical Summary
- f. Infrastructure Recommendations

Each category includes the assessment and recommendations. The mechanical systems assessment of the buildings includes additional information identified as “**Longer term needs and energy reduction**”. These are optional future upgrades for consideration as a means of reducing the use of fossil fuels to heat the buildings in question; note that this should be done in conjunction with thermal envelope upgrades depending on the building’s current thermal performance. An opinion of probable construction costs (OPC) for the identified deferred maintenance items is included at the end of the report. The OPCs are intended to be used for budget planning purposes. Additional professional evaluations and detailed plan development will be necessary before finalizing costs.

The following classifications are included in the Architectural Assessment to describe the condition of interior and exterior finishes and materials:

Excellent – New, like new

Good – Well maintained

Fair - Worn or soiled, but serviceable

Poor - Nearing end of useful service life

Very Poor - Reached end of useful service life, should be replaced

The above classifications when describing a painted material describe the condition of the finish paint. Assume the underlying material to be sound unless noted or described otherwise.

When typical finishes are listed for a floor or area, assume all finishes and conditions are the typical unless noted otherwise.

Clarifications

Assessments do not include consultations with Authorities Having Jurisdiction to ascertain their interpretation of code issues. Architectural assessments do not include energy code reviews because the energy code applies to new construction. Should any remedial work be conducted to address issues identified by this assessment, the new work will be required to conform to the version of the energy code enforced at that time. Buildings were not reviewed for their historical significance. Before any work is undertaken to address issues identified by this assessment that could alter the historic nature of the building in question, the District should determine if the building is eligible for the historic register. This can be determined by contacting the New Hampshire Division of Historical Resources for buildings

located in New Hampshire and the Vermont Department of Historic Preservation for buildings located in Vermont. In addition to these general statements, our assessments did not include:

1. Site related elements.
2. Building structure.
3. Furniture, Fixtures, and Equipment (FF+E).
4. Testing, inspections, and destructive investigations.
5. Hazardous materials identification and remediation planning.
6. Exhaustive surveys or building scanning of existing conditions. This assessment is intended to identify major, observable deficiencies.

Accessibility

Many doors have been upgraded with lever operated mechanisms, but many still have knob style operating devices that do not comply with ADA requirements. The District should consider replacing all non-complying door hardware in consultation with a door hardware professional. ADA states that handles, pulls, latches, locks and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When replacing hardware choose leversets where one action releases both lock and latch, as required by code.

There are five Titles in the Americans with Disabilities Act:

Employment (Title I),
Public Services (Title II),
Public Accommodations (Title III),
Telecommunications (Title IV), and
Miscellaneous (Title V).

Title II is divided into two parts. Subtitle A covers all programs, services, and activities of state and local government. This report focuses on ADA Title II A as these are District owned buildings. Title II focuses on making sure that programs, services, and activities are available to people with disabilities. When a service, program, or activity is located in a building or part of a building that is not accessible, a public entity can achieve program accessibility by relocating the program or activity to an accessible facility, providing the service in an accessible area of the building, or making structural changes to the building.

There are four (4) Categories or Priorities included in the ADA. These categories are separated into different groups of elements as follows:

Priority 1 - Accessible exterior approach and entrance

Priority 2 - Access to interior goods and services

Priority 3 - Access to toilet rooms

Priority 4 - Access to other items such as water fountains, and public telephones.

From the “Guide to the ADA Accessibility Standards” the description below of employee work areas is helpful.

“The ADA Standards require a more limited level of accessibility in employee work areas. At a minimum, areas used only by employees as work areas must meet requirements for:

- access to approach, enter, and exit the work area
- accessible means of egress
- wiring for visible alarms in areas served by audible alarms
- accessible common use circulation paths in most work areas of at least 1,000 sq.ft.

These provisions apply to those areas where only work is performed by employees. Spaces not used for work, including employee restrooms, locker rooms, break rooms, cafeterias, and parking, must be fully accessible.”

LIST OF BUILDINGS ASSESSED

1. Rivendell Academy – East Wing – High School
2. Rivendell Academy – West Wing – Memorial Hall Middle School
3. Samuel Morey Elementary School
4. Westshire Elementary School

GLOSSARY OF TERMS

ADA - Americans with Disabilities Act, 2010 ADA Standards for Accessible Design

ACT - Acoustic Ceiling Tile (Typically 12"x12" or 12"x24")

AFF - Above Finish Floor

AHJ - Authority Having Jurisdiction

CIP - Cast-In-Place

CMU - Concrete Masonry Unit

CT - Ceramic Tile (All tile is called ceramic but some may be porcelain)

FRP - Fiberglass Reinforced Panel

GWB - Gypsum Wall Board

HM - Hollow Metal

IBC - International Building Code

N/A - Not Applicable

NFPA - National Fire Prevention Association

OPC - Opinion of Probable Cost

PLAM - Plastic Laminate

PWD - Plywood

SS - Stainless Steel

VAC - Vinyl Asbestos Tile (Typically 9" x 9", Assumed to be Asbestos Containing Material and/or Mastic)

VCT - Vinyl Composite Tile (Typically 12" x 12")

Building #1 Rivendell Academy – East Wing

Constructed: 2000

Last Renovated: N/A

Stories: 2 above grade

Gross Area: 45,778 SF

Use: School

CONSTRUCTION

1.	Foundation	Concrete
2.	Superstructure	Steel Frame, CMU
3.	Exterior Walls	Fiber Cement Siding
4.	Roof	Low Slope Roof: Single-ply membrane Pitched Roof: Asphalt Shingles

CODE

1.	Occupancy	NFPA Educational, IBC Group E
2.	Construction Type	NFPA Type II, IBC Type II
3.	Sprinklers	Yes
4.	Fire Alarm	Yes



During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed.

LIFE SAFETY

1.	Exits		
		Discharge to Public Way	Yes
		Number	Level 1 has 4, Level 2 has 2.
		Egress Width	In compliance.
		Separation Distance	In compliance.
		Travel Distance	In compliance.
		Signage	In compliance.
		Hardware	In compliance.
2.	Stairs		
		Rise/Run	In compliance.
		Width	In compliance.
		Rated Enclosure	In compliance.
		Handrail	In compliance.
		Guardrail	In compliance.
3.	Rated Rooms		In compliance.
4.	Fire Extinguishers		Yes

ACCESSIBILITY

1.	Main Entrance or Alternate Entrance		Yes
2.	Door Dimensions		In compliance. However upper level is missing ADA operator.
		Clear Width	Yes
		Push/Pull	In Compliance.
		Threshold	In Compliance.
		Lever set/height [34-48]	In Compliance.
		Distance Between Sequential Doors	In Compliance.
3.	Accessible Route		In Compliance.

		Path to Public Areas/ Elevator	In Compliance.
		Minimum Width	In Compliance.
		Protruding Objects	In Compliance.
		Ramp Dimensions [landings 60"]	N/A
		Ramp Curb or 12" Beyond Rail	N/A
		Handrail Dimensions	N/A
4.	Elevators		
		Call Button Height [54" max]	In Compliance.
		Elevator Cab [51"D x 51"W or 54"D x 36"W]	In Compliance.
		Controls Requirements	No Braille at controls. Recommendation – Install controls in accordance with ADA guidelines.
		Signage	No Braille signage. Signage appears to be temporary. Recommendation –Install signage in accordance with ADA guidelines.
		Lift Platform Size & Clearance	N/A
5.	Signage		No ADA compliant room, stairs, or building directory signage. Recommendation – Install ADA compliant signage.
6.	Transaction Counters		N/A
7.	Toilet Rooms		
		At Least 1 Accessible	Not all restrooms are required to be ADA accessible. One restroom in each pod of stalls appears to meet ADA compliance.
		Signage to locate	No Braille signage. Recommendation – Install compliant signage.
		Fixture Dimensions	All restrooms appear to meet ADA compliance.

8.	Drinking Fountains	In compliance.
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INTERIOR

1.	General: Room numbers are per the numbering system within the building.		
2.	Stair 1		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	N/A
3.	Lower Level Corr. Northwest		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition – CMU. Fair condition – Connection at split face at interior walls is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.
			
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required. 45-minute wood doors with narrow lite wire glass. On magnetic hold opens
		Borrowed Lites	N/A
		Millwork	N/A
4.	Lower Level West (entry)		
		Floor	Poor condition. Several cracks. Recommendation – VCT replacement.
		Walls/ Columns	Good condition – CMU. Fair condition – Connection at split face at interior walls is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.
		Ceiling	Poor condition. Several scrapes, chips stains.

			Recommendation – Replace ACT tiles.
		Doors	Fair condition, no immediate action required. Fire rated doors on hold open.
		Borrowed Lites	N/A
		Millwork	N/A
5.	Lower-Level Vestibule South		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Fair condition. ACT has stains. Recommendation – Replace stained tile. Verify there are no active water leaks. Replace unseated tiles.
			
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
6.	Main Corridor Central		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
7.	Music Room 1101		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	N/A
8.	Music Room 1104		

		Floor	Fair condition – VCT. No immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition. Wood doors fair but steel frame is unprotected. Recommendation – replace existing door frame with protected steel frame.
		Borrowed Lites	N/A
		Millwork	Not in compliance with ADA regulations; base cabinets at 3'-4", lacks knee space. Recommendation – Replace base cabinets with ADA compliant units.  
9.	Stage 1105		Stair from gym to stage is non-compliant; incorrect rise and run dimensions and only one railing. Recommendation – Renovate stage area to be fully compliant.
		Floor	Good condition – Main floor. Poor condition – Landing from stairs. Recommendation – Replace floor leading to gym and stairs as nosing lacks differentiated color.
		Walls/ Columns	Good condition – Main space. Main floor CMU walls good condition. Poor condition – Landing from stairs, walls.

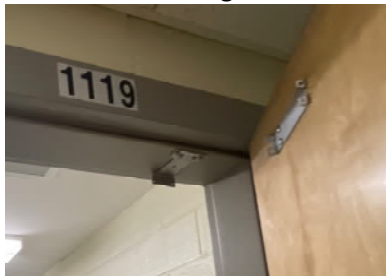


			Recommendation – replace floor leading to gym and stairs as nosing lacks differentiated color.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
10.	Gymnasium 1106		Fair condition. All surfaces have stains, scuffs, and wear consistent with use of space.
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition. Bottom of split face at exterior wall is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.
		Ceiling	Fair condition.
		Doors	Fair condition – Door frames to gym to all be confirmed as rated. Poor condition – Doors to exterior all missing bottom seals and bottoms of frames rusted out. Recommendation – Reinstall bottom seals on all exterior doors or replace all exterior doors and frames.
		Borrowed Lites	N/A
		Millwork	N/A
11.	Café 1107		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
12.	Café 1107 Vestibule		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
13.	Rooms 1108, 1110 & 1112		
		Floor	Good condition.

		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
14.	Boys / Girls Locker Room 1109		Boys locker room has 2'-0" wide clear area at low urinal. Recommendation – Reconfigure space to meet minimum 30" wide urinal size (currently 2'-0").
		Floor	Poor condition. Epoxy worn in shower areas. Poor condition at the remainder of Locker room floors. Recommendation – replace all locker room tile and remaining flooring. 
		Walls/ Columns	Fair condition. Gang Shower stalls removed leaving unpatched holes in CMU walls and in floors. Recommendation – Patch, repair, repaint holes to match existing space.
		Ceiling	Fair condition, no immediate action required. Acoustic deck.
		Doors	Poor condition – Door frames from hallway to locker rooms to all be confirmed as requiring fire rating. Recommendation – Install new doors and hardware.
		Borrowed Lites	N/A
		Millwork	N/A



15.	PE Office 1111		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	N/A
16.	Learning Center 1114, Room 1118, and Room 1120		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
17.	Kitchen 1115		Note: Kitchen Equipment not reviewed.
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
18.	Computer Room 1116		
		Floor	Good Condition.
		Walls/ Columns	Good Condition.
		Ceiling	Good Condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A

19.	Janitor's Room 1117		Condition suitable for the function of space.
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	N/A
20.	Elevator Mech. Room 1119		Space could be left as-is if it is functioning well for its intended use.
		Floor	Fair condition. Floor shows significant wear. Recommendation – Seal cracks in concrete floor. 
		Walls/ Columns	Fair condition. Various areas of wall paint color variation. Recommendation – Repaint walls.
		Ceiling	Good condition. GWB ceiling has minor staining. Recommendation – Repaint stained GWB. Verify there are no active water leaks. 
		Doors	Fair condition. Dings and marks, basic wear to door. Hinges show significant wear. Closer is missing but hardware on door is still present. Recommendation – Repair and replace door hardware including closer arm. 
		Borrowed Lites	N/A

		Millwork	N/A
21.	Mechanical Room 1121		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition.
		Ceiling	Fair condition. Most portions of ceiling concealed by mechanical piping.
		Doors	Poor condition. Rated Door has several dings and scrapes. However, could be acceptable for use of the space. Recommendation - Verify rated door is within rated walls as required for use of space.
		Borrowed Lites	N/A
		Millwork	N/A
22.	Humanities 1122		
	Room 1124	Floor	Good condition.
	Room 1126	Walls/ Columns	Fair condition. Recommendation – Repaint areas where plaques were removed.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
23.	Electrical 1123		
		Floor	Poor condition. Exposed cracking and chipping of concrete floor. Recommendation – patch, repair, and seal concrete floor.
		Walls/ Columns	Fair condition. 
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A



		Millwork	N/A
24.	Boys/Girls Restroom 1125, Room 1127		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition. The hardware locking mechanism at entry appears broken. Recommendation – Replace broken mechanism.
		Borrowed Lites	N/A
		Millwork	N/A
25.	Janitor's Room 1129		Condition suitable for the function of space.
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
26.	Admin Offices 1201, Room 1203		
		Floor	Poor condition. Recommendation – Replace VCT.
		Walls/ Columns	Good condition.
		Ceiling	ACT has stains. Recommendation – Replace stained tile. Verify there are no active water leaks. Replace unseated tiles.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Fair condition. Shelving along the sides of walls for storage only. Inaccessible but suitable for storage use.
27.	Admin 1205		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A

		Millwork	N/A
28.	Boys/Girls Restroom 1207, Room 1211		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Good condition.
29.	English 1208, Room 1210		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
30.	Math 1212, 1216, & 1218		
		Floor	Fair condition. Many large scuff marks. Recommendation – Clean.
			
		Walls/ Columns	Fair condition. Main walls / whiteboard walls have many scuffs, marks and general wear. Recommend repainting CMU walls.

			
		Ceiling	Fair condition. GWB soffits have some scuffs, marks and general wear. Recommend repainting GWB soffits.  ACT dropped ceiling clouds are in fair condition. However, they need to be realigned and spaces out evenly with the intended pattern. 
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	N/A
31.	Art 1213		
		Floor	Fair condition. Lots of large scuff marks.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
32.	Science Labs 1217, 1219, & 1223		Fair condition, no immediate action required. Lots of large scuff marks. Recommend cleaning.
		Floor	Good condition.

		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	Fair condition – Millwork and counters all rooms generally. 38" height work counters with 34" ADA portion at each space. Poor condition – Approximately 10% of laminate faces of counters peeling off. Recommendation – Repair delaminated portions.
			 

Exterior

1.	General: Site elements are not included in the scope of work of this review.		
2.	Walls		
		Foundation	Good condition.
		Siding	Fair condition. Wood clapboards and trim boards have peeling paint and paint appears faded; most prevalent around entry drop off area. Recommendation – Repair, Prep, and repaint clapboards and trim. Replace clapboards beyond repair. Replace missing shingle siding and repair deteriorated portions of shingle siding and vertical board and batten siding where it meets and shows excessive warping.



			 
		Windows / Skylights	Windows - Good condition. Skylights – Poor condition. Roof was not accessible. Deterioration is visible from the ground. Recommendation – Consult a skylight and roofing contractor to determine the probable cause, repair, or replace deteriorated skylights to match existing. 
		Doors	Good condition.
		Louvers	N/A
		Soffits	Poor condition. Recommendation – Reseal and stain wood soffits. 
		Fascia	Fascia Poor condition. Discolored and dirty. Recommendation – Clean, repair/replace, repaint. 

3.	Elements [e.g. Columns]	Concrete Pads at Exterior Doors	Concrete foundation in poor condition. Recommendation – Repair cracks, clean misc. paint and seal all concrete pads. 
4.	Roof	General	Roof not accessible during site visit. Assessment based upon information provided by facilities staff, visual observations from ground level, and data from 2023 FCA.
			Fair condition. Some discoloration visible around skylights. No reports or signs of active leaks on the building interior. 

Additional Notes / Photos



View of South Facade



View of West Façade from courtyard



View of Northeast corner



View of East Façade entry



View of South Façade second floor

RE: Rivendell Academy High School MEP/FP Analysis Report

Existing Building Mechanical/Plumbing Infrastructure



L.N. Consulting was retained by Freeman French Freeman Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting the Rivendell Academy High School, Orford, NH to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The goal of the building infrastructure report is to provide an overview of the existing conditions, the general age of the equipment and systems, and code compliance issues to help define the scope of work should the building undergo a major renovation.

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system, or equipment wear items. The report will provide general details about the systems and then offer a combined recommendations section for ease of reference. Included with each report of existing conditions will be photos of items that may be of interest and provide more explanation of our findings.

Note that this report is based on the site visit that, due to the amount of time available, and limited access to certain areas, involved general review of the building. Although LNC was able to perform a somewhat detailed analysis of the building, it was not possible to review every space or system for deficiency. The intent of this report is to provide an overview of the conditions, focusing on identifying deficiencies, including any code deficiencies concerning code deficiencies, while actual corrections required would involve specific design work.

Mechanical/Plumbing Overview

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Fire Protection Association (NFPA) codes including the Standard for the Installation of Air Conditioning and Ventilating Systems (90A-2015), National Fuel Gas Code (54-2015), Fire Code (1-2015), Life Safety Code (101-2015), 2015 New Hampshire Fire and Building Safety Code, International Plumbing Code (IPC-2021), New Hampshire Plumbing Rules, International Building Code (IBC-2015), International Existing Building Code (IEBC-2018), ASHRAE Ventilation and Acceptable Indoor Air Quality (62.1-2016), New Hampshire Commercial Building Energy Standards (CBES-2024) effective 7/1/24, with ASHRAE Energy Standard for Buildings Except Low-Rise Buildings (90.1-2019) as the alternative compliance path, and occasionally other codes. When these systems were installed, they were code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for tempered water protection at public lavatories and handwashing facilities and mechanical ventilation as natural ventilation utilizing operable windows was previously permitted but is no longer an approved ventilation method. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition.

Existing Conditions

General

LN Consulting made our observations of the High School on June 16, 2025. This building is a two story facility, slab on grade. The building is heated with (2) oil fired hot water - steam boilers.

Mechanical and Plumbing

Refer to the photo captions below for mention of the majority of the existing mechanical, plumbing, and fire protection equipment. Equipment that is at or near the end of useful service life is identified, making it an opportune time to switch to a more energy efficient solution and to address code issues.

Main Boiler Room Boiler #1 with an oil service burner and boiler. This existing burner/boiler was installed in 2001 has 2 zones, was installed in accordance with code, is well maintained but is at the of its service life. LN Consulting recommends that this equipment be upgraded.

Main Boiler Room Boiler #2 with an oil service burner and boiler. This existing burner/boiler has 2 zones, was installed in accordance with code, is well maintained, and is 24 years into its 30 year service life. LN Consulting recommends that this equipment be upgraded.

Associated circulation pumps and VFD controls appear to be recently upgraded and may be used in the future.

Carbon monoxide (CO) detection was not noticed; however, it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

The electric water heaters serve the domestic hot water needs of the facility. The lifespan of a water heater is typically 15 years. It is in good condition. Water heater units should be replaced with upgraded electric water heaters.

Units and piping are in working condition. Welded, threaded black iron pipes are used for oil piping within the facility.

Recommended repairs, and equipment replacements;

Oil fired boilers supply hydronic heat to the terminal units in the classrooms. The loop feeds two air handling units (AHUs) in the gym and AHU Room, several unit heaters, radiant baseboard in the office areas, meeting spaces, and throughout the facility. In the penthouse there is an older Semco energy recovery unit with energy recovery wheel and hot water heating coils.

Heating system piping appears in good condition however further inspection is required. Insulation needs to be repaired in some areas.

Hot water circulation pumps in the main boiler room are newer units and in good condition.

Split heating and cooling system is used in the office areas of the facility. These units are in good condition but should be cleaned. Inner blower fans, filters, tested, and more closely evaluated. They have completed more than half of their expected 15 to 20 years life cycle. The facilities upgrade project should include the replacement or upgrade of these split systems.

The boiler room and main distribution pumps are in good to fair condition. System piping insulation should be repaired, the boiler room should be cleaned of stored items, debris, walls patched, piping penetrations fire stopped, and painted.

Mechanical and plumbing photos from the LN Consulting site visit begin on the next page.

1. Mechanical

Boiler #1 at the end of its service life.



Boiler #2 at the end of its service life.



Electric hot water heater, DHW mixing valve, and piping.



		Electric hot water heater. 
		Newer circulation pump #1 
		Newer circulation pump #2. 

		Newer VFDs #1 
		Older VFDs #2 
		Heating zone circulation pumps – good to fair condition. 

		Fair condition – circulation pump and motor 
		Upper AHU Room – Main AHU. 
		AHU piping arrangement. 

		(3) AHUS in gym. 
		AHU piping connections and controls – typical of (3) 
		AHUs piping into gym. 

		Fresh air intake – gym. 
		Kitchen refrigerated walk in #1. 
		Kitchen refrigerated walk in #2. 

		Outdoor condenser unit #1. 
		Outdoor condenser unit #2. 
		Grill hood to exhaust fan - noise dampening needed. Added burners requested by staff. 

		Fill and drains to be upgraded on food service line. 
		Kitchen grill exhaust fans. 
		Smaller kitchen exhaust fans. 

Infrastructure Recommendations:

General Mechanical Recommendations:

The Rivendell High School's main service is 1200 amp, 208/120 volt, 3 phase.

We have outlined below (2) potential HVAC system solutions. Some pros and cons follow at the end.

1. The base / recommended solution is water source heat pump (WSHP) geothermal-based. This is a closed loop geothermal (ground source) WSHP system that is capable of using the earth as both a sink and source of energy, provides simultaneous heating and cooling year round and energy sharing between zones. This would distribute a heat pump loop throughout the building

and would have water source heat pumps serving each zone. In addition, a Water-to-Water Heat Pump will provide heating hot water to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

WSHP options:

- Water Furnace International, Inc., commercial water to air heat pump equipment will be the basis of design. Typically, these will be concealed ducted units.
- ClimateMaster

Water-to-Water Heat Pump Options

- Water Furnace T1 (2, 4 or 5 Tons)
- Bosch TW or WT series (not sure which is more efficient)

2. The alternate solution will use air source heat pumps. Air-to-Water Heat Pumps would generate hot water and chilled water to be distributed throughout the building. 4-pipe fan coil units would serve each zone. Heating hot water would be provided to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

Air-to-Water Heat Pump Options:

- Hitachi air H20 Yutaki units (R32 refrigerant)
- Space Pak Solstice Extreme R32 (CC32-XX)
- Arctic Heat Pumps OXXZA/BE (R410A for the moment, probably switching soon)

Pumps Options:

Grundfos Magna3 or TPE3

Hydronic systems Buffer Tank Options:

Lochinvar HP250G (R30 insulation) and many others

Refrigerant R410A is being phased out 12/31/24 and most manufacturers of WSHP equipment are changing to R454B.

Considering the first solution will be considerably more energy efficient and should come with incentives, we believe it will be the chosen solution.

We recommend a Building Management System (BMS) to be a direct digital controls (DDC) system installed to control the proposed equipment and facilitate maintenance with features such as remote internet access and alarm notification.

Immediate needs:

Replace Boiler #1 and associated equipment.

Replace heating system piping insulation. Inspect piping.

Shorter term needs:

Replace AHUs in Gym.
Replace split duct cooling systems in offices.
Replace window mounted AC units.

Longer term needs and energy reduction:

If the building has not recently had a blower door test, we recommend this be completed to guide envelope upgrade recommendations. Assuming envelope upgrades and/or major program changes leads to a major building renovation, provide either the geothermal or air source option recommended above.

We recommend providing cooling throughout the facility, which will greatly improve occupant comfort during warmer times of the year as well as helping to preserve certain building finishes by helping to keep moisture levels within the facility in a desired range.

We recommend upgrading the building envelope to meet code minimum. In addition, as part of energy modeling, during the design we can perform envelope design assistance. We anticipate the building will ultimately be cooling dominant, and if so, as part of the major building renovation we recommend the existing boiler plant, regardless of the age or condition, be demolished as part of the switch to the recommended mechanical solutions.

Alternatively, if a major building renovation is not planned (that is, the geothermal or air source options are not being installed and the central heating plant is to remain intact), for any areas that are not presently cooled and yet are deficient in ventilation air, we could provide new energy recovery ventilation units with dehumidification to improve indoor air quality and provide a limited amount of cooling. While this solution isn't our first recommendation because it is not as energy efficient and does not provide fully comfortable spaces, it is a path with lower construction cost.

The geothermal system utilizes WSHP's throughout the facility to condition (both heat and cool) the entire facility. This system utilizes a closed loop borehole geothermal system to heat or cool the indoor heat pump loop which is utilized to heat and cool the facility. We suggest a new wall mount backup boiler be installed for an unlikely emergency if the geothermal field were to become unavailable for an extended period of time. We recommend new ERVs be utilized to provide fully ducted ventilation air to each space. The ventilation system will be appropriately sized and designed per ASHRAE 62.1 requirements. The geothermal system will be sized based on the cooling load of the facility which is anticipated to then easily meet the peak heating demand. Based on a current project at Burlington High School we roughly estimate the cooling load for this project to be 20-25 Btu/sq.ft. and heating load to be 12 Btu/sq.ft. (actual, including no safety factor.) These will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design.

We recommend geothermal heat pump systems for schools such as this one because we have typically found these to be the most energy efficient method of conditioning schools based upon our energy

modelling. In addition, the geothermal piping system is expected to survive for decades, reducing future maintenance costs. Replacing water source heat pumps when required is a relatively easy task.

Water source heat pumps utilize the refrigeration cycle to both heat and cool air. They accomplish this through the use of a refrigerant reversing valve allowing the equipment to run the cycle as an air conditioner or reverse the cycle to operate as a heater. The water source heat pump can extract heat from the air and transfer it to a water loop when in cooling mode or transfer heat from the water loop to the air in heating mode. The units are very efficient with Energy Efficiency Ratio (EER) values of 15-25 in cooling mode and the Coefficient of Performance (COP) values for heat pumps are in the range of 3.0-4.5. A COP value of 3.0 indicates that for every 1 unit of energy used to run the heat pump, 3 units of heat energy are transferred to the air. This represents a 300% increase in efficiency when compared to electric resistance heating and over 300% more efficient than any fuel fired heating equipment. A water source heat pump system has the added benefit of energy “sharing.” Spaces that are in cooling mode can reject heat into the common water loop which can be used by spaces in heating. This condition can be common during shoulder seasons when the spaces with southern exposure require cooling while the spaces with northern exposure require heating. This can save significant amounts of energy in facilities that have many different exposures and variable occupancies such as this building.

We recommend installing energy recovery ventilation (ERVs) which utilize energy heat exchangers that transfer both sensible and latent energy from the exhaust air to pre-condition the ventilation air. Ductwork located above the ceilings will distribute the air.

The ventilation air will be controlled by CO2 sensors, occupancy sensors, and occupancy schedules to vary the ventilation air delivered to each space. Variable Air Volume (VAV) boxes will be utilized to modulate the ventilation air flow to each zone. The ventilation unit fans will modulate to deliver only as much ventilation air as necessary to satisfy space demands, which significantly reduces energy consumption.

A closed loop geothermal (ground source) / water source heat pump system uses a glycol and water fluid mixture as a medium to transfer energy to and from the heat pumps located throughout the facility. The geothermal closed-loop ground source heat exchanger will be installed on the site to condition the fluid. The closed-loop heat exchanger will be a series of 500-700 ft. deep boreholes with 1-1/4” to 1-1/2” HDPE (High Density Polyethylene plastic) piping loops that utilize the near constant ground temperature to both heat and cool the facility. In the next phase we will prepare calculations to size the geothermal borehole field and these calculations will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design. The final borehole field design will also require the drilling of a test borehole to better understand the subsurface characteristics of this specific site.

A geothermal heat pump system utilizes only electricity to heat and cool the facility and the ventilation air. This will significantly reduce or eliminate the school building’s use of fossil fuels. The heat pump loop piping interior to the building for this type of system is required to be insulated due to low temperature fluid temperatures that occur when the system is in heating mode. The hydronic system will utilize a propylene glycol solution for freeze protection. The geothermal borehole fluid will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided

for redundant backup). The borehole circulators will inject into the internal building secondary heat pump loop which will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). All of the new circulator pumps will have either ECM's or IE5 motors with pump mounted Variable Frequency Drives (VFDs) to modulate the speed of the pumps to match the building heating or cooling loads. The DDC system will modulate the pumps to maintain a differential pressure set point in the heat pump hydronic system. This significantly reduces pumping energy as the pumps reduce speed as the facility heating or cooling demand decreases.

Base scope (geothermal / water source heat pump system), Facility Conditioning and Ventilating Equipment:

The classrooms throughout the facility would be conditioned using water source heat pumps. A typical classroom would be provided with a small closet located in a corner of the room that would house the heat pump. This will provide each classroom with a dedicated heating/cooling zone.

We estimate that a 5-ton water source heat pump with a variable speed compressor or 2-stages of capacity control will be installed. The heat pump will have variable speed EC fan motors, low sound package, insulated coils, hot gas reheat, MERV13 filters and BACnet controls package. The heat pump supply will be ducted above the ceiling (where applicable) or through the structure (where applicable). A return grille would be in the face of the closet to return the air back to the unit. Each heat pump would be equipped with a 2-way modulating control valve to match the compressor speed to reduce water flow during low load conditions along with a balance valve to control water flow through the unit. If there is available space, the heat pump will be suspended above the ceiling with the heat pump return ducted to ceiling grilles.

Common spaces based on our initial heat load estimates, will be included in the a 5-ton variable capacity heat pump with variable speed EC fan motors, low sound package, insulated coils, MERV13 filters, modulating control valve and BACnet controls package.

Each space will have a supply and return VAV (Variable Air Volume box) to control the ventilation air. Outdoor air and exhaust will be ducted to each classroom and generally ducted to the heat pump return plenum. Each classroom will be a single ventilation zone with Carbon Dioxide (CO₂) monitoring; the VAVs will modulate as necessary to maintain CO₂ levels below set point values in each zone.

The offices / administrative and meeting spaces in the facility will be conditioned using either a fully ducted heat pump or exposed console style (free standing) heat pump depending on the specific application. Each heat pump will be equipped with a 2-way control valve and balance valve to control water flow through the unit. The ducted heat pumps will have the same options indicated for the classroom units where applicable. Ducted heat pumps will typically serve 2-3 offices. Console heat pumps will be installed in each office where applicable. Typical office heat pumps will be single stage units.

The other spaces will have a supply and return VAV (Variable Air Volume box) to control the ventilation air to each zone. The ventilation supply air shall be ducted to the heat pump returns (where applicable) and an exhaust grille shall be in each space. Typical office ventilation zones will be for adjacent spaces on a single zone with large open common spaces being dedicated ventilation zones. Outdoor air and exhaust will be ducted to each space with the outdoor air ducted to each heat pump return plenum. Where multiple spaces are served by a single VAV unit, each normally occupied space will have CO₂

monitoring; the VAV's will modulate as necessary to maintain CO2 levels below set point values in each zone.

We recommend a kitchen hood sized for the specific equipment that is located underneath it. The hood will have an Ansul fire suppression system, a U.L. Listed grease laden vapor rated isolation damper, and a supply air plenum. If the kitchen cooking equipment is electric, we recommend installing a grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit. This unit, when paired with a Halton Capture Jet hood and the variable volume exhaust dampers, and the MARVEL controls package, this system allows for variable volume exhaust flow rate and recirculation back into the space. Exhausting air to the outdoors and conditioning outdoor air for make-up purposes consumes a significant amount of energy and recirculating the air reduces this energy consumption. The recirculation unit will have (4) stages of filtration, and integral Ansul system, controls to interconnect with the exhaust hood system, supply air duct smoke detector, BACnet connections to the DDC system and the system is to be UL Listed (710B) for use with grease rated exhaust. The grease exhaust system will be installed per UL 762 and NFPA 96 requirements. To be determined based upon the size of the recirculated kitchen exhaust air will be how this air is cooled and how to ventilate and condition the kitchen and cafeteria spaces.

The corridors will be conditioned by either ducted or console type heat pumps. Heat pumps will be predominantly located near exterior entrances or exterior exposures. The corridors will have dedicated ventilation zones that are tied into the ventilation for restrooms off of the corridors.

A Direct Digital Controls (DDC) system will be installed to operate the HVAC equipment throughout the facility. The DDC system will have internet connectivity to enable monitoring and control of the system remotely. Web connected DDC systems can be programmed to send alerts to operators and maintenance personnel when there is an equipment failure. A DDC system will enable the new HVAC system and components to operate efficiently and as designed.

For the alternate solution using air source heat pumps, thermal storage buffer tanks located in the mechanical room will be utilized for both the hot water and chilled water. This system will not qualify for incentives. It is entirely possible that the total installed cost of this system will not be cheaper than the geothermal / water source heat pump system, when considering incentives.

The four pipe fan coils with concealed ducted units located above the ceiling. The fan coils will have EC motors, elastomeric closed cell foam liners, inlet filters, 0.025" thickness tube wall coils, stainless steel insulated drain pans, and condensate overflow switches. Generally, fan coils will have MERV 13 filters. Modulating control valves will vary the heating/cooling capacity of the units based on the zone's call for heating or cooling. All cooling units will be provided with condensate lift pumps as required to ensure appropriate condensate drainage. Each zone (either a single space or multiple spaces) will be equipped with its own dedicated thermostat integrated into the DDC. For all spaces, modulating control valves tied into the DDC system will be installed to control the water flows to each fan coil unit.

Both solutions offer equipment with maintenance requirements that are relatively minimal.

Pros of the base/recommended solution

- A geothermal system may qualify for state, federal, and utility incentives to offset construction costs, which could make the system economically advantageous to install compared to other non-geothermal options.

Cons of the base/recommended solution

- Site coordination required to determine where the borehole field can fit on the site.

Cons of the alternate solution:

- Geothermal systems are more energy efficient and there is no energy sharing for the alternate solution between spaces in heating mode and spaces in cooling mode so energy consumption will be higher.
- Possibly higher installed cost due to 4-pipe design rather than a 2-pipe system.

General Plumbing Recommendations:

A backflow preventer will be installed for the domestic water entrance.

For both solutions, domestic hot water will be produced by residential grade electric air-to-water heat pump (hybrid heat pump) water heaters. These absorb ambient heat from the surrounding air to heat water using a compressor and R134a refrigerant. Self-contained heat pump unit is integrated into the top of the tank.

- A.O. Smith Water Products Co; HPTU-80N (Basis of Design.)
- State Industries, State Water Heaters, HPSX-80DHPT

The hybrid heat pump water heater will operate on factory controls to maintain a set temperature within the tanks.

Domestic hot water discharge temperature will be controlled by an ASSE 1017 rated thermostatic water mixing valve. The mixing valve will utilize controls and temperature sensors to maintain the desired discharge water temperature. Basis of design is the Caleffi 520500AX tank mounted 3/4" master mixing valve which has tight hot water close off, ASSE 1017, 8 gpm, and is DZR low-lead brass.

Domestic hot water recirculation will be provided by a duplex set of potable water rated circulator pumps. Grundfos Pumps Corporation, Alpha HWR 15-29 or Alpha HWR 15-55 will be the Basis of Design.

The domestic water distribution system shall be provided to support the bathrooms, drinking fountains, mop sinks, kitchen sinks and laundry.

All new water closets shall be high efficiency 1.28 GPF flushometers with anti-microbial surfaces, lavatories will be equipped with 0.5 GPM aerators, and break room sinks shall be equipped with 1.5 GPM aerators for water conservation. All facilities shall be ADA compliant where applicable. All public lavatories will be provided with ASSE 1070 point of use thermostatic mixing valves to provide tempered hot water to the fixtures. We recommend that all public lavatory faucets and all urinal/water closet flush valves be sensor operated.

All plumbing equipment including piping, valves, pumps, tanks, fixtures, etc. will be Lead-Free. The domestic water piping will be copper soldered. The sanitary waste piping will be PVC.

General Fire Protection Recommendations:

A fire protection system will be installed in the entire facility meeting NFPA 13.

Rivendell High School - Electrical

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Electrical Code (NEC), fire safety including NFPA 72, life safety including National Fire Protection Association (NFPA) 101, 2015 Vermont and New Hampshire Fire and Building Safety Code, or other similar codes. When these systems were installed, they were most likely code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for weather-resistant receptacles in wet and exterior locations, and tamper resistant receptacles for schools. Other deficiencies, such as the use of shared neutrals on circuits with separate breakers, could not be investigated due to safety concerns. Due to the age of the buildings it is expected this is not an issue. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition. Many of the changes to the electrical codes are a result of injuries and deaths because of less stringent regulations and enforcement in the past.

Any renovation work should consider the use of LED lighting technology. LED lighting provides more lumens (measure of light output) per watt compared to other technologies, has a longer life, is usually inherently dimmable, generates less Ultraviolet (UV) light than fluorescent bulbs and is essentially mercury-free. For all practical purposes, fluorescent and incandescent lighting is no longer used, and most commercial buildings have or are making the change to LED.

Electrical Distribution:

The Rivendell High School’s main service is 1200 amp, 208/120 volt, 3 phase, 4 wire service via a pad mounted transformer located to the right of the circle at the front entrance. This existing electric service was installed in 2002. The panelboards, subpanels, outlets, and power feeds are in operational working and very good condition.

The 1200 amp main breaker does not have an energy reduction switch. It is required for new installations however since this is an existing installation no change is required.

The pad mounted 100 kW emergency generator and automatic transfer switch is located to the right of the front entrance. This equipment appears to be recently installed, code compliant, well maintained, and in very good condition.

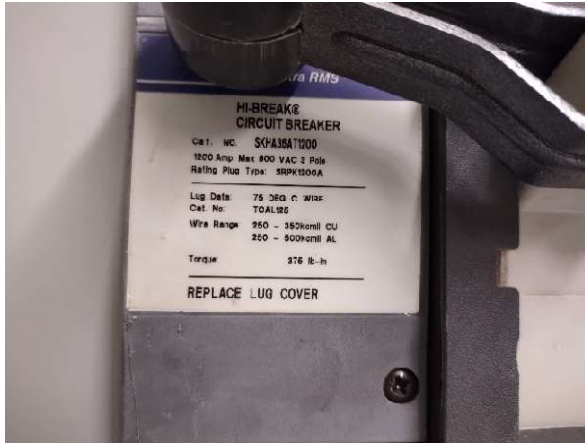
There did not appear to be any surge protection at the main service to the building. Surge protection helps protect electrical systems within a building from surges in voltage that may occur. Of particular concern are spikes during lightning strikes. Although not required, they are recommended.

2. Electrical

150 kVA -12.5 kV – 208/120V service transformer.



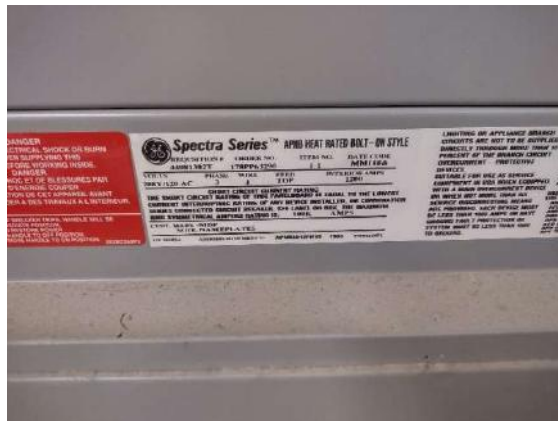
1200 amp, 208/120 volt, three phase Main Breaker.



Meter for electrical service.



Service Main Panelboard.



Main Panelboards



Generator subpanel.



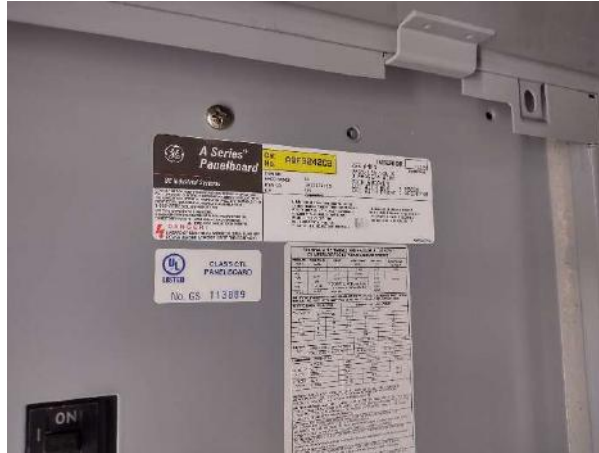
Hallway lighting subpanels - typical.



Panelboard for stage.



Panelboard for upper AHU Room



Sub panel for lighting circuits – typical



Wire circuiting is either via conduit or metal clad (MC) cable. Installation of electrical equipment, wiring, conduit, and metal clad has been done in a professional manner but in some areas of the facility show signs that its exceeded its service life. Electrical systems have been well maintained and show no signs of damage or excessive corrosion. Abandoned conduit lines with pulled wire, sub panels not in use, old telephone panels still in place should be properly capped or removed.

Receptacles in spaces accessible to the public appear no to be tamper resistant (TR) type. Recent electrical code changes require TR receptacles in public facilities to protect everyone.

Lighting:

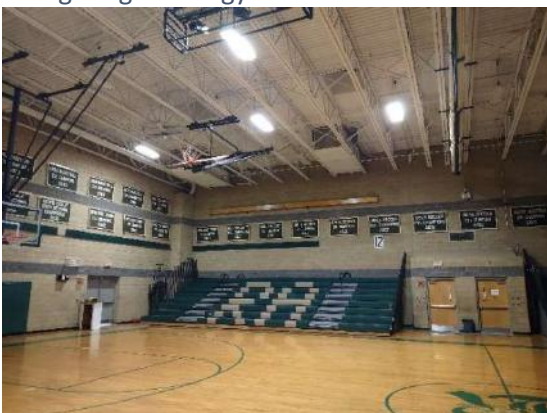
Some of the indoor lights are incandescent bulbs, T8 fluorescent, ceiling mounted 2" x 2", or 2" x 4" troffer type. This type of lighting is usually recommended for replacement with LED.

All exterior lighting should be upgraded to LED type. The exterior mounted lighting is on timers and was not on during the day, suggesting either the time clock and a photocell controlling the lights are working correctly.

There does not appear to be much occupancy or daylight sensing. Vermont and New Hampshire Commercial Energy Standards are that unless a space uses very low lighting and more than one light fixture is in space, occupancy sensing is required. Sometimes “daylight harvesting” is required to essentially utilize the ambient light from the outdoors in lieu of lighting indoors. This is accomplished via “photo eyes” in the room that sense ambient light levels and either turn off or dim lighting accordingly.

There is emergency lighting, some of the fixtures appear to be as original to the building. Batteries can be replaced, often it is less expensive to simply buy new fixtures. Some exit signs also appear to be original to the building. There are a few newer ones.

Many of the common areas have wall switches. Any public egress path should not have the means to manually turn the lighting off. Similarly, multi-person restrooms are typically set up for automatic light control instead of switches.

3.	Lighting	Typical traditional lighting. The fixtures appear to still be incandescent and fluorescent type. 
		T-8 lighting in the gym. 

T-8s should be replaced with LED.



Exterior flood lights limited, showing signs of age.



Fire Alarm:

The fire alarm system control panel is an audible and addressable type system. It appears to be in good condition. The front cover indicates no violations.

The existing fire alarm control panel is a Mircom FX – 2000 Series and is located at the main entrance.

The High School is considered an existing educational occupancy and it is not required to be provided with a voice notification fire alarm system. Simple alarms are adequate by code. However, if the fire alarm system were to be replaced, the fire marshal will most likely consider that a “system replacement”, and if so the new fire alarm would be required to be provided with voice notification.

One item that should be confirmed by the High School is that the “recall” alarm, indicating staff and visitors may reenter the building after a fire alarm, must be a distinct alarm from the fire alarm itself.

Carbon monoxide (CO) detection was not noticed; however, it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

4. Fire Alarm

The main fire alarm panel. There were no violation notes on the front cover.



FACP – remote annunciator- appears to be more than one



Telecommunications:

LNC did not investigate the telecommunication system. Telecom is typically done by an Owner's IT department and "methods" and "standards" for installation vary. Although there are some NEC rules to follow, for the most part telecommunication system installations do not require electricians to perform the work. The BDA system needs to be evaluated and possibly upgraded to meet local fire department requirements. Telecom hard drive and battery back up mounted in the corner meeting space should have a proper NEMA 1 enclosure.

Electrical Summary

- Some electrical distribution equipment is obsolete and should be replaced as part of any facility upgrade.
- All lighting should be upgraded to LED lighting. This should include emergency lighting for exterior exit paths. Exterior floodlights have LED bulbs but the fixture should be replaced.
- The lighting throughout the building appears to be incandescent bulbs and T8 fluorescent type lamps and fixtures. The troffer type fixtures tend to be less efficient and result in more glare than newer LED type fixtures. LED type fixtures also allow for easier controls, particularly dimming.
- Lighting control in many areas do not utilize occupancy sensors. There did not appear to be many areas utilizing dimming or daylight sensing controls.
- The lighting in some egress paths, including lobbies, corridors and stairs, is controlled by wall switches. This is a code violation for egress paths.
- Any upgrade may require some additional smoke detectors and carbon monoxide detection.

Infrastructure Recommendations:

General Electrical Recommendations:

There are some recommendations that should be implemented to bring the High School up to the latest safety codes. This includes the following:

1. Selective electrical distribution equipment replacement.
2. Replace lighting and exit lighting to LED
3. Replace receptacles in public areas with tamper resistant type.
4. Remove switches in corridors with keyed switches that are only controllable by staff. This would be done in conjunction with the addition of occupancy sensors in the corridors or other egress paths.

The main recommendation that is not a safety issue is the replacement of the existing lighting with LED type. In conjunction with this, the controls would be upgraded to provide occupancy sensor control and dimming. The simplest way to accomplish this may be to provide new light fixtures with integral wireless controls. This would significantly reduce the amount of recircuiting required. There may be some incentives to upgrade.

Based on most selected mechanical system upgrades, the electric service to the building may not need to be increased. LNC can provide existing load information and based on that it can be determined if the existing service can accommodate the mechanical upgrades or not. If not, it may be the service entrance would be increased, and possibly the outdoor transformer as well. This should be relatively simple however and based on the total scope of work required for the mechanical system upgrade this should be small.

LNC does not have any power outage information.



Sincerely,

David Gass
Project Manager
LN Consulting, Inc.

Building #2: Rivendell Academy – West Wing

Constructed: 1957 original building, c.1990 south addition

Last Renovated: C.1990 major renovation of original building; numerous minor renovations

Stories: 1 above grade, partial mechanical basement

Gross Area: 29,469 SF

Use: School

CONSTRUCTION

1.	Foundation	Original & Addition: Concrete
2.	Superstructure	Original & Addition: Primary: Conventional wood frame structure Secondary: Structural steel frame & metal studs
3.	Exterior Walls	Primary: Wood clapboards Secondary: Wood shakes & vertical ribbed panels
4.	Roof	Low Slope Roof: Single-ply membrane Pitched Roof: Asphalt shingles

CODE

1.	Occupancy	NFPA Educational, IBC Group E
2.	Construction Type	Original: NFPA Type V, IBC Type V Addition: NFPA Type V, IBC Type V
3.	Sprinklers	Yes
4.	Fire Alarm	Yes



During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed:

LIFE SAFETY

1.	Exits		
		Discharge to Public Way	Yes
		Number	In compliance. Summary: Level 1 has 8 exits from common areas, 6 exterior exits from program rooms, and 3 exterior exits from utility spaces. Specific detail for assembly spaces: - Multi-Purpose Room 2131 has 2 exterior exits & 1 exit to corridor. - Gymnasium 2119 has 3 exits to corridors. Second exit from basement is bulkhead as existing condition.
		Egress Width	In compliance.
		Separation Distance	In compliance.
		Travel Distance	In compliance.
		Signage	Signage does not meet code / regulation requirements. Recommendation – Install compliant signage.
		Hardware	In compliance except the following: North Corridor door and South Corridor door to Connector have lever sets. Recommendation – Install panic devices. Mechanical Room 2129 exterior door has knob. Recommendation – Install panic device.
2.	Stairs		Normally unoccupied space directly off stair is not allowed by code. Recommendation – Modifications to bring existing condition into conformance may not be necessary until other modifications are made in this area. Consult AHJ.
		Rise/Run	Rise exceeds maximum height. Recommendation – Modifications to bring existing condition into conformance may not be

			necessary until other modifications are made in this area. Consult AHJ.
		Width	Does not meet minimum width for existing stairs. Recommendation – Modifications to bring existing condition into conformance may not be necessary until other modifications are made in this area. Consult AHJ.
		Rated Enclosure	Stair/Exit corridor bottom level has unprotected openings, door to 2101 Fitness Center has louver. Recommendation – Install fire rated doors and frames. Stair 2105 door to Storage has push/pull. Recommendation – Install latch/lever set and automatic closer.
		Handrail	There is no handrail on the wall side of the stair. Recommendation – Install code compliant handrail.
		Guardrail	Guardrail does not meet height requirements. Recommendation – Install code compliant guardrail.
3.	Rated Rooms		Boiler Room 2120 is not fire rated. Recommendation – Create new 1-hour fire rated enclosure including door and frame. Electrical Room 2122 is not fire rated. Recommendation – Create new 1-hour fire rated enclosure included door and frame.
4.	Fire Extinguishers		Yes. Facilities Shop 2104 fire extinguisher mounted higher than ADA maximum. Recommendation – Mount fire extinguisher at required height.

ACCESSIBILITY

Note that some room specific comments are located within the notes for that room.

1.	Main Entrance or Alternate Entrance	Main entrance is intended to be accessible; concrete pad lip exceeds allowable maximum
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			height. Most exits do not meet ADA requirements. Recommendation – Raise adjacent grade or grind down edge of slab to meet requirements. Modify exits as required to meet minimum number of required ADA exits.
2.	Door Dimensions		
		Clear Width & Height	In compliance.
		Push/Pull	The following doors are not in compliance: Stair 2105 door to Gym 2119 lacks pull distance. Stair 2105 door to exterior lacks push distance. Boys Bathroom 2110 lacks pull distance. Classroom 2142 entry door lacks push and pull distance. Classroom 2154 entry door lacks push distance. Classroom 2162 entry door lacks push distance. Recommendation – Install automatic door operators or reconfigure rooms.
		Threshold	In Compliance.
		Leverset/height	The following doors have knobs: Weight Room 2101 door to Corridor 2105. Shop entry 2104. Restroom corridor 2109.1. Restroom 2109.2. Storage 2111. Janitor's Closet between 2113 and 2115. Electrical Room 2122. Janitor's closet 2124. Janitor's Closet 2135. 2148 entry door and shared door to 2150. Multi-Purpose 2131 closet. Mechanical Room 2129 entry. Nurse 2140 entry door. Nurse's 2142 Office door. Bathroom 2160. Recommendation – Install leverset except door to Electrical Room 2122 to receive panic device.

			The following doors have no handle: Patient Room 2143. Storage 2144. Recommendation – Provide push/pull hardware if leverset with latch is not desired.
		Distance Between Sequential Doors	In Compliance.
3.	Accessible Route		
		Path to Public Areas/ Elevator	In Compliance.
		Minimum Width	In Compliance.
		Protruding Objects greater than allowed 4"	AED is in surface mounted cabinet. Recommendation – Install AED in semi-recessed AED cabinet.  Multi-Purpose 2131 has surface mounted fire extinguisher. Recommendation – Reinstall fire extinguisher in semi-recessed cabinet. South corridor bench and drinking fountain. Recommendation – Install cane rail or end panel at bench, install ADA compliant drinking fountain.
		Ramp Dimensions [landings 60"]	2123 ramp exceeds allowable slope, does not meet required width for push side clearance at door.

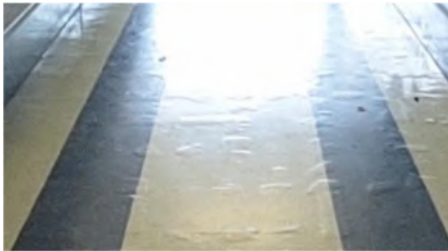
			Recommendation – Options include: Removing raised stage floor, increasing length and width of ramp, installing stairs and lift.
		Ramp Curb or 12” Beyond Rail	N/A
		Handrail Dimensions	2123 ramp lacks handrails. Recommendation – Install handrails in new ramp configuration if ramp is to be retained.
4.	Elevators		N/A
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage including braille.
6.	Transaction Counters		N/A
7.	Toilet Rooms		
		At Least 1 Accessible	Bathroom in Nurse 2140 is the only ADA compliant bathroom.
		Signage to locate	Not in compliance. Recommendation – Install compliant signage.
		Fixture Dimensions	Restroom 2109.2 does not meet ADA requirements. Recommendation – To meet ADA requirements room must be enlarged and reconfigured. Boys Bathroom 2120 no ADA toilet stall, sinks do not have required clear width, sinks lack drain pipe insulation, accessory locations do not meet ADA Recommendation – Enlarge bathroom to achieve ADA toilet stall, and sink clear width. Install pipe insulation. Girls Bathroom 2112 no ADA toilet stall, sinks do not have required clear width, sinks lack drain pipe insulation. Recommendation – Reconfigure to achieve ADA toilet stall and sink clear width, install pipe insulation. Boys Bathroom 2133 & Girls Bathroom 2137 bottom of mirror exceeds maximum height, rim

			of sink exceeds maximum height, width of ADA stall does not meet minimum width. Recommendation – Remount mirrors and sinks at appropriate height, enlarge ADA stall.  Restroom 2158 (Staff Restroom) does not meet minimum ADA requirements for clearance space between toilet and sink, toilet distance off of side wall, and rear grab bar is missing. Recommendation – To meet ADA requirements room must be enlarged. Toilet Room 2160 does not meet ADA requirements. Recommendation – To meet ADA requirements room must be enlarged and reconfigured.
8.	Drinking Fountains		North and south corridor drinking fountains are not high-low fountains. Recommendation – Replace fountains with High-Low model that meets ADA requirements.

INTERIOR

1.	General: Room numbers are per the numbering system within the building.		
2.	North Corridor		
		Floor	Fair condition; scrapes, scuffs, and some joint gaps. VCT tile near drinking fountain damaged. Recommendation – Replace tile near drinking fountain.
		Walls/ Columns	Fair condition panelized system, no immediate action require.
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition – North aluminum entry door pair; weather stripping worn. Recommendation – Replace weather stripping.

			Good condition – West aluminum entry door pair.
		Borrowed Lites	N/A
		Millwork	Fair condition – Chair rail, no immediate action required.
3.	North Corridor – West Exit		
		Floor	Good condition. Half of the floor is covered by walk-off carpet and is not able to be fully assessed.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition. Aluminum doors are slightly out of alignment and there are gaps at weatherstripping. Recommendation – Align doors, install new weatherstripping.
		Borrowed Lites	N/A
		Millwork	Fair condition – Chair rail, no immediate action required.
4.	North Corridor – South End		
		Floor	Good condition.
		Walls/ Columns	Good condition. External corners chipped/damaged. Recommendation – Install corner guards.
		Ceiling	Fair condition. Several ACT tiles damaged. Recommendation – Replace damaged tiles.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	Fair condition – Chair rail.
5.	Northeast Corridor		
		Floor	Good condition.
		Walls/ Columns	Fair condition. Recommendation – Replace wood trim at opening to North Corridor.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Wooden storage cabinets have been added to north wall.

			Recommendation – Confirm with AHJ that combustible storage cabinets are acceptable in exit access corridor.
6.	South Corridor		
		Floor – North End	Poor condition. Cracks and differential settlement in VCT along assumed slab joint lines, scrapes, gouges, discoloring. Recommendation – Install new flooring after flashing concrete slab. 
		Floor – South End	Poor condition. Bubbling under VCT, edge of flooring at exterior door threshold chipped. Recommendation – Replace flooring. 
		Walls/ Columns – North End	Poor condition. External corners damaged, wall base damaged, paint scraped / missing. Recommendation – Patch and repaint walls, replace wall base. 

		Walls/ Columns – South End	Fair condition. Some damage at external corners, dings and scratches. Recommendation – Patch and repaint walls.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Fair condition, no immediate action required.
7.	East Corridor		
		Floor	Good condition. Rough edge at exterior door threshold. Recommendation – Intsall wider threshold. 
		Walls/ Columns	Fair condition – Dings and cracks, wall base poor, exterior windows stuck shut. Recommendation – Repair damage and replace wall base.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition overall – exterior door. No bottom seals, threshold poor, hardware poor. Recommendation – Install new weatherstripping, threshold, and hardware.
		Borrowed Lites	Good condition.
		Millwork	N/A
8.	Fitness Center 2101		
		Floor	Good condition.
		Walls/ Columns	Poor condition. Multiple areas of damage. Recommendation – Fixed damaged areas and repaint.
		Ceiling	Poor condition. Bulkhead and numerous ceiling tiles damaged. Recommendation – Repair bulkhead and replace damaged 2x4 ACT.
		Doors	Poor condition. Recommendation – Replace doors and frames.

			
		Borrowed Lites	Painted over (see Doors).
		Millwork	N/A
9.	Operations Entry Vestibule		
		Floor	Obscured by walk-off carpet.
		Walls/ Columns	Fair condition; wall base missing. Recommendation – Install wall base.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition; many chips and scratches. Recommendation – Refinish door.
		Borrowed Lites	N/A
		Millwork	N/A
10.	Operations Office 2102		
		Floor	Fair condition, joint separation north end of room. Recommendation – Seal joint.
		Walls/ Columns	Fair condition, some damage at east wall. Recommendation – Repair and repaint damaged areas. 
		Ceiling	Fair condition, no immediate action required.
		Doors	Poor condition.

			Recommendation – Replace door and frame.
		Borrowed Lites	N/A
		Millwork	Wall mounted adjustable shelves protrude beyond 4". Recommendation – Remove shelves or move piece of furniture below shelving as cane detection.
			
11.	Kitchen Storage 2103		Many surfaces covered by furniture. Notes reflect only areas that are observable.
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Exposed structure.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
12.	Facilities Shop 2104		Many surfaces covered by tools, equipment, work surfaces, and materials. Notes reflect only areas that are observable.
			
		Floor	Fair condition. Concrete has crack near sink. Painted finish has worn off. Recommendation – Repair crack and recoat surface.
		Walls/ Columns	Fair condition for shop space; walls have dings, dents, scrapes.
		Ceiling	Fair condition for shop space.

		Doors	Interior door fair condition for shop space. Door lacks ADA pull clearance due to stored material. Wall closure around door frame is incomplete Recommendation – Replace door frame trim, relocate stored material to achieve pull clearance. Exterior door poor condition with rust, dents, scrapes. Recommendation – Replace door and frame. Overhead door poor condition. Recommendation – Replace overhead door.
		Borrowed Lites	N/A
		Millwork	Fair condition for shop space.
13.	Kitchen Storage 2105		Not assessed – unable to access area.
14.	Stair / Exit Corridor		This space appears to have numerous life safety code deficiencies. Any work in this area should be coordinated with the AHJ.
		Floor	Poor condition. Concrete is unfinished and has cracks. Recommendation – Seal cracks and install flooring.
		Walls/ Columns	Poor condition. Walls have numerous unfinished patches, wall base missing. Recommendation – Repair and repaint wall, install wall base. 
		Ceiling	Exposed structure.
		Doors	Poor condition.

			Recommendation – Replace metal exterior door and frame, metal Weight Room door and frame, wood door and frame all located in stairway walls.
		Borrowed Lites	N/A
		Millwork	N/A
15.	Room 2106		Note that material is stacked below electrical panels and should be removed.
		Floor	Poor condition. Concrete floor has cracks and finish has worn off. Recommendation – Repair cracks and repaint. 
		Walls/ Columns	Good condition. Most of wall surfaces are covered and cannot be fully assessed.
		Ceiling	Fair condition. Some tiles need to be replaced. Recommendation – Replace several 2x4 ACT tiles.
		Doors	Fair condition. Recommendation – Repaint.
		Borrowed Lites	N/A
		Millwork	N/A
16.	Kitchen 2107		
		Floor	VCT fair condition. For sanitary purposes floor should have no/seamless joints, integral wall base, and floor drain. Recommendation – If kitchen is used for commercial food preparation, upgrade flooring to high-traffic seamless with integral base and install floor drain with slope to drain.
		Walls/ Columns	Fair condition with some damage. Recommendation – Repair and paint damaged areas.

			
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Fair condition. Counter height not in compliance with ADA standards, sink drain lacks ADA required insulation. Recommendation – Install ADA compliant sink/counter with drain insulation.
			
17.	Classroom 2108		
		Floor	Fair condition. Numerous scuffs and scrapes, areas of discoloration. Recommendation – Replace VCT.
		Walls/ Columns	Fair condition. Recommendation – Repaint wall panels with paint spatter.
		Ceiling	Poor condition. 2x4 ACT bowed and stained. Recommendation – Replace ACT.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Poor condition. Sink not ADA compliant. Recommendation – Replace millwork, provide ADA compliant sink.
18.	Access Corridor to 2109		
		Floor	Good condition.

		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Poor condition. Recommendation – Replace door and frame.
		Borrowed Lites	N/A
		Millwork	N/A
19.	Toilet Room 2109		
		Floor	Poor condition. Bare concrete. Recommendation – Install flooring. 
		Walls/ Columns	Poor condition. No wall base, dings and dents. Recommendation – Patch and paint walls, install wall base.
		Ceiling	Good condition.
		Doors	Poor condition. Metal door has holes, damaged edges. Recommendation – Replace door. 
		Borrowed Lites	N/A

		Millwork	N/A
20.	Boys Bathroom 2110		
		Floor	Poor condition. Recommendation – Replace flooring.
		Walls/ Columns	Poor condition. Panelized walls with cracks and large chips, wall base has much damage. Recommendation – Reconstruct bathroom.
		Ceiling	Fair condition, no immediate action required.
		Doors	Poor condition. Recommendation – Replace door and frame.
		Borrowed Lites	N/A
		Millwork	N/A
21.	Storage 2111		
		Floor	Poor. Most of floor is concrete slab with perimeter rough cut topping material. Recommendation – Prep floor and install new flooring. 
		Walls/ Columns	Obscured so not able to be assessed.
		Ceiling	Fair – Stained 2x4 ACT tiles. Recommendation – Replace stained tiles.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	N/A
22.	Girls Bathroom 2112		
		Floor	Poor condition. Cracks at doorway, bubbling around partition feet. Recommendation – Repair/replace flooring.

			
		Walls/ Columns	Fair condition. Poor patch panel on west wall. Recommendation – Remove patch and repair wall.
		Ceiling	Good condition.
		Doors	Poor condition. Recommendation – Replace door.
		Borrowed Lites	N/A
		Millwork	N/A
23.	Former Boys Locker Room 2113		
		Floor	Poor condition overall. Painted concrete has slopes from previous floor drains, patches from removed walls, and chips / scrapes. Toilet stall has new flooring in good condition. Recommendation – Flash concrete and install new flooring.
		Walls/ Columns	Fair condition. Poorly plugged holes at former location of shower heads. Recommendation – Replace CMU units at plugged holes.
		Ceiling	Fair condition, no immediate action required.
		Door	N/A
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	Good condition.
24.	Room 2114		
		Floor	Fair condition.
		Walls/ Columns	Good condition.
		Ceiling	Fair condition. A few chipped/cracked ceiling tiles. Recommendation – Replace damaged 2x4 ACT tiles.
		Door	Good condition. Interior door scraped, paint worn. Recommendation – Repaint interior door.
		Borrowed Lites	Good condition.
		Millwork	N/A

25.	Former Girls Locker Room 2115		
		Floor	Fair condition. Unpainted concrete, slopes to drain in two locations with loose flooring used to cover one location. Recommendation – If floors are intended for everyday use, remove drains, flash concrete, install new flooring. 
		Walls/ Columns	Fair condition. Poorly plugged holes at former location of shower heads, damage from entry door handle, damaged CMU at entry half wall. Recommendation – Replace CMU units at plugged holes, repair GWB behind entry door & install door stop, repair damaged CMU at half wall.
		Ceiling	Fair condition, no immediate action required.
		Doors	Poor condition. Recommendation – Replace door and frame.
		Borrowed Lites	Fair condition. Recommendation – Repaint underside of sill.
		Millwork	N/A
26.	Room 2116		
		Floor	Poor condition. Portion of floor discolored and scraped. Recommendation – Replace VCT flooring.
		Walls/ Columns	Poor condition. Recommendation – Patch and repaint.

		Ceiling	Poor condition. Recommendation – Replace 2x4 VCT tiles.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	N/A
27.	Former Coach Office 2117		
		Floor	Fair condition.
		Walls/ Columns	Fair condition.
		Ceiling	Fair condition.
		Doors	N/A
		Borrowed Lites	N/A
		Millwork	N/A
28.	Office 2118		
		Floor	Poor condition. Area near desk worn and joints of adjacent VCT tile discolored. Recommendation – Replace VCT tile.
		Walls/ Columns	Good condition. Finned tube convactor missing end panel. Recommendation – Replace end panel.
			
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	N/A
29.	Gymnasium 2119		
		Floor	Good condition.
		Walls/ Columns	Good condition. Some minor damage.

			Recommendation – Minor repair and touch up painting. 
		Ceiling	Exposed structure.
		Doors	Fair condition. Some dings and scratches, missing parts on surface rods to east double doors. Recommendation – Repair and repaint doors and frames, repair surface rods. 
		Borrowed Lites	N/A
		Millwork	N/A
30.	Mechanical Room 2120		Entire room is in poor condition. Recommendation – Renovate entire room. Room to have fire rating.
31.	Gym Storage 2121		
		Floor	Poor condition. Recommendation – Repaint concrete.
		Walls/ Columns	Fair condition. Large portion of wall surface obscured by storage shelving and is not able to be assessed.
		Ceiling	Fair condition. GWB scraped at center of room. Recommendation – Patch and paint.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	N/A

32.	Electrical Room 2122		
		Floor	Fair condition. Painted finish worn off concrete. Recommendation – Repaint floor.
		Walls/ Columns	Fair condition.
		Ceiling	Poor condition. Utility room so not critical.
		Doors	Fair condition. Some damage at bottom of metal door. Recommendation – Repair damage, repaint door.
		Borrowed Lites	N/A
		Millwork	N/A
33.	Room 2123 (former Stage)		
		Floor	Good condition – Carpet at ramp. Poor condition – VCT. Many marks and stains. Portions of floor covered by material so cannot be assessed. Recommendation – Replace VCT.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition. Some sag in 2x4 ACT.
		Doors	Good condition – Interior door. Fair condition – Exterior door. Large gap at bottom left. Recommendation – Install new weatherstripping and address threshold if necessary. 
		Borrowed Lites	N/A
		Millwork	N/A
34.	Janitor's Closet 2124		
		Floor	Fair condition. Most of floor is covered by walk-off mat and cannot be fully assessed. Visible portions are concrete that is sound, painted finish worn off. Recommendation – Repaint floor.

			
		Walls/ Columns	Fair condition for visible portions of wall surfaces.
		Ceiling	Poor condition. ACT damaged. Utility space so not critical.
		Doors	Fair condition. Door edge scraped. Recommendation – Repaint door edge.
		Borrowed Lites	N/A
		Millwork	N/A
35.	Classroom 2125		
		Floor	Fair condition. Some carpet stains and runs. Recommendation – Clean carpet.
		Walls/ Columns	Good condition. Some dings and scrapes on blue wall. Surface mounted fire extinguisher exceeds ADA maximum allowed projection. Recommendation – Touch up damage and repaint blue wall. Place fire extinguisher out of path of travel or mount in semi-recessed cabinet.
			
		Ceiling	Good condition.
		Doors	Fair condition. Paint scrapes on door and frame. Recommendation – Repaint door and frame.

			
		Borrowed Lites	N/A
		Millwork	Fair condition. Door and drawer faces have dents, scrapes, door misalign. Recommendation – Replace cabinetry. 
36.	Storage 2126		
		Floor	Fair condition. Most of floor is covered by furniture and material so not fully assessed.
		Walls/ Columns	Fair condition. Most walls are covered by furniture and material so not fully assessed. Visible portion shows some damage. Recommendation – Repair, repaint damaged areas.
		Ceiling	Fair condition. Two ACT tiles appear to be too short. Recommendation – Replace short ACT tiles.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
37.	Classroom 2127		
		Floor	Fair condition.
		Walls/ Columns	Window sills paint peeling. Recommendation – Repaint window sills.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition – Interior door. Scrapes and missing paint.

			Fair condition – Exterior door. Recommendation – Repaint interior door and frame.
		Borrowed Lites	N/A
		Millwork	Fair condition, no immediate action required.
38.	District Office 2128, 2134		
		Floor	Fair condition. Numerous scrapes.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition. Some chips and scrapes on exterior of 2134, damaged threshold to storage room. Recommendation – Repaint exterior face of door 2134, replace threshold to storage room.
			
		Borrowed Lites	N/A
		Millwork	N/A
39.	Storage for District Office 2128, 2134		
		Floor	Fair condition. Sealed concrete floor. Damaged threshold. Recommendation – Replace threshold to storage room.
			
		Walls/ Columns	Fair condition. Large portion of wall surface obscured by storage shelving and is not able to be assessed.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A

		Millwork	Good condition. Exceeds maximum ADA counter height, sink is not accessible, path not accessible.
40.	Connector		
		Floor	Good condition. Most of the floor is covered by walk-off carpet and is not fully assessed.
		Walls/ Columns	Good condition. Window sills have chips, finned tube convector has scrapes. Recommendation – Repaint sills and convector. 
		Ceiling	Good condition.
		Doors	Good condition – North door and exterior door. Poor condition – South door. Recommendation – Replace wood south door, paint frame. 
		Borrowed Lites	Fair condition – South door sidelite, see door notes above.
		Millwork	Fair condition – Chair rail, no immediate action required.
41.	Mechanical Room 2129		
		Floor	Fair condition. Unsealed concrete. Recommendation – Seal concrete.
		Walls/ Columns	Wall surface obscured by equipment and is not able to be assessed.

		Ceiling	Ceiling obscured by equipment and is not able to be assessed.
		Doors	Fair condition – Interior door. Frame rusted at bottom.  Poor condition – Exterior door. Recommendation – Patch and repaint interior door frame, replace exterior door.
		Borrowed Lites	N/A
		Millwork	N/A
42.	Offices 2130, 2032, 2036, 2038		
		Floor	Fair condition. 2130 has wear pattern at desk. 2132 has mismatched VCT and wear pattern at desk. Recommendation – Replace worn and mismatched VCT, may require replacement of all VCT in room if product no longer available. 
		Walls/ Columns	Good condition.
		Ceiling	Fair condition. 2136 has unseated ACT and debris on grid. Recommendation – Reseat tiles and remove debris.

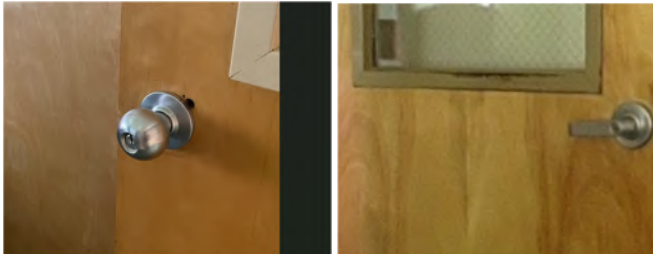
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
43.	Multi-Purpose 2131		
		Floor	Fair condition. Some discoloration, surface finish scrapes, chips. No immediate action required. 
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	Good condition – Interior door entry door, closet doors. Fair condition – South door. Scrapes. Poor condition – North door. Bottom of door rusted. Recommendation – Paint south door, replace north door. 
		Borrowed Lites	Good condition. Sidelites at entry door have glazing painted over.
		Millwork	Fair condition, no immediate action required.
44.	Boys Bathroom 2133 & Girls Bathroom 2137		
		Floor	Fair condition. Some wear, some staining at perimeter.
		Walls/ Columns	Fair condition. Boys 2133 unusual joint line at shared wall with JC 2135. Recommendation – Repair joint and repaint walls.

			
		Ceiling	Poor condition. Chipped, cut, stained 2x4 ACT. Chipped, stained grid. Recommendation – Replace ACT and grid.
		Doors	Poor condition. Wear patterns, scratches, discoloration. Recommendation – Replace doors.
		Borrowed Lites	N/A
		Millwork	N/A
45.	Janitor's Closet 2135		
		Floor	Very poor condition. Portion of VCT missing, remaining VCT is damaged. Recommendation – Replace flooring. 
		Walls/ Columns	Poor condition. Utility space so may be acceptable.
		Ceiling	Poor condition. Most 2x4 ACT are stained. Utility space so may be acceptable until scheduled replacement.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	N/A
46.	Classrooms 2139, 2141, 2143, 2154, 2156, 2162		
		Floor	Fair condition. Polished concrete worn, scratched, but is sound.

			 Poor condition – VCT Room 2162. Worn, scraped, rough edge at joint with polished concrete. Recommendation – Refinish concrete, replace VCT. 
		Walls/ Columns	Fair condition. Dings, scratches, scuffs. Windows difficult to open. Shades in poor condition. Recommendation – Patch and paint walls, determine if window operation can be improved, replace shades.
		Ceiling	Poor condition. 2x4 ACT chips, stains. Recommendation – Replace ACT and grid.
		Doors	Poor condition – Entry doors. Worn finishes, chips, scrapes, loose hardware. Recommendation – Replace doors and hardware. 
		Borrowed Lites	N/A
		Millwork	Poor condition. Worn finishes, counter and sink not ADA accessible. Recommendation – Replace millwork.
47.	Nurse 2140		
		Floor	Good condition. Some scrapes.
		Walls/ Columns	Good condition. Large portion of wall surface obscured by furniture/stored material and is not fully assessed.
		Ceiling	Good condition.

		Doors	Fair condition.
		Borrowed Lites	N/A
		Millwork	Obscured by material, not able to be assessed.
48.	Bathroom in Nurse 2140		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition.
		Borrowed Lites	N/A
		Millwork	N/A
49.	Storage Room in Nurse 2140		
		Floor	Fair condition. Wear pattern in VCT.
		Walls/ Columns	Good condition. Large portion of wall surface obscured and is not fully assessed.
		Ceiling	Fair condition.
		Doors	Fair condition. Operable hardware missing. Recommendation – Install latching lever set or push/pull.
		Borrowed Lites	N/A
		Millwork	N/A
50.	Nurse Office 2142		
		Floor	Fair condition. Wear pattern in VCT.
		Walls/ Columns	Good condition. Large portion of wall surface obscured and is not fully assessed.
		Ceiling	Good condition.
		Doors	Poor condition. Large portion of door surface obscured and is not fully assessed. Frame has chips and screw holes. Recommendation – Replace door, fill and repaint frame.
		Borrowed Lites	N/A
		Millwork	N/A
51.	Patient Room 2144		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.

		Doors	Fair condition. Operable hardware missing. Recommendation – Install latching leverset or push/pull.
		Borrowed Lites	N/A
		Millwork	N/A
52.	Public Entry – Vestibule & Lobby		
		Floor	Good condition – Vestibule. Poor condition – Lobby. VCT work and large gaps between tiles. Large portion of floor obscured by walk-off carpet and is not fully assessed. Recommendation – Replace lobby VCT.
		Walls/ Columns	Good condition – Vestibule. Some paint discoloration and chips at “wainscot”, unknown device on south wall.  Fair condition – Lobby. Recommendation – Repaint discolored areas, properly conceal device on south wall.
		Ceiling	Good condition – Vestibule. Fair condition – Lobby.
		Doors	Good condition. Aluminum entry doors weatherstripping has gaps. Recommendation – Replace weatherstripping.
		Borrowed Lites	Good condition – door sidelites.
		Millwork	Fair condition – wood wainscot.
53.	Counseling 2146, Office		

	2148, Office 2150		
		Floor	Fair condition. Some wear patterns in VCT.
		Walls/ Columns	Fair condition. Some dings and chips, Office 2148 external corner chipped. Recommendation – Repaint Office 2148 corner.
		Ceiling	Fair condition. Some stained, chipped, cracked 2x4 ACT. Recommendation – Replace damaged ACT. 
		Doors	Fair condition. Office 2148 entry door operating hardware does not conceal holes for previous hardware. Office 2150 entry door lite frame and bottom of door frame have rust. Recommendation – Replace knobs with levers having rosette sized to conceal holes if door is not replaced. Prep and paint rusted elements. 
		Borrowed Lites	Good condition.
		Millwork	N/A
54.	Computer Room 2152		
		Floor	Poor condition. Random sizes of sheet flooring loose laid on VCT. Recommendation – Install static dissipative flooring.

			
		Walls/ Columns	Poor condition. Wall base is missing. Large portion of wall surface obscured by furniture/equipment and is not fully assessed. Recommendation – Patch and repaint, install wall base.
		Ceiling	Poor condition. Ripped, cracked, chipped 2x4 ACT. Recommendation – Replace ACT.
		Doors	Fair condition. Outside face has discoloration at bottom of door, bottom of frame chipped and scraped. Recommendation – Install kickplate on push side of door, prep and paint frame. 
		Borrowed Lites	N/A
		Millwork	Fair condition, no immediate action required.
55.	Staff Toilet 2158		
		Floor	Poor condition. Recommendation – Replace VCT.
		Walls/ Columns	Fair condition. Blemish and holes near sink. Recommendation – Patch and paint wall adjacent to sink.
		Ceiling	Good condition.
		Doors	Fair condition – Entry door. Poor condition – Side door. Water stains on classroom side, holes around lever set. Recommendation – Replace side door or infill opening if door not used.

			
		Borrowed Lites	N/A
		Millwork	N/A
56.	Toilet Room 2160		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition.
		Borrowed Lites	N/A
		Millwork	N/A

EXTERIOR

1.	General: Site elements are not included in the scope of work of this review.		
2.	Walls		
		Foundation	Fair condition. Southern portion of building foundation insulation cover has broken / bowed sections. Recommendation – Repair / replace damaged areas. 
		Siding	Poor condition – Southern portion. Wood clapboards have numerous areas of rot. Trim boards under exterior doors have areas of rot. Gable end shakes have areas of cupping and deterioration. Trim boards at bottom of wall show discoloration. All siding and trim should be painted.

Recommendation – Replace wood siding and replace trim under doors. Clean and repaint any wood elements to remain.



Good condition – North portion. Various locations have cracked / broken vinly clapboards and broken vinyl trim pieces. Damage and makeshift corner pieces at panels above vinyl clapboards.

Recommendation – Replace broken vinyl clapboards and trim, replace panels.



			
	Windows	Overall fair condition – South portion. Wood hung windows difficult to open, some screens damaged. Fair condition vinyl, poor condition wood – North portion. Wood windows deteriorated / rotted. Seal is broken on some thermal panes, some screen frames show signs of rust. Recommendation – Replace wood windows, replace thermal panes with broken seals, replace rusty screens.	 
	Doors	Good condition – Aluminum doors.	

			Fair condition – Hollow metal doors. South portion of building has several HM doors with rust at bottom of door. Fair condition – Overhead door. Door has dents. Recommendation – Replace rusted doors, replace dented section of overhead door.
			
		Louvers	Good condition. Two exhaust vents on west side of north portion of building in very poor condition. Recommendation – Replace vents or remove if not in use.
			
		Soffits	Fair condition, no immediate action required.
		Fascia	Fair condition, no immediate action required.
3.	Elements [e.g. Columns]	Hose Bib	Poor condition. Hose bib surround broken at north portion west façade. Recommendation – Replace vinyl trim at hose bib.
		Concrete Pads at Exterior Doors	Poor condition. Cracks and rust at concrete pad at main entry. Crooked concrete pad at exit from Room 2136. Concrete pad eroded at north entry. No concrete pad at stair exit door. Recommendation – Install new concrete pads at exterior doors to meet ADA requirements.

			
4	Roof	General	Roof not accessible during site visit. Assessment based upon information provided by facilities staff, visual observations from ground level, and data from 2023 FCA.
		Single-Ply Membrane	Fair condition, no immediate action required.
		Asphalt Shingles	Good condition – Northeast roof installed around 2023. Fair condition – South roofs. Some discoloration visible, no reports or signs of active leaks. 

ADDITIONAL NOTES/ PHOTOS



View from Southwest Entering Drop-off Loop



View of Northwestern Facade of Building



View of East Façade from Courtyard to Academy East Wing

RE: Rivendell Academy Middle School MEP/FP Analysis Report

Existing Building Mechanical/Plumbing Infrastructure



L.N. Consulting was retained by Freeman French Freeman Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting the Rivendell Academy Middle School, Orford, NH to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The goal of the building infrastructure report is to provide an overview of the existing conditions, the general age of the equipment and systems, and code compliance issues to help define the scope of work should the building undergo a major renovation.

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system, or equipment wear items. The report will provide general details about the systems and then offer a combined recommendations section for ease of reference. Included with each report of existing conditions will be photos of items that may be of interest and provide more explanation of our findings.

Note that this report is based on the site visit that, due to the amount of time available, and limited access to certain areas, involved general review of the building. Although LNC was able to perform a somewhat detailed analysis of the building, it was not possible to review every space or system for deficiency. The intent of this report is to provide an overview of the conditions, focusing on identifying deficiencies, including any code deficiencies concerning code deficiencies, while actual corrections required would involve specific design work.

Mechanical/Plumbing Overview

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Fire Protection Association (NFPA) codes including the Standard for the Installation of Air Conditioning and Ventilating Systems (90A-2015), National Fuel Gas Code (54-2015), Fire Code (1-2015), Life Safety Code (101-2015), 2015 New Hampshire Fire and Building Safety Code, International Plumbing Code (IPC-2021), New Hampshire Plumbing Rules, International Building Code (IBC-2015), International Existing Building Code (IEBC-2018), ASHRAE Ventilation and Acceptable Indoor Air Quality (62.1-2016), New Hampshire Commercial Building Energy Standards (CBES-2024) effective 7/1/24, with ASHRAE Energy Standard for Buildings Except Low-Rise Buildings (90.1-2019) as the alternative compliance path, and occasionally other codes. When these systems were installed, they were code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for tempered water protection at public lavatories and handwashing facilities and mechanical ventilation as natural ventilation utilizing operable windows was previously permitted but is no longer an approved ventilation method. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition.

Existing Conditions

General

LN Consulting made our observations of the Middle School on June 16, 2025. This building is a single floor and basement, slab on grade. The building is heated with (3) natural gas fired boiler steam boilers.

Mechanical and Plumbing

Refer to the photo captions below for mention of the majority of the existing mechanical, plumbing, and fire protection equipment. Equipment that is at or near the end of useful service life is identified, making it an opportune time to switch to a more energy efficient solution and to address code issues.

Basement boiler #1 with an oil service burner and boiler. This existing burner/boiler has 3 zones, was combustion tested in 2019, was installed in accordance with code, is well maintained but is at the of its service life. LN Consulting recommends that this equipment be upgraded.

Room 133 boiler #2 with a propane service burner and boiler. This existing burner/boiler has 3 zones, was installed in accordance with code, is well maintained, and 15 years into its 30 year service life.

AHU Room boiler #3 with an oil service burner and boiler. This existing burner/boiler has 3 zones, was installed in accordance with code, is well maintained, and 15 years into its 30 year service life.

Water is supplied through (3) Well-trol compression tanks that appear to be well-feed.

Carbon monoxide (CO) detection was not noticed; however, it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

The water heaters serve the domestic hot water needs of the facility. The lifespan of a water heater is typically 15 years. It is in good condition. Water heater units should be replaced with an electric water heaters.

Units and piping are in working condition. Welded, threaded black iron pipes are used for oil piping within the facility.

Recommended repairs, and equipment replacements;

Oil and propane fired boilers supply hydronic heat to the terminal units in the classrooms. The loop feeds two air handling units (AHUs) in the gym and AHU Room, several unit heaters, radiant baseboard in the office areas, and meeting spaces.

Heating system piping appears in good to fair condition however further inspection is required. Insulation needs to be repaired in some areas.

Hot water circulation pumps in the main boiler room are in good condition.

Split heating and cooling system is used in the office areas of the facility. These units are in fair condition, should be cleaned - inner blower fans, filters, tested, and more closely evaluated. They have completed more than half of their expected 15 to 20 years life cycle. Condenser units mounted in the second floor mechanical space with the Trane cooling equipment needs to be verified. The facilities upgrade project should include the replacement or upgrade of these split systems.

Secondary areas have aging through wall and window mounted air conditioning units that should be replaced.

The boiler plants and main distribution pumps are in good condition. System piping insulation should be repaired, the boiler room should be cleaned of stored items, debris, walls patched, piping penetrations fire stopped, and painted.

Fire Protection

There is a fire pump serving the building.

Mechanical and plumbing photos from the LN Consulting site visit begin on the next page.

1. Mechanical

Basement boiler #1 at the end of its service life.



Newer circulation pumps.



Room 133 Propane fired boiler #2 – 15 years into 30 year service life.



Room 133 boiler #2 Room - Newer hot water heater.



AHU Room boiler #3 – 15 years into a 30 year service life.



Newer circulation pump.



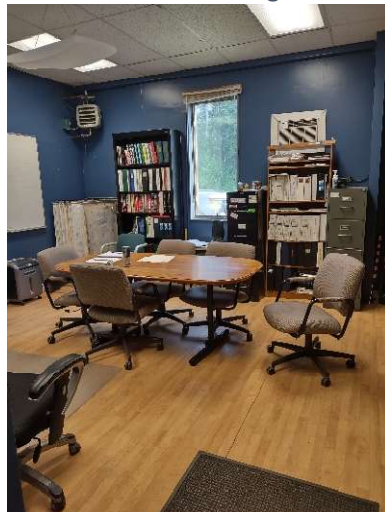
AHU in gym – older unit at the end of its service life.



Terminal unit in classroom – typical.



Unit heater and through wall AC in office area.



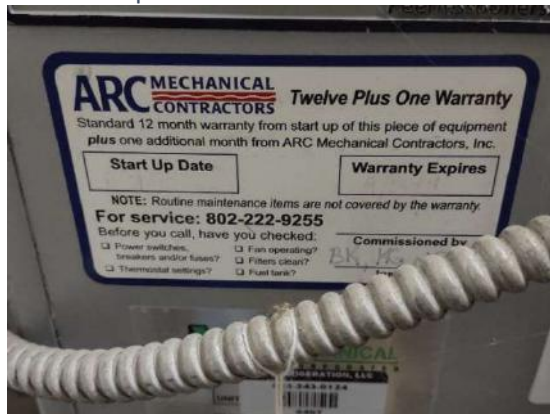
Radiant baseboard – typical.



AHU room equipment



AHU nameplate.



Infrastructure Recommendations:

General Mechanical Recommendations:

Electrical service is 800 amps and 208/120 volt, three phase. This may present some limitations on mechanical equipment selection but appears to be manageable given the building sizes.

We have outlined below (2) potential HVAC system solutions. Some pros and cons follow at the end.

1. The base / recommended solution is water source heat pump (WSHP) geothermal-based. This is a closed loop geothermal (ground source) WSHP system that is capable of using the earth as both a sink and source of energy, provides simultaneous heating and cooling year round and energy sharing between zones. This would distribute a heat pump loop throughout the building and would have water source heat pumps serving each zone. In addition, a Water-to-Water Heat Pump will provide heating hot water to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

WSHP options:

- Water Furnace International, Inc., commercial water to air heat pump equipment will be the basis of design. Typically, these will be concealed ducted units.
- ClimateMaster

Water-to-Water Heat Pump Options

- Water Furnace T1 (2, 4 or 5 Tons)
- Bosch TW or WT series (not sure which is more efficient)

2. The alternate solution will use air source heat pumps. Air-to-Water Heat Pumps would generate hot water and chilled water to be distributed throughout the building. 4-pipe fan coil units would serve each zone. Heating hot water would be provided to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

Air-to-Water Heat Pump Options:

- Hitachi air H20 Yutaki units (R32 refrigerant)
- Space Pak Solstice Extreme R32 (CC32-XX)
- Arctic Heat Pumps OXXZA/BE (R410A for the moment, probably switching soon)

Pumps Options:

Grundfos Magna3 or TPE3 (TPE3 can do up to 2 horsepower at single phase)

Hydronic systems Buffer Tank Options:

Lochinvar HP250G (R30 insulation) and many others

Refrigerant R410A is being phased out 12/31/24 and most manufacturers of WSHP equipment are changing to R454B.

Considering the first solution will be considerably more energy efficient and should come with incentives, we believe it will be the chosen solution.

We recommend a Building Management System (BMS) to be a direct digital controls (DDC) system installed to control the proposed equipment and facilitate maintenance with features such as remote internet access and alarm notification.

Immediate needs:

Replace Boiler #1 and associated equipment.
Replace heating system piping insulation. Inspect piping.
Replace AHU equipment in gym and adjacent mechanical room.

Shorter term needs:

Replace split duct cooling systems in offices.
Replace window mounted AC units.
Replace terminal units in classrooms and corridors.

Longer term needs and energy reduction:

If the building has not recently had a blower door test, we recommend this be completed to guide envelope upgrade recommendations. Assuming envelope upgrades and/or major program changes leads to a major building renovation, provide either the geothermal or air source option recommended above.

We recommend providing cooling throughout the facility, which will greatly improve occupant comfort during warmer times of the year as well as helping to preserve certain building finishes by helping to keep moisture levels within the facility in a desired range.

We recommend upgrading the building envelope to meet code minimum. In addition, as part of energy modeling, during the design we can perform envelope design assistance. We anticipate the building will ultimately be cooling dominant, and if so, as part of the major building renovation we recommend the existing boiler plant, regardless of the age or condition, be demolished as part of the switch to the recommended mechanical solutions.

Alternatively, if a major building renovation is not planned (that is, the geothermal or air source options are not being installed and the central heating plant is to remain intact), for any areas that are not presently cooled and yet are deficient in ventilation air, we could provide new energy recovery ventilation units with dehumidification to improve indoor air quality and provide a limited amount of cooling. While this solution isn't our first recommendation because it is not as energy efficient and does not provide fully comfortable spaces, it is a path with lower construction cost.

The geothermal system utilizes WSHP's throughout the facility to condition (both heat and cool) the entire facility. This system utilizes a closed loop borehole geothermal system to heat or cool the indoor

heat pump loop which is utilized to heat and cool the facility. We suggest a new wall mount backup boiler be installed for an unlikely emergency if the geothermal field were to become unavailable for an extended period of time. We recommend new ERVs be utilized to provide fully ducted ventilation air to each space. The ventilation system will be appropriately sized and designed per ASHRAE 62.1 requirements. The geothermal system will be sized based on the cooling load of the facility which is anticipated to then easily meet the peak heating demand. Based upon a current project at Burlington High School we roughly estimate the cooling load for this project to be 20-25 Btu/sq.ft. and heating load to be 12 Btu/sq.ft. (actual, including no safety factor.) These will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design.

We recommend geothermal heat pump systems for schools such as this one because we have typically found these to be the most energy efficient method of conditioning schools based upon our energy modelling. In addition, the geothermal piping system is expected to survive for decades, reducing future maintenance costs. Replacing water source heat pumps when required is a relatively easy task.

Water source heat pumps utilize the refrigeration cycle to both heat and cool air. They accomplish this through the use of a refrigerant reversing valve allowing the equipment to run the cycle as an air conditioner or reverse the cycle to operate as a heater. The water source heat pump can extract heat from the air and transfer it to a water loop when in cooling mode or transfer heat from the water loop to the air in heating mode. The units are very efficient with Energy Efficiency Ratio (EER) values of 15-25 in cooling mode and the Coefficient of Performance (COP) values for heat pumps are in the range of 3.0-4.5. A COP value of 3.0 indicates that for every 1 unit of energy used to run the heat pump, 3 units of heat energy are transferred to the air. This represents a 300% increase in efficiency when compared to electric resistance heating and over 300% more efficient than any fuel fired heating equipment. A water source heat pump system has the added benefit of energy "sharing." Spaces that are in cooling mode can reject heat into the common water loop which can be used by spaces in heating. This condition can be common during shoulder seasons when the spaces with southern exposure require cooling while the spaces with northern exposure require heating. This can save significant amounts of energy in facilities that have many different exposures and variable occupancies such as this building.

We recommend installing energy recovery ventilation (ERVs) which utilize energy heat exchangers that transfer both sensible and latent energy from the exhaust air to pre-condition the ventilation air. Ductwork located above the ceilings will distribute the air.

The ventilation air will be controlled by CO2 sensors, occupancy sensors, and occupancy schedules to vary the ventilation air delivered to each space. Variable Air Volume (VAV) boxes will be utilized to modulate the ventilation air flow to each zone. The ventilation unit fans will modulate to deliver only as much ventilation air as necessary to satisfy space demands, which significantly reduces energy consumption.

A closed loop geothermal (ground source) / water source heat pump system uses a glycol and water fluid mixture as a medium to transfer energy to and from the heat pumps located throughout the facility. The geothermal closed-loop ground source heat exchanger will be installed on the site to condition the fluid. The closed-loop heat exchanger will be a series of 500-700 ft. deep boreholes with 1-1/4" to 1-1/2" HDPE (High Density Polyethylene plastic) piping loops that utilize the near constant ground temperature

to both heat and cool the facility. In the next phase we will prepare calculations to size the geothermal borehole field and these calculations will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design. The final borehole field design will also require the drilling of a test borehole to better understand the subsurface characteristics of this specific site.

A geothermal heat pump system utilizes only electricity to heat and cool the facility and the ventilation air. This will significantly reduce or eliminate the school building's use of fossil fuels. The heat pump loop piping interior to the building for this type of system is required to be insulated due to low temperature fluid temperatures that occur when the system is in heating mode.

The hydronic system will utilize a propylene glycol solution for freeze protection. The geothermal borehole fluid will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). The borehole circulators will inject into the internal building secondary heat pump loop which will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). All of the new circulator pumps will have either ECM's or IE5 motors with pump mounted Variable Frequency Drives (VFDs) to modulate the speed of the pumps to match the building heating or cooling loads. The DDC system will modulate the pumps to maintain a differential pressure set point in the heat pump hydronic system. This significantly reduces pumping energy as the pumps reduce speed as the facility heating or cooling demand decreases.

Base scope (geothermal / water source heat pump system), Facility Conditioning and Ventilating Equipment:

The classrooms throughout the facility would be conditioned using water source heat pumps. A typical classroom would be provided with a small closet located in a corner of the room that would house the heat pump. This will provide each classroom with a dedicated heating/cooling zone.

We estimate that a 5-ton water source heat pump with a variable speed compressor or 2-stages of capacity control will be installed. The heat pump will have variable speed EC fan motors, low sound package, insulated coils, hot gas reheat, MERV13 filters and BACnet controls package. The heat pump supply will be ducted above the ceiling (where applicable) or through the structure (where applicable). A return grille would be in the face of the closet to return the air back to the unit. Each heat pump would be equipped with a 2-way modulating control valve to match the compressor speed to reduce water flow during low load conditions along with a balance valve to control water flow through the unit. If there is available space, the heat pump will be suspended above the ceiling with the heat pump return ducted to ceiling grilles.

Common spaces based on our initial heat load estimates, will be included in the a 5-ton variable capacity heat pump with variable speed EC fan motors, low sound package, insulated coils, MERV13 filters, modulating control valve and BACnet controls package.

Each space will have a supply and return VAV (Variable Air Volume box) to control the ventilation air. Outdoor air and exhaust will be ducted to each classroom and generally ducted to the heat pump return plenum. Each classroom will be a single ventilation zone with Carbon Dioxide (CO₂) monitoring; the VAVs will modulate as necessary to maintain CO₂ levels below set point values in each zone.

The offices / administrative and meeting spaces in the facility will be conditioned using either a fully ducted heat pump or exposed console style (free standing) heat pump depending on the specific

application. Each heat pump will be equipped with a 2-way control valve and balance valve to control water flow through the unit. The ducted heat pumps will have the same options indicated for the classroom units where applicable. Ducted heat pumps will typically serve 2-3 offices. Console heat pumps will be installed in each office where applicable. Typical office heat pumps will be single stage units.

The other spaces will have a supply and return VAV (Variable Air Volume box) to control the ventilation air to each zone. The ventilation supply air shall be ducted to the heat pump returns (where applicable) and an exhaust grille shall be in each space. Typical office ventilation zones will be for adjacent spaces on a single zone with large open common spaces being dedicated ventilation zones. Outdoor air and exhaust will be ducted to each space with the outdoor air ducted to each heat pump return plenum. Where multiple spaces are served by a single VAV unit, each normally occupied space will have CO₂ monitoring; the VAV's will modulate as necessary to maintain CO₂ levels below set point values in each zone.

We recommend a kitchen hood sized for the specific equipment that is located underneath it. The hood will have an Ansul fire suppression system, a U.L. Listed grease laden vapor rated isolation damper, and a supply air plenum. If the kitchen cooking equipment is electric, we recommend installing a grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit. This unit, when paired with a Halton Capture Jet hood and the variable volume exhaust dampers, and the MARVEL controls package, this system allows for variable volume exhaust flow rate and recirculation back into the space. Exhausting air to the outdoors and conditioning outdoor air for make-up purposes consumes a significant amount of energy and recirculating the air reduces this energy consumption. The recirculation unit will have (4) stages of filtration, and integral Ansul system, controls to interconnect with the exhaust hood system, supply air duct smoke detector, BACnet connections to the DDC system and the system is to be UL Listed (710B) for use with grease rated exhaust. The grease exhaust system will be installed per UL 762 and NFPA 96 requirements. To be determined based upon the size of the recirculated kitchen exhaust air will be how this air is cooled and how to ventilate and condition the kitchen and cafeteria spaces.

The corridors will be conditioned by either ducted or console type heat pumps. Heat pumps will be predominantly located near exterior entrances or exterior exposures. The corridors will have dedicated ventilation zones that are tied into the ventilation for restrooms off of the corridors.

A Direct Digital Controls (DDC) system will be installed to operate the HVAC equipment throughout the facility. The DDC system will have internet connectivity to enable monitoring and control of the system remotely. Web connected DDC systems can be programmed to send alerts to operators and maintenance personnel when there is an equipment failure. A DDC system will enable the new HVAC system and components to operate efficiently and as designed.

For the alternate solution using air source heat pumps, thermal storage buffer tanks located in the mechanical room will be utilized for both the hot water and chilled water. This system will not qualify for incentives. It is entirely possible that the total installed cost of this system will not be cheaper than the geothermal / water source heat pump system, when considering incentives.

The four pipe fan coils with concealed ducted units located above the ceiling. The fan coils will have EC motors, elastomeric closed cell foam liners, inlet filters, 0.025" thickness tube wall coils, stainless steel insulated drain pans, and condensate overflow switches. Generally, fan coils will have MERV 13 filters. Modulating control valves will vary the heating/cooling capacity of the units based on the zone's call for heating or cooling. All cooling units will be provided with condensate lift pumps as required to ensure appropriate condensate drainage. Each zone (either a single space or multiple spaces) will be equipped with its own dedicated thermostat integrated into the DDC. For all spaces, modulating control valves tied into the DDC system will be installed to control the water flows to each fan coil unit.

Both solutions offer equipment with maintenance requirements that are relatively minimal.

Pros of the base/recommended solution

- A geothermal system may qualify for state, federal, and utility incentives to offset construction costs, which could make the system economically advantageous to install compared to other non-geothermal options.

Cons of the base/recommended solution

- Site coordination required to determine where the borehole field can fit on the site.

Cons of the alternate solution:

- Geothermal systems are more energy efficient and there is no energy sharing for the alternate solution between spaces in heating mode and spaces in cooling mode so energy consumption will be higher.
- Possibly higher installed cost due to 4-pipe design rather than a 2-pipe system.

General Plumbing Recommendations:

A backflow preventer will be installed for the domestic water entrance.

For both solutions, domestic hot water will be produced by residential grade electric air-to-water heat pump (hybrid heat pump) water heaters. These absorb ambient heat from the surrounding air to heat water using a compressor and R134a refrigerant. Self-contained heat pump unit is integrated into the top of the tank.

- A.O. Smith Water Products Co; HPTU-80N (Basis of Design.)
- State Industries, State Water Heaters, HPSX-80DHPT

The hybrid heat pump water heater will operate on factory controls to maintain a set temperature within the tanks.

Domestic hot water discharge temperature will be controlled by an ASSE 1017 rated thermostatic water mixing valve. The mixing valve will utilize controls and temperature sensors to maintain the desired discharge water temperature. Basis of design is the Caleffi 520500AX tank mounted 3/4" master mixing valve which has tight hot water close off, ASSE 1017, 8 gpm, and is DZR low-lead brass.

Domestic hot water recirculation will be provided by a duplex set of potable water rated circulator pumps. Grundfos Pumps Corporation, Alpha HWR 15-29 or Alpha HWR 15-55 will be the Basis of Design.

The domestic water distribution system shall be provided to support the bathrooms, drinking fountains, mop sinks, kitchen sinks and laundry.

All new water closets shall be high efficiency 1.28 GPF flushometers with anti-microbial surfaces, lavatories will be equipped with 0.5 GPM aerators, and break room sinks shall be equipped with 1.5 GPM aerators for water conservation. All facilities shall be ADA compliant where applicable. All public lavatories will be provided with ASSE 1070 point of use thermostatic mixing valves to provide tempered hot water to the fixtures. We recommend that all public lavatory faucets and all urinal/water closet flush valves be sensor operated.

All plumbing equipment including piping, valves, pumps, tanks, fixtures, etc. will be Lead-Free. The domestic water piping will be copper soldered. The sanitary waste piping will be PVC.

General Fire Protection Recommendations:

A fire protection system will be installed in the entire facility meeting NFPA 13.

Rivendell Middle School - Electrical

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Electrical Code (NEC), fire safety including NFPA 72, life safety including National Fire Protection Association (NFPA) 101, 2015 Vermont and New Hampshire Fire and Building Safety Code, or other similar codes. When these systems were installed, they were most likely code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for weather-resistant receptacles in wet and exterior locations, and tamper resistant receptacles for schools. Other deficiencies, such as the use of shared neutrals on circuits with separate breakers, could not be investigated due to safety concerns. Due to the age of the buildings it is expected this is not an issue. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition. Many of the changes to the electrical codes are a result of injuries and deaths because of less stringent regulations and enforcement in the past.

Any renovation work should consider the use of LED lighting technology. LED lighting provides more lumens (measure of light output) per watt compared to other technologies, has a longer life, is usually inherently dimmable, generates less Ultraviolet (UV) light than fluorescent bulbs and is essentially mercury-free. For all practical purposes, fluorescent and incandescent lighting is no longer used, and most commercial buildings have or are making the change to LED.

Electrical Distribution:

The Rivendell Middle School has a 225 amp, 120/208 volt, 3 phase, wire service via a pad mounted transformer located in back of the school appears. The panelboards, subpanels, outlets, and power feeds are in operational working yet fair condition. Most of the electrical equipment has exceeded its service life and should be replaced. Some electrical equipment that has been installed in recent years such as safety switches, disconnect switches, and subpanels are in very good condition.

There did not appear to be any surge protection at the main service to the building. Surge protection helps protect electrical systems within a building from surges in voltage that may occur. Of particular concern are spikes during lightning strikes. Although not required, they are recommended.

Electrical photos from the LN Consulting site visit begin on the next page.

2. Electrical

The main service equipment is in the basement. Functional but past its service life.



225 amp, 120/240 volt, three phase service panelboard.



Meter for electrical service.



Newer 600A safety switch in very good condition.



Sub panel original to the facility. Shows signs of corrosion and age.



Pad mounted service transformer at the back of the school.



The 1st floor electrical service equipment is in Room 134 - Electrical. Functional but some components are past their service lives.



Functional but aging panel.



Functional panelboard shows signs of aging.



Sub panel original to the facility.



Sub panel original to the facility. Shows signs of age.



Older 200 amp safety switch.



Electrical service disconnect switch to AHUs for gym.



200 amp, 120/240 volt, main breaker – AHU room.



Functional panelboard shows signs of age.



CIRCUIT DIRECTORY	
1 Water Meter	9 Bellingham Mill Pond
2	4 Mill Pond
3	6 Mill Pond
4	8 Mill Pond
5	10 Mill Pond
6	12 Mill Pond
7	14 Mill Pond
8	16 Mill Pond
9 Bridge	18 Mill Pond
10	20 Mill Pond
11	22 Mill Pond
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40	80 Mill Pond
41	82 Mill Pond
42	84 Mill Pond
43	86 Mill Pond
44	88 Mill Pond
45	90 Mill Pond
46	92 Mill Pond
47	94 Mill Pond
48	96 Mill Pond
49	98 Mill Pond
50	100 Mill Pond

Wire circuiting is either via conduit or metal clad (MC) cable. Installation of electrical equipment, wiring, conduit, and metal clad has been done in a professional manner but in some areas of the facility show signs that it's exceeded its service life. Electrical systems have been well maintained and show no signs of damage or excessive corrosion. Abandoned conduit lines with pulled wire, sub panels not in use, old telephone panels still in place should be properly capped or removed.

Receptacles in spaces accessible to the public appear no to be tamper resistant (TR) type. Recent electrical code changes require TR receptacles in public facilities to protect everyone.

Lighting:

Some of the indoor lights are incandescent bulbs, T8 fluorescent, ceiling mounted 2" x 2", or 2" x 4" troffer type. This type of lighting is usually recommended for replacement with LED.

All exterior lighting should be upgraded to LED type. The exterior mounted lighting is on timers and was not on during the day, suggesting either the time clock and a photocell controlling the lights are working correctly.

There does not appear to be much occupancy or daylight sensing. Vermont and New Hampshire Commercial Energy Standards are that unless a space uses very low lighting and more than one light fixture is in space, occupancy sensing is required. Sometimes "daylight harvesting" is required to essentially utilize the ambient light from the outdoors in lieu of lighting indoors. This is accomplished via "photo eyes" in the room that sense ambient light levels and either turn off or dim lighting accordingly.

There is emergency lighting, some of the fixtures appear to be as original to the building. Batteries can be replaced, often it is less expensive to simply buy new fixtures. Some exit signs also appear to be original to the building. There are a few newer ones.

Many of the common areas have wall switches. Any public egress path should not have the means to manually turn the lighting off. Similarly, multi-person restrooms are typically set up for automatic light control instead of switches.

3. Lighting

Typical traditional lighting. These tend to provide more glare since they do not “disperse” the light but rather simply shine down. The fixtures appear to still be incandescent and fluorescent type.



T-8 lighting in the boiler room.



T-8s should be replaced with LED.



Exterior flood lights with CFL bulbs but showing signs of age.



Fire Alarm:

The fire alarm system control panel is an audible and addressable type system. It appears to be in good condition. The front cover indicates no violations.

The existing fire alarm control panel is a Silent Knight SK-5208 and is located in the basement adjacent to the boiler room. Located there as well is the Eaton LMR Plus electric fire pump controller. This equipment has been recently installed and is in excellent condition.

Located in the air handling unit (AHU) room on the first floor near the gym is the sub panel for this system. The FACP in this location is a much older control panel and while it is functional it should be upgraded. LN Consulting recommends a selective fire alarm system upgrade including new FACP and possibly a sprinkler system.

However, due to its age it is assumed the FACP in the AHU room is obsolete. Upgrade recommended.

The Middle School is considered an existing educational occupancy and it is not required to be provided with a voice notification fire alarm system. Simple alarms are adequate by code. However, if the fire alarm system were to be replaced, the fire marshal will most likely consider that a "system replacement", and if so the new fire alarm would be required to be provided with voice notification.

One item that should be confirmed by the Middle School is that the "recall" alarm, indicating staff and visitors may reenter the building after a fire alarm, must be a distinct alarm from the fire alarm itself.

Carbon monoxide (CO) detection was not noticed, however it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

4. Fire Alarm

The main fire alarm panel. There were no violation notes on the front cover.



Fire pump controller – recently installed and well maintained.



Telecommunications:

LNC did not investigate the telecommunication system. Telecom is typically done by an Owner's IT department and "methods" and "standards" for installation vary. Although there are some NEC rules to follow, for the most part telecommunication system installations do not require electricians to perform the work. The BDA system needs to be evaluated and possibly upgraded to meet local fire department

requirements. Telecom hard drive and battery backup mounted in the corner meeting space should have a proper NEMA 1 enclosure.

Electrical Summary

- The electrical service and some distribution equipment is obsolete and should be replaced as part of any facility upgrade.
- All lighting should be upgraded to LED lighting. This should include emergency lighting for exterior exit paths. Exterior floodlights have LED bulbs but the fixture should be replaced.
- The lighting throughout the building appears to be incandescent bulbs and T8 fluorescent type lamps and fixtures. The troffer type fixtures tend to be less efficient and result in more glare than newer LED type fixtures. LED type fixtures also allow for easier controls, particularly dimming.
- Lighting control in many areas do not utilize occupancy sensors. There did not appear to be many areas utilizing dimming or daylight sensing controls.
- The lighting in some egress paths, including lobbies, corridors and stairs, is controlled by wall switches. This is a code violation for egress paths.
- The fire alarm system is fundamentally code compliant, however due to its age it should be replaced with a new system.
- Any upgrade may require some additional smoke detectors and carbon monoxide detection.

Infrastructure Recommendations:

General Electrical Recommendations:

There are some recommendations that should be implemented to bring the Middle School up to the latest safety codes. This includes the following:

1. Electrical distribution equipment replacement.
2. Replace lighting and exit lighting to LED.
3. Replace FACP in AHU room.
4. Replace receptacles in public areas with tamper resistant type.
5. Remove switches in corridors with keyed switches that are only controllable by staff. This would be done in conjunction with the addition of occupancy sensors in the corridors or other egress paths.

The main recommendation that is not a safety issue is the replacement of the existing lighting with LED type. In conjunction with this, the controls would be upgraded to provide occupancy sensor control and dimming. The simplest way to accomplish this may be to provide new light fixtures with integral wireless controls. This would significantly reduce the amount of recircuiting required. There may be some incentives to upgrade.

Based on most selected mechanical system upgrades, the electric service to the building may not need to be increased. LNC can provide existing load information and based on that it can be determined if the existing service can accommodate the mechanical upgrades or not. If not, it may be the service entrance would be increased, and possibly the outdoor transformer as well. This should be relatively simple

however and based on the total scope of work required for the mechanical system upgrade this should be small.

LNC does not have any power outage information.

Sincerely,

David Gass
Project Manager
LN Consulting, Inc.

Building #3: Samuel Morey Elementary School

Constructed: 1957 original building, c.2000 Gym + Eastern Wing

Last Renovated: C.2000 major renovation of original building; numerous minor renovations

Stories: 1 above grade

Gross Area: 28,424 SF

Use: School

CONSTRUCTION

1.	Foundation	Original & Addition: Concrete slab foundation w/ linear concrete footings
2.	Superstructure	Original: CMU, wood framing (assumed) Addition: CMU, steel bar joists
3.	Exterior Walls	Original: Primary – EIFS Secondary – Painted Wood
4.	Roof	Low Slope Roof: Single-ply EPDM membrane Pitched Roof: Standing seam metal

CODE

1.	Occupancy	NFPA Educational, IBC Group E
2.	Construction Type	Original: NFPA Type III, IBC Type III (assumed) Addition: NFPA Type II, IBC Type II
3.	Sprinklers	No
4.	Fire Alarm	Yes



During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed:

LIFE SAFETY

1.	Exits		
		Discharge to Public Way	Yes
		Number	In compliance. There are 9 exits from common areas (6 from corridors), 1 from each classroom, 2 from mechanical rooms, and 1 from kitchen.
		Egress Width	In compliance
		Separation Distance	In compliance
		Travel Distance	In compliance
		Signage	In compliance
		Hardware	Panic devices or push/pull hardware at all exit doors and vestibule doors along path.
2.	Stairs		
		Rise/Run	Not applicable
		Width	Not applicable
		Rated Enclosure	Not applicable
		Handrail	Not applicable
		Guardrail	Not applicable
3.	Rated Rooms		Mechanical rooms, storage rooms, multi-purpose room and lobby rated 1-hour.
4.	Fire Extinguishers		Not in compliance; fire extinguishers are missing from kitchen and Media space. Recommendation - Add Fire Extinguishers.

ACCESSIBILITY

1.	Main Entrance or Alternate Entrance		Yes
2.	Door Dimensions		In Compliance.
		Clear Width	Yes. Clear height not in compliance. All doors in the building appear to be below the recommended minimum height of 6'-8". All building doors were observed to be below this

			height threshold. Doors measured were between 6'-5" and 6'-6". Recommendation – Given the building is an elementary school and is assumed to be approved for occupancy by the Authority Having Jurisdiction, no action is needed at this time. If significant renovation work is undertaken, the AHJ will need to be consulted on the potential requirement to bring all doors into code compliance.
		Push/Pull	In Compliance.
		Threshold	ADA entrance threshold exceeds allowable (5/8" actual vs. 1/2" maximum). Recommendation – Install new code compliant thermally broken threshold and address transition from exterior concrete pad to threshold as applicable.
		Leverset/height [34-48]	In Compliance.
		Distance Between Sequential Doors	In Compliance.
3.	Accessible Route		Note that some room specific comments are located at the beginning of the notes for that specific room.
		Path to Public Areas/Elevator	In Compliance.
		Minimum Width	In Compliance.
		Protruding Objects	AED are in surface mounted cabinets that protrude greater than the allowed 4". Recommendation – Install AED in semi-recessed AED cabinets.
		Ramp Dimensions [landings 60"]	N/A
		Ramp Curb or 12" Beyond Rail	N/A
		Handrail Dimensions	N/A
4.	Elevators		

		Call Button Height [54" max]	N/A
		LULA Cab [51"D x 51"W or 54"D x 36"W]	N/A
		Elevator Cab [51"D x 36"W]	N/A
		Controls Requirements	N/A
		Signage	N/A
		Lift Platform Size & Clearance	N/A
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage including braille requirements.
6.	Transaction Counters		N/A
7.	Toilet Rooms		
		At Least 1 Accessible	Yes
		Signage to locate	No Braille signage. Recommendation – Install compliant signage.
		Fixture Dimensions	Multi-person toilet rooms appear to meet ADA requirements. Single person toilet rooms do not appear to meet ADA requirements. Current ADA does not allow sinks to encroach upon clear floor area for toilet. Recommendation – For restrooms requiring ADA compliance, reconfigure restrooms to allow proper fixture clearances.
			
8.	Drinking Fountains		Not in compliance, protrudes more than 4" into hallway.

		Recommendation – Install hi-lo drinking fountain that complies with ADA cane detection requirement.
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INTERIOR

1.	General: Room numbers are per the numbering system within the building.		
2.	North corridor – East (outside kitchen)		
		Floor	Fair condition. Cracked portions of VCT near entrance. Recommendation – Replace cracked VCT.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition. Ceiling tiles outside gym entrance door shows signs of water leak. Recommendation – Replace damaged ceiling tiles.
		Doors	Poor condition. Recommendation – replace exterior storefront doors. 
		Borrowed Lites	N/A
		Millwork	N/A
3.	North Corridor - West		
		Floor	Fair condition. Cracked portions of VCT near entrance. Recommendation – Replace damaged floor tiles.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition. Minimal ceiling tiles show signs of water leak. Recommendation – Replace damaged ceiling tiles.
		Doors	Poor condition.

			Recommendation – Replace exterior doors and frames. 
		Borrowed Lites	N/A
		Millwork	N/A
4.	Corridor at Southwest Exit		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Poor condition. Water staining outside room 3135. Recommendation – Replace damaged tiles. 
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
5.	Classrooms 3102, 3103 & 3109		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.

		Ceiling	Tiles around lights were unseated or not fitting properly, visible portions of ACT are in good condition.
		Door	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
		Millwork	N/A
6.	Learning Center 3106		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Good condition – Shelving within space not ADA compliant; projects more than 4” from wall surface without cane detection. Recommendation – Install shelving full height or add cane detection.
7.	Reading 3108		
		Floor	Fair condition. Rug concealed much of the floor so only visible portion assessed.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition, no immediate action required. Some chipped finish and wear at edges.
		Borrowed Lights	N/A
		Millwork	N/A
8.	Learning Center 3110		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lights	N/A
		Millwork	Good condition – Shelving.
9.	Expedition Room 3112		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.

		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
10.	Conference Room 3113		
		Floor	Fair condition. Wall base is in poor condition peeling away and deteriorating. Recommendation – Replace vinyl base.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
11.	Server Room 3115		
		Floor	Poor condition. VCT shows wear, fading. Recommendation – Replace VCT; determine if static dissipative flooring is required.
		Walls/ Columns	Poor condition. Recommendation – Patch and paint several areas. 
		Ceiling	Fair condition. ACT stained at multiple locations, light fixtures have debris. Recommendation – Replace tile, clean light fixtures.

			
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Shelves protruding beyond 4" allowed by ADA regulations. Recommendation – Address ADA cane detection requirements.
12.	Room 3117		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition. Mainly concealed by shelving so only visible portion assessed.
		Ceiling	Fair condition. ACT has one tile with water damage. Recommendation – Verify there is no active leak and replace damaged tile.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Fair condition. Materials in fair condition but the cabinet height is not in compliance. Base cabinets at 34.5" with non-accessible sink. Recommendation – Replace cabinets and sink with ADA compliant units.
			

13.	Girls Bathroom 3118 / Boys Bathroom 3120		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition. CMU chipping. Recommendation – Repaint chipped paint areas to match existing.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	N/A
14.	Media Room 3119		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Poor condition. Majority of ceiling in good condition however two small portions where GWB soffit shows cracking at corners. Recommendation – Patch, repair, repaint cracking soffit areas o match existing.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	Fair condition, no immediate action required.
15.	Nurse 3121		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition. Glass lite cracked inside. Recommendation – Replace door with new glass light.
			 This door was also locked and described as not in use. From the interior side there is no

			additional door for students to reach the nurses office other than through the adjacent restroom space. Recommendation – Provide access to Nurse 3121 through space other than adjacent restroom.
		Borrowed Lites	Good condition.
		Millwork	Poor Condition. Nurse's Station counter height not in compliance with ADA standards. No ADA access to the sink. Recommendation – Install new ADA open cabinet below sink and 34" counter above base cabinets. Install new door to the right (leading to Office 3135) of the cabinets. 
16.	Bathroom at Nurse 3121		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Poor condition. Counters not in compliance and in poor condition. Recommendation – Install new ADA sink at 34" height.

			 Missing 5'-0" turning radius at toilet by way of furniture. Shelves protrude into toilet clearance. Missing complaint ADA grab bars. Shower adjacent to toilet space was filled with supplies but appeared to be ADA complaint unit. Recommendation – Remove all wall shelving and cabinets from toilet area. Install ADA complaint grab bars. Refinish wall and floor areas where shelves were removed to match exiting.
17.	Custodial Room 3122		Portions of wall and floor surfaces obscured by stored materials and are not fully assessed.
		Floor	Poor condition. VCT is discolored and worn. Recommendation – Replace flooring. 
		Walls/ Columns	Good condition. Wall base is discolored. Recommendation – Replace wall base. 
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A

18.	Office 3123		
		Floor	Fair / Poor condition. Majority of VCT is in fair condition, however, there are isolated areas where furniture locations have left damage and discoloration. Recommend – Replace stained and damaged tiles. 
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
19.	Mechanical Room 3124		Portions of wall and floor surfaces obscured by stored materials and are not fully assessed.
		Floor	Fair condition. Floor is concrete and is assumed suitable for room and use. Crack at doorway between two mechanical rooms. Floor slopes up immediately upon entry to rooms from corridor or exterior. Recommendation – Repair crack and seal floor. 
		Walls/ Columns	Fair condition. Suitable for room type and use. Some wall penetrations (conduit, etc.) lack fire rated sealant.
		Ceiling	Good condition. Unfinished but sound and suitable for room type and use.

		Doors	Fair condition. Some scrapes, but solid. Door frame between rooms below minimum required height of 6'-8" due to floor being raise. Note that door to mechanical room is only 2'-6" wide and fire rating tags are painted over. Recommendation –Existing condition of door frame between rooms assumed acceptable to Authority Having Jurisdiction. Opening height to be raised if any alterations are made to mechanical rooms. Replace door and frame to corridor with fire rated / tagged units.
		Borrowed Lites	N/A
		Millwork	N/A
20.	Closet 3125 (in Staff Room 3127)		
		Floor	Good condition.
		Walls/ Columns	Poor condition. Much of wall has wiring or holes in places where electrical is hanging. Upper half not painted. Visible caulking and sealant joint areas.
		Ceiling	Fair condition, no immediate action required.
		Door	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
21.	Rooms 3126, 3130, & 3132		Note Room 3132 not reviewed as space was occupied; assuming similar conditions as adjacent classrooms.
		Floor	Poor condition. Gaps between VCT tiles and cracked corners. Recommendation – Replace VT tiles throughout space.
		Walls/ Columns	Fair condition – CMU; no immediate action required. Some rough areas.

			 Poor condition – Wall base in room 3126. Recommendation – Replace wall base in room 3126.
		Ceiling	Fair condition – ACT. Some stained tiles. Good condition – Acoustic Clouds. Recommendation – Replace stained ACT.
		Doors	Fair condition. Wood doors have chips, worn edges. Plywood surround on corridor side of door shows wear. Recommendation – Replace doors and surround when door height issue is addressed.
		Borrowed Lites	N/A
		Millwork	Fair condition – Plam at counters; no immediate action required. Poor condition – Wood backsplashes.  No clear floor area ADA access at sink. Recommendation – Replace wood backsplashes with Plam. Replace sink cabinet to meet ADA requirements.
22.	Staff Room 3127		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Non-compliant sink access. Delamination of countertop at edges. Trim around countertops in poor condition. Recommendation – install

			new base cabinets with ADA sink access and new finish trim.
23.	Bathroom 3129 (Staff)		Unisex
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required. Wall base in fair condition. Recommendation – Replace wall base.
		Ceiling	Fair condition. Cut out hole in center of room roughly 4 ft. Recommendation - close off repaint and refinish to match existing.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
24.	Office 3133		
		Floor	Poor condition. Scuffing and markings through central portion.
		Walls/ Columns	Fair condition.
		Ceiling	Fair condition.
		Doors	Fair, dings and marks along door. Paint peeling at entry door frames – Recommend repainting.
		Borrowed Lites	N/A
		Millwork	N/A
		Closet 3131	Wires exposed from conduit
25.	Office 3135		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	N/A
26.	Room 3136 Girls / 3138 Boys Toilets North Wing		
		Floor	VCT Poor condition. Recommendation – Replace VCT.
		Walls/ Columns	Fair condition – CMU / GWB; no immediate action required.
		Ceiling	GWB ceiling good condition within restroom. Vestibule between restrooms has water tiles

			damaged with water. Recommendation – replace damaged tiles.
			
		Doors	Fair condition. 3138 Boys Toilet has broken hinge at entrance door with makeshift solution. Recommendation – Replace hinge.
		Borrowed Lites	N/A
		Millwork	Partitions are in good condition. Mirrors not in compliance with ADA requirements. Reinstall mirrors at bottom of glass at 40" A.F.F.
27.	Project Room 3128		
		Floor	Poor condition. Cracks in VCT mid-room, ripples at door to corridor. Recommendation – Replace VCT.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	Good condition.
		Millwork	Fair condition. No ADA access at sink. Recommendation – Replace sink cabinet with ADA compliant unit.
28.	Office 3139		
		Floor	Good condition.
		Walls/ Columns	Good condition. Wall base is in poor condition. Recommendation - Replacement when floor is replaced.
		Ceiling	Fair condition. Ceiling tile placement has gaps between frame and tiles. Recommendation – Adjust tiles along edges.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
29.	Room 3140 Gymnasium		
		Floor	Good condition.
		Walls/ Columns	Good condition.

		Ceiling	Fair condition. Skylights have visible signs of water penetration. Water leaking at pipes at ceiling. Recommendation – Investigate skylight leaks for repairs, repair leaks at pipes.  
		Doors	Fair condition. Dings and dents at all doors, water damage / rust at base of hollow metal doors. Caulking joint above door deteriorating. Recommendation – Repair / replace mortar and soft joints above exterior doors. Repair damage to doors and frame or replace.  
		Borrowed Lites	N/A
		Millwork	N/A
30.	Arts 3143 & Classroom 3145		
		Floor	Poor condition. Cracks in VCT at exterior door area.

			Recommendation – Replace damaged tiles.
		Walls/ Columns	Fair condition – CMU. Crack at corner near exterior door.  Poor condition – Wall base and GWB finish. Recommendation – Replace wall base, patch and paint GWB, create soft joint at CMU crack and paint to match wall.
		Ceiling	Fair condition. Some ACT stained. Recommendation – Replace stained tiles.
		Doors	Poor condition. HM frames fair condition, door seals missing under exterior door. Recommendation – Replace door seals.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	No clear floor area ADA access at sink. Wall base as backsplash behind sink in poor condition. Recommend replacement of sink cabinet to meet ADA requirements. Replacement of backsplash.
31.	Classrooms 3147 & 3149		
		Floor	Poor condition.
		Walls/ Columns	Fair condition – CMU, Poor condition – GWB. Recommend Patch repair repaint all GWB.
		Ceiling	Fair condition, no immediate action required.
		Doors	Poor condition. HM frames fair condition. Recommendation – Replace doors.
		Borrowed Lites	Fair, Broken casement handle at southern portion of window 3149
		Millwork	No clear floor area ADA access at sink. Wood backsplash behind sink in poor condition.

			Recommendation – Replace sink cabinet to meet ADA requirements. Replace backsplash.
32.	Kitchen 3151		
		Floor	Poor condition. Paint finish worn away in many locations, cracks in concrete. Recommendation – Repair cracks, install new seamless flooring and integral wall base suitable for kitchen sanitation requirements.  
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition. Some tiles are damaged. Recommendation – Replace damaged tiles. 
		Doors	Poor condition. HM frames fair condition. Door seals missing under door to outside. Recommendation – Replace doors.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	N/A

EXTERIOR

1.	General: Site elements are not included in the scope of work of this review.		
2.	Walls		
		Foundation	Fair condition. Synthetic stucco over insulation board generally in fair condition; corner conditions throughout the building show significant deterioration. Recommendation – Repair corner conditions, patch, repair refinish to match existing. 
		Siding	Fair condition overall. Isolated areas of very poor conditions; deterioration / chipping at bottoms of vertical siding boards where they meet the water table and over some openings (see window section and door section below). Recommendation – Replace all chipped / damaged conditions. Refinish to match existing. Approximately 10% of façade. 



Isolated areas of siding discoloration for various reasons.

Recommendation – Repaint all discolored areas. Patch, repair refinish to match existing. Approximately 10% of façade.



Deterioration at control joints / soft joints between siding panels.

Recommendation – Replace all soft joints.

		 Some exterior wall penetrations are not sealed. Recommendation – Seal around all exterior wall penetrations. 
	Windows	Fair condition. Seals around operable units are falling off. Windows losing finish color. Recommendation – Provide new seals on operable windows. Repaint windows. 



Additional areas of siding damage at windows specifically. Refer to above siding section for recommendations.

Approximately 90% of windows.



Doors

Fair condition in general. Garden storefront doors are in poor condition with interior face

rusting; exterior is equally poor with deteriorated trim boards, rusting and gaps at base showing signs of water penetration. Recommendation – Replace storefront door and all trim, thresholds seals etc.



Deteriorated wood skirt under classroom doors. Recommendation – Replace wood.



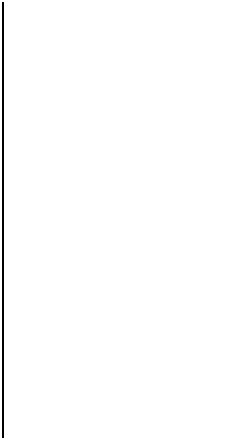
Additional areas of siding damage at doors specifically. Refer to above siding section for recommendations.

Approximately 80% of doors.



			    
		Louvers	N/A
		Soffits	Fair condition, no immediate action required.
		Fascia	Fair condition, no immediate action required.
3.	Elements [e.g., Columns]		Deterioration at wood post base. Recommendation – Replace deteriorated wood elements.

		 Rusted post base plate and bottom of posts (5 posts). Recommendation – Replace posts and base plates.  
4.	Roof	Fair condition. Low Slope Roof single-ply EPDM membrane at gym installed c.1999 so may be approaching end of service life. Pitched Roof standing seam metal installed c.2019. Water shedding from pitched roof on south side above Media Room is deteriorating siding below. Recommendation – Install rain diverter or gutter to protect siding.



ADDITIONAL NOTES/ PHOTOS



View of West entry Façade



View of North entry Facade



View of North East Corner towards gym



View of North Entry



View of South East corner



View of South Facade

RE: Samuel Morey Elementary School MEP/FP Analysis Report

Existing Building Mechanical/Plumbing Infrastructure



L.N. Consulting was retained by Freeman French Freeman Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting the Samuel Morey Elementary School, Fairlee, VT to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The goal of the building infrastructure report is to provide an overview of the existing conditions, the general age of the equipment and systems, and code compliance issues to help define the scope of work should the building undergo a major renovation.

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system, or equipment wear items. The report will provide general details about the systems and then offer a combined recommendations section for ease of reference. Included with each report of existing conditions will be photos of items that may be of interest and provide more explanation of our findings.

Note that this report is based on the site visit that, due to the amount of time available, and limited access to certain areas, involved general review of the building. Although LNC was able to perform a somewhat detailed analysis of the building, it was not possible to review every space or system for deficiency. The intent of this report is to provide an overview of the conditions, focusing on identifying deficiencies, including any code deficiencies concerning code deficiencies, while actual corrections required would involve specific design work.

The following is the mechanical, plumbing and fire protection portion of the report.

Mechanical/Plumbing Overview

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Fire Protection Association (NFPA) codes including the Standard for the Installation of Air Conditioning and Ventilating Systems (90A-2015), National Fuel Gas Code (54-2015), Fire Code (1-2015), Life Safety Code (101-2015), 2015 New Hampshire Fire and Building Safety Code, International Plumbing Code (IPC-2021), New Hampshire Plumbing Rules, International Building Code (IBC-2015), International Existing Building Code (IEBC-2018), ASHRAE Ventilation and Acceptable Indoor Air Quality (62.1-2016), New Hampshire Commercial Building Energy Standards (CBES-2024) effective 7/1/24, with ASHRAE Energy Standard for Buildings Except Low-Rise Buildings (90.1-2019) as the alternative compliance path, and occasionally other codes. When these systems were installed, they were code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for tempered water protection at public lavatories and handwashing facilities and mechanical ventilation as natural ventilation utilizing operable windows was previously permitted but is no longer an approved ventilation method. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition.

Existing Conditions

General

LN Consulting made our observations of the Samuel Morey Elementary School on June 17, 2025. This building is a single story facility, slab on grade. The building is heated with (2) oil fired hot water - steam boilers.

Mechanical and Plumbing

Refer to the photo captions below for mention of the majority of the existing mechanical, plumbing, and fire protection equipment. Equipment that is at or near the end of useful service life is identified, making it an opportune time to switch to a more energy efficient solution and to address code issues.

Main Boiler Room Boiler #1 with an oil service burner and boiler. This existing burner/boiler has 2 zones, was installed in 2019, was installed in accordance with code, is well maintained, and is in very good operational condition.

Main Boiler Room Boiler #2 with an oil service burner and boiler. This existing burner/boiler has 2 zones, was installed in 2019, was installed in accordance with code, is well maintained, and is in very good operational condition.

Associated circulation pumps and VFD controls appear to be obsolete and should be upgraded.

Carbon monoxide (CO) detection was not noticed; however, it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

The electric water heaters serve the domestic hot water needs of the facility. The lifespan of a water heater is typically 15 years. It is in good condition. Water heater units should be replaced with upgraded electric water heaters.

Units and piping are in working condition. Welded, threaded black iron pipes are used for oil piping within the facility.

Recommended repairs, and equipment replacements;

Oil fired boilers supply hydronic heat to the terminal units in the classrooms. The loop feeds two air handling units (AHUs) in the gym and AHU Room, FCUs, several unit heaters, radiant baseboard in the office areas, meeting spaces, and throughout the facility. There are two large older Des Champs rooftop units, each with an energy recovery wheel, providing ventilation air to the building.

Heating system piping appears in good condition however further inspection is required. Insulation needs to be repaired in some areas.

Hot water circulation pumps in the main boiler room are newer units and in good to fair condition.

Split heating and cooling system is used in the office areas of the facility. These units are in good condition but should be cleaned. Inner blower fans, filters, tested, and more closely evaluated. They have completed more than half of their expected 15 to 20 years life cycle. The facilities upgrade project should include the replacement or upgrade of these split systems.

The boiler room and main distribution pumps are in good to fair condition. System piping insulation should be repaired, the boiler room should be cleaned of stored items, debris, walls patched, piping penetrations fire stopped, and painted.

A review of the public records for lead in Vermont school drinking water shows no elevated levels requiring action. Samuel Morey Elem. School, Fairlee <https://leadresults.vermont.gov/school/1296> For any project, this means that no domestic water piping would need to be replaced for that reason alone.

Mechanical and plumbing photos from the LN Consulting site visit begin on the next page.

1. Mechanical

Boiler #1 and boiler #2 are in very good condition.



Electric hot water heater and piping – very good condition.



Electric hot water heater product data.



Circulation pumps – Good condition



New auto control valves – Very good condition



Control valve product data.



AHUs (2) with larges fans, and duct arrangement.



Piping connection to AHU.



AHU on roof



AHU product data.



RTU on roof



RTU product data.



AHU on roof.



AHU product data.



Exhaust fan on gym roof.



Air intake cover – typical (2).



Electric hot water heater in kitchen



Kitchen grill hood.



Infrastructure Recommendations:

General Mechanical Recommendations:

The Samuel Morey Elementary School's main service appears to be 400 amp, 120/240 volt, 1 phase. This may present some limitations on mechanical equipment selection but appears to be manageable given the building size.

We have outlined below (2) potential HVAC system solutions. Some pros and cons follow at the end.

1. The base / recommended solution is water source heat pump (WSHP) geothermal-based. This is a closed loop geothermal (ground source) WSHP system that is capable of using the earth as both a sink and source of energy, provides simultaneous heating and cooling year round and energy sharing between zones. This would distribute a heat pump loop throughout the building and would have water source heat pumps serving each zone. In addition, a Water-to-Water Heat Pump will provide heating hot water to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

WSHP options:

- Water Furnace International, Inc., commercial water to air heat pump equipment will be the basis of design. Typically, these will be concealed ducted units.
- ClimateMaster

Water-to-Water Heat Pump Options

- Water Furnace T1 (2, 4 or 5 Tons)
- Bosch TW or WT series (not sure which is more efficient)

2. The alternate solution will use air source heat pumps. Air-to-Water Heat Pumps would generate hot water and chilled water to be distributed throughout the building. 4-pipe fan coil units would serve each zone. Heating hot water would be provided to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

Air-to-Water Heat Pump Options:

- Hitachi air H20 Yutaki units (R32 refrigerant)
- Space Pak Solstice Extreme R32 (CC32-XX)
- Arctic Heat Pumps OXXZA/BE (R410A for the moment, probably switching soon)

Pumps Options:

Grundfos Magna3 or TPE3 (TPE3 can do up to 2 horsepower at single phase)

Hydronic systems Buffer Tank Options:

Lochinvar HP250G (R30 insulation) and many others

Refrigerant R410A is being phased out 12/31/24 and most manufacturers of WSHP equipment are changing to R454B.

Considering the first solution will be considerably more energy efficient and should come with incentives, we believe it will be the chosen solution.

We recommend a Building Management System (BMS) to be a direct digital controls (DDC) system installed to control the proposed equipment and facilitate maintenance with features such as remote internet access and alarm notification.

Immediate needs:

Repair and replace heating system piping insulation. Inspect piping.
Test, repair roof top units.
Replace kitchen hoods.

Shorter term needs:

Paint mechanical rooms and repair all through wall penetrations.
Replace RTUs and split duct cooling systems.

Longer term needs and energy reduction:

If the building has not recently had a blower door test, we recommend this be completed to guide envelope upgrade recommendations. Assuming envelope upgrades and/or major program changes leads to a major building renovation, provide either the geothermal or air source option recommended above.

We recommend providing cooling throughout the facility, which will greatly improve occupant comfort during warmer times of the year as well as helping to preserve certain building finishes by helping to keep moisture levels within the facility in a desired range.

We recommend upgrading the building envelope to meet code minimum. In addition, as part of energy modeling, during the design we can perform envelope design assistance. We anticipate the building will ultimately be cooling dominant, and if so, as part of the major building renovation we recommend the existing boiler plant, regardless of the age or condition, be demolished as part of the switch to the recommended mechanical solutions.

Alternatively, if a major building renovation is not planned (that is, the geothermal or air source options are not being installed and the central heating plant is to remain intact), for any areas that are not presently cooled and yet are deficient in ventilation air, we could provide new energy recovery ventilation units with dehumidification to improve indoor air quality and provide a limited amount of cooling. While this solution isn't our first recommendation because it is not as energy efficient and does not provide fully comfortable spaces, it is a path with lower construction cost.

The geothermal system utilizes WSHP's throughout the facility to condition (both heat and cool) the entire facility. This system utilizes a closed loop borehole geothermal system to heat or cool the indoor heat pump loop which is utilized to heat and cool the facility. We suggest a new wall mount backup

boiler be installed for an unlikely emergency if the geothermal field were to become unavailable for an extended period of time. We recommend new ERVs be utilized to provide fully ducted ventilation air to each space. The ventilation system will be appropriately sized and designed per ASHRAE 62.1 requirements. The geothermal system will be sized based on the cooling load of the facility which is anticipated to then easily meet the peak heating demand. Based upon a current project at Burlington High School we roughly estimate the cooling load for this project to be 20-25 Btu/sq.ft. and heating load to be 12 Btu/sq.ft. (actual, including no safety factor.) These will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design.

We recommend geothermal heat pump systems for schools such as this one because we have typically found these to be the most energy efficient method of conditioning schools based upon our energy modelling. In addition, the geothermal piping system is expected to survive for decades, reducing future maintenance costs. Replacing water source heat pumps when required is a relatively easy task.

Water source heat pumps utilize the refrigeration cycle to both heat and cool air. They accomplish this through the use of a refrigerant reversing valve allowing the equipment to run the cycle as an air conditioner or reverse the cycle to operate as a heater. The water source heat pump can extract heat from the air and transfer it to a water loop when in cooling mode or transfer heat from the water loop to the air in heating mode. The units are very efficient with Energy Efficiency Ratio (EER) values of 15-25 in cooling mode and the Coefficient of Performance (COP) values for heat pumps are in the range of 3.0-4.5. A COP value of 3.0 indicates that for every 1 unit of energy used to run the heat pump, 3 units of heat energy are transferred to the air. This represents a 300% increase in efficiency when compared to electric resistance heating and over 300% more efficient than any fuel fired heating equipment. A water source heat pump system has the added benefit of energy “sharing.” Spaces that are in cooling mode can reject heat into the common water loop which can be used by spaces in heating. This condition can be common during shoulder seasons when the spaces with southern exposure require cooling while the spaces with northern exposure require heating. This can save significant amounts of energy in facilities that have many different exposures and variable occupancies such as this building.

We recommend installing energy recovery ventilation (ERVs) which utilize energy heat exchangers that transfer both sensible and latent energy from the exhaust air to pre-condition the ventilation air. Ductwork located above the ceilings will distribute the air.

The ventilation air will be controlled by CO2 sensors, occupancy sensors, and occupancy schedules to vary the ventilation air delivered to each space. Variable Air Volume (VAV) boxes will be utilized to modulate the ventilation air flow to each zone. The ventilation unit fans will modulate to deliver only as much ventilation air as necessary to satisfy space demands, which significantly reduces energy consumption.

A closed loop geothermal (ground source) / water source heat pump system uses a glycol and water fluid mixture as a medium to transfer energy to and from the heat pumps located throughout the facility. The geothermal closed-loop ground source heat exchanger will be installed on the site to condition the fluid. The closed-loop heat exchanger will be a series of 500-700 ft. deep boreholes with 1-1/4” to 1-1/2” HDPE (High Density Polyethylene plastic) piping loops that utilize the near constant ground temperature to both heat and cool the facility. In the next phase we will prepare calculations to size the geothermal

borehole field and these calculations will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design. The final borehole field design will also require the drilling of a test borehole to better understand the subsurface characteristics of this specific site.

A geothermal heat pump system utilizes only electricity to heat and cool the facility and the ventilation air. This will significantly reduce or eliminate the school building's use of fossil fuels. The heat pump loop piping interior to the building for this type of system is required to be insulated due to low temperature fluid temperatures that occur when the system is in heating mode.

The hydronic system will utilize a propylene glycol solution for freeze protection. The geothermal borehole fluid will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). The borehole circulators will inject into the internal building secondary heat pump loop which will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). All of the new circulator pumps will have either ECM's or IE5 motors with pump mounted Variable Frequency Drives (VFDs) to modulate the speed of the pumps to match the building heating or cooling loads. The DDC system will modulate the pumps to maintain a differential pressure set point in the heat pump hydronic system. This significantly reduces pumping energy as the pumps reduce speed as the facility heating or cooling demand decreases.

Base scope (geothermal / water source heat pump system), Facility Conditioning and Ventilating Equipment:

The classrooms throughout the facility would be conditioned using water source heat pumps. A typical classroom would be provided with a small closet located in a corner of the room that would house the heat pump. This will provide each classroom with a dedicated heating/cooling zone.

We estimate that a 5-ton water source heat pump with a variable speed compressor or 2-stages of capacity control will be installed. The heat pump will have variable speed EC fan motors, low sound package, insulated coils, hot gas reheat, MERV13 filters and BACnet controls package. The heat pump supply will be ducted above the ceiling (where applicable) or through the structure (where applicable). A return grille would be in the face of the closet to return the air back to the unit. Each heat pump would be equipped with a 2-way modulating control valve to match the compressor speed to reduce water flow during low load conditions along with a balance valve to control water flow through the unit. If there is available space, the heat pump will be suspended above the ceiling with the heat pump return ducted to ceiling grilles.

Common spaces based on our initial heat load estimates, will be included in the a 5-ton variable capacity heat pump with variable speed EC fan motors, low sound package, insulated coils, MERV13 filters, modulating control valve and BACnet controls package.

Each space will have a supply and return VAV (Variable Air Volume box) to control the ventilation air. Outdoor air and exhaust will be ducted to each classroom and generally ducted to the heat pump return plenum. Each classroom will be a single ventilation zone with Carbon Dioxide (CO₂) monitoring; the VAVs will modulate as necessary to maintain CO₂ levels below set point values in each zone.

The offices / administrative and meeting spaces in the facility will be conditioned using either a fully ducted heat pump or exposed console style (free standing) heat pump depending on the specific

application. Each heat pump will be equipped with a 2-way control valve and balance valve to control water flow through the unit. The ducted heat pumps will have the same options indicated for the classroom units where applicable. Ducted heat pumps will typically serve 2-3 offices. Console heat pumps will be installed in each office where applicable. Typical office heat pumps will be single stage units.

The other spaces will have a supply and return VAV (Variable Air Volume box) to control the ventilation air to each zone. The ventilation supply air shall be ducted to the heat pump returns (where applicable) and an exhaust grille shall be in each space. Typical office ventilation zones will be for adjacent spaces on a single zone with large open common spaces being dedicated ventilation zones. Outdoor air and exhaust will be ducted to each space with the outdoor air ducted to each heat pump return plenum. Where multiple spaces are served by a single VAV unit, each normally occupied space will have CO2 monitoring; the VAV's will modulate as necessary to maintain CO2 levels below set point values in each zone.

We recommend a kitchen hood sized for the specific equipment that is located underneath it. The hood will have an Ansul fire suppression system, a U.L. Listed grease laden vapor rated isolation damper, and a supply air plenum. If the kitchen cooking equipment is electric, we recommend installing a grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit. This unit, when paired with a Halton Capture Jet hood and the variable volume exhaust dampers, and the MARVEL controls package, this system allows for variable volume exhaust flow rate and recirculation back into the space. Exhausting air to the outdoors and conditioning outdoor air for make-up purposes consumes a significant amount of energy and recirculating the air reduces this energy consumption. The recirculation unit will have (4) stages of filtration, and integral Ansul system, controls to interconnect with the exhaust hood system, supply air duct smoke detector, BACnet connections to the DDC system and the system is to be UL Listed (710B) for use with grease rated exhaust. The grease exhaust system will be installed per UL 762 and NFPA 96 requirements. To be determined based upon the size of the recirculated kitchen exhaust air will be how this air is cooled and how to ventilate and condition the kitchen and cafeteria spaces.

The corridors will be conditioned by either ducted or console type heat pumps. Heat pumps will be predominantly located near exterior entrances or exterior exposures. The corridors will have dedicated ventilation zones that are tied into the ventilation for restrooms off of the corridors.

A Direct Digital Controls (DDC) system will be installed to operate the HVAC equipment throughout the facility. The DDC system will have internet connectivity to enable monitoring and control of the system remotely. Web connected DDC systems can be programmed to send alerts to operators and maintenance personnel when there is an equipment failure. A DDC system will enable the new HVAC system and components to operate efficiently and as designed.

For the alternate solution using air source heat pumps, thermal storage buffer tanks located in the mechanical room will be utilized for both the hot water and chilled water. This system will not qualify for incentives. It is entirely possible that the total installed cost of this system will not be cheaper than the geothermal / water source heat pump system, when considering incentives.

The four pipe fan coils with concealed ducted units located above the ceiling. The fan coils will have EC motors, elastomeric closed cell foam liners, inlet filters, 0.025" thickness tube wall coils, stainless steel insulated drain pans, and condensate overflow switches. Generally, fan coils will have MERV 13 filters. Modulating control valves will vary the heating/cooling capacity of the units based on the zone's call for heating or cooling. All cooling units will be provided with condensate lift pumps as required to ensure appropriate condensate drainage. Each zone (either a single space or multiple spaces) will be equipped with its own dedicated thermostat integrated into the DDC. For all spaces, modulating control valves tied into the DDC system will be installed to control the water flows to each fan coil unit.

Both solutions offer equipment with maintenance requirements that are relatively minimal.

Pros of the base/recommended solution

- A geothermal system may qualify for state, federal, and utility incentives to offset construction costs, which could make the system economically advantageous to install compared to other non-geothermal options.

Cons of the base/recommended solution

- Site coordination required to determine where the borehole field can fit on the site.

Cons of the alternate solution:

- Geothermal systems are more energy efficient and there is no energy sharing for the alternate solution between spaces in heating mode and spaces in cooling mode so energy consumption will be higher.
- Possibly higher installed cost due to 4-pipe design rather than a 2-pipe system.

General Plumbing Recommendations:

A backflow preventer will be installed for the domestic water entrance.

For both solutions, domestic hot water will be produced by residential grade electric air-to-water heat pump (hybrid heat pump) water heaters. These absorb ambient heat from the surrounding air to heat water using a compressor and R134a refrigerant. Self-contained heat pump unit is integrated into the top of the tank.

- A.O. Smith Water Products Co; HPTU-80N (Basis of Design.)
- State Industries, State Water Heaters, HPSX-80DHPT

The hybrid heat pump water heater will operate on factory controls to maintain a set temperature within the tanks.

Domestic hot water discharge temperature will be controlled by an ASSE 1017 rated thermostatic water mixing valve. The mixing valve will utilize controls and temperature sensors to maintain the desired discharge water temperature. Basis of design is the Caleffi 520500AX tank mounted 3/4" master mixing valve which has tight hot water close off, ASSE 1017, 8 gpm, and is DZR low-lead brass.

Domestic hot water recirculation will be provided by a duplex set of potable water rated circulator pumps. Grundfos Pumps Corporation, Alpha HWR 15-29 or Alpha HWR 15-55 will be the Basis of Design.

The domestic water distribution system shall be provided to support the bathrooms, drinking fountains, mop sinks, kitchen sinks and laundry.

Kitchen exhaust hoods should be replaced.

All new water closets shall be high efficiency 1.28 GPF flushometers with anti-microbial surfaces, lavatories will be equipped with 0.5 GPM aerators, and break room sinks shall be equipped with 1.5 GPM aerators for water conservation. All facilities shall be ADA compliant where applicable. All public lavatories will be provided with ASSE 1070 point of use thermostatic mixing valves to provide tempered hot water to the fixtures. We recommend that all public lavatory faucets and all urinal/water closet flush valves be sensor operated.

All plumbing equipment including piping, valves, pumps, tanks, fixtures, etc. will be Lead-Free. The domestic water piping will be copper soldered. The sanitary waste piping will be PVC.

General Fire Protection Recommendations:

A fire protection system will be installed in the entire facility meeting NFPA 13.

Samuel Morey Elementary School - Electrical

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Electrical Code (NEC), fire safety including NFPA 72, life safety including National Fire Protection Association (NFPA) 101, 2015 Vermont Fire and Building Safety Code, or other similar codes. When these systems were installed, they were most likely code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for weather-resistant receptacles in wet and exterior locations, and tamper resistant receptacles for schools. Other deficiencies, such as the use of shared neutrals on circuits with separate breakers, could not be investigated due to safety concerns. Due to the age of the buildings it is expected this is not an issue. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition. Many of the changes to the electrical codes are a result of injuries and deaths because of less stringent regulations and enforcement in the past.

Any renovation work should consider the use of LED lighting technology. LED lighting provides more lumens (measure of light output) per watt compared to other technologies, has a longer life, is usually inherently dimmable, generates less Ultraviolet (UV) light than fluorescent bulbs and is essentially mercury-free. For all practical purposes, fluorescent and incandescent lighting is no longer used, and most commercial buildings have or are making the change to LED.

Electrical Distribution:

The Samuel Morey Elementary School’s main service appears to be an 400 amp, 120/240 volt, 1 phase, three wire service via a pole mounted transformer and an underground electrical service vault located across the driveway adjacent to the parking lot. This existing electrical service was installed in

approximately 2001. The panelboards, subpanels, outlets, and power feeds are in operational working and good condition.

There did not appear to be any surge protection at the main service to the building. Surge protection helps protect electrical systems within a building from surges in voltage that may occur. Of particular concern are spikes during lightning strikes. Although not required, they are recommended.

Electrical photos from the LN Consulting site visit begin on the next page.

2.	Electrical	Pole mounted transformer electrical service fed underground to electric vault. 
		Front Entrance. 
		800 amp Main Breaker 

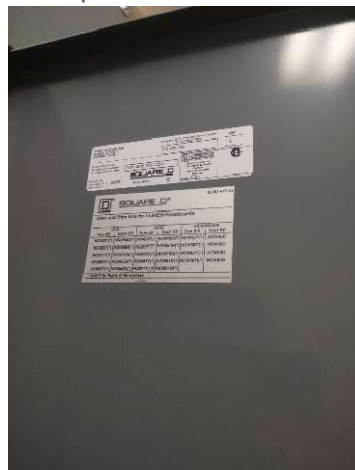
Service Main Panelboard. Product data.



Older panelboard with fire emergency circuit.



Panel product data.



Older main circuit breaker.



Panelboard shows signs of age.



Switch product data.



Double throw switch.



Old main circuit breaker.



Product data.



Full panel with fire emergency circuit.



Panel data.



Older main breaker.



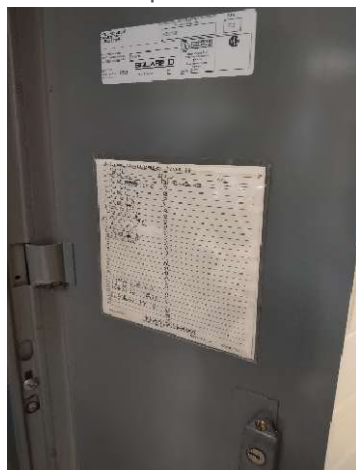
Panel data.



Main breaker showing signs of age.



Panelboard product data.



Panelboard – typical.



Panelboard product data.



Older breakers in fully populated panel.



Panelboard near end of service life.



Older main breaker.



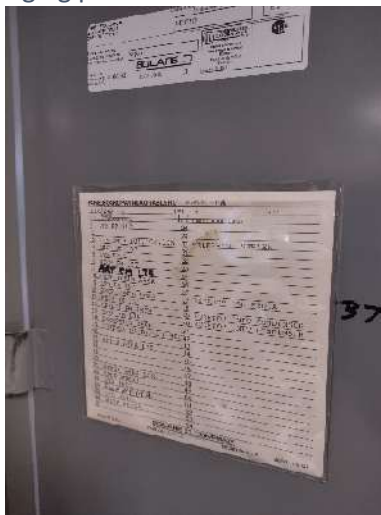
Fully populated panel with older breakers.



Electrical meter at the pole.



Aging panelboard.



Wire circuiting is either via conduit or metal clad (MC) cable. Installation of electrical equipment, wiring, conduit, and metal clad has been done in a professional manner but in some areas of the facility show signs that its exceeded its service life. Electrical systems have been well maintained and show no signs of damage or excessive corrosion. Abandoned conduit lines with pulled wire, sub panels not in use, old telephone panels still in place should be properly capped or removed.

Receptacles in spaces accessible to the public appear no to be tamper resistant (TR) type. Recent electrical code changes require TR receptacles in public facilities to protect everyone.

Lighting:

Some of the indoor lights are incandescent bulbs, T8 fluorescent, ceiling mounted 2" x 2", or 2" x 4" troffer type. This type of lighting is usually recommended for replacement with LED.

All exterior lighting should be upgraded to LED type. The exterior mounted lighting is on timers and was not on during the day, suggesting either the time clock and a photocell controlling the lights are working correctly.

There does not appear to be much occupancy or daylight sensing. Vermont Commercial Energy Standards are that unless a space uses very low lighting and more than one light fixture is in space, occupancy sensing is required. Sometimes "daylight harvesting" is required to essentially utilize the ambient light from the outdoors in lieu of lighting indoors. This is accomplished via "photo eyes" in the room that sense ambient light levels and either turn off or dim lighting accordingly.

There is emergency lighting, some of the fixtures appear to be as original to the building. Batteries can be replaced, often it is less expensive to simply buy new fixtures. Some exit signs also appear to be original to the building. There are a few newer ones.

Many of the common areas have wall switches. Any public egress path should not have the means to manually turn the lighting off. Similarly, multi-person restrooms are typically set up for automatic light control instead of switches.

3. Lighting

Typical traditional lighting. The fixtures appear to still be incandescent and fluorescent type.



T-8 lighting – typical..



T-8s should be replaced with LED.



Exterior flood lights to be upgraded.



Fire Alarm:

The fire alarm system control panel is an audible and addressable type system. It appears to be in good to fair condition. The front cover indicates no violations. Inspected in 2024. The fire alarm system however does not appear to have voice notification.

Newer Silent Knight FA sub panels are in very good condition.

The existing fire alarm control panel is a Fire Controls Instruments 6 Zone system and is located at the main entrance. It is fairly old however it looks like some renovation work has occurred. It is assumed however that parts are difficult to procure as this fire alarm system is no longer serviced.

The Samuel Morey Elementary School is considered an existing educational occupancy and it is not required to be provided with a voice notification fire alarm system. Simple alarms are adequate by code. However, if the fire alarm system were to be replaced, the fire marshal will most likely consider that a “system replacement”, and if so the new fire alarm would be required to be provided with voice notification.

One item that should be confirmed by the Samuel Morey Elementary School is that the “recall” alarm, indicating staff and visitors may reenter the building after a fire alarm, must be a distinct alarm from the fire alarm itself.

Carbon monoxide (CO) detection was not noticed, however it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

4. Fire Alarm

The main fire alarm panel. There were no violation notes on the front cover.



FACP – sub panel – typical



Telecommunications:

LNC did not investigate the telecommunication system. Telecom is typically done by an Owner's IT department and "methods" and "standards" for installation vary. Although there are some NEC rules to follow, for the most part telecommunication system installations do not require electricians to perform the work. The BDA system needs to be evaluated and possibly upgraded to meet local fire department requirements. Telecom hard drive and battery back up mounted in the corner meeting space should have a proper NEMA 1 enclosure.

Electrical Summary

- Some electrical distribution equipment is obsolete and should be replaced as part of any facility upgrade.
- All lighting should be upgraded to LED lighting. This should include emergency lighting for exterior exit paths. Exterior floodlights have LED bulbs but the fixture should be replaced.
- The lighting throughout the building appears to be incandescent bulbs and T8 fluorescent type lamps and fixtures. The troffer type fixtures tend to be less efficient and result in more glare than newer LED type fixtures. LED type fixtures also allow for easier controls, particularly dimming.
- Replace VFDs.
- Lighting control in many areas do not utilize occupancy sensors. There did not appear to be many areas utilizing dimming or daylight sensing controls.
- The lighting in some egress paths, including lobbies, corridors and stairs, is controlled by wall switches. This is a code violation for egress paths.
- Any upgrade may require some additional smoke detectors and carbon monoxide detection.

Infrastructure Recommendations:

General Electrical Recommendations:

There are some recommendations that should be implemented to bring the Samuel Morey Elementary School up to the latest safety codes. This includes the following:

1. Selective electrical distribution equipment replacement.
2. Replace lighting and exit lighting to LED.
3. Replace VFDs.
4. Replace receptacles in public areas with tamper resistant type.
5. Remove switches in corridors with keyed switches that are only controllable by staff. This would be done in conjunction with the addition of occupancy sensors in the corridors or other egress paths.

The main recommendation that is not a safety issue is the replacement of the existing lighting with LED type. In conjunction with this, the controls would be upgraded to provide occupancy sensor control and dimming. The simplest way to accomplish this may be to provide new light fixtures with integral wireless controls. This would significantly reduce the amount of recircuiting required. There may be some incentives to upgrade.

Based on most selected mechanical system upgrades, the electric service to the building may not need to be increased. LNC can provide existing load information and based on that it can be determined if the existing service can accommodate the mechanical upgrades or not. If not, it may be the service entrance would be increased, and possibly the outdoor transformer as well. This should be relatively simple however and based on the total scope of work required for the mechanical system upgrade this should be small.

LNC does not have any power outage information.



Fairlee, VT

Samuel Morey Elementary School

Sincerely,

David Gass
Project Manager
LN Consulting, Inc.

Constructed: 2001

Last Renovated: n/a

Stories: 1 above grade

Gross Area: 23,804 sf

Use: School

CONSTRUCTION

1.	Foundation	Concrete
2.	Superstructure	Wood framing, CMU
3.	Exterior Walls	Fiber cement siding
4.	Roof	Asphalt Shingles

CODE

1.	Occupancy	NFPA Educational, IBC E
2.	Construction Type	NFPA Type V, IBC Type V
3.	Sprinklers	No
4.	Fire Alarm	Yes



View of South Entry Façade

During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed:

LIFE SAFETY

1.	Exits		
		Discharge to Public Way	Yes
		Number	In compliance. In summary: 3 exterior exits from corridors. 3 exterior exits from common program areas. 4 exterior exits from staff areas. 1 exterior exit from each classroom.
		Egress Width	In compliance.
		Separation Distance	In compliance.
		Travel Distance	In compliance.
		Signage	In compliance.
		Hardware	Panic hardware present at each set of exit doors corridors and assembly space.
2.	Stairs		No stairs; two (2) ships ladders accessing utility space.
3.	Rated Rooms		In compliance.
4.	Fire Extinguishers		Yes

ACCESSIBILITY

1.	Main Entrance or Alternate Entrance		Yes
2.	Door Dimensions		
		Clear Width	Yes
		Push/Pull	Yes
		Threshold	Yes
		Leverset/height [34-48]	In compliance.
		Distance Between Sequential Doors	In compliance.
3.	Accessible Route		Note that some room specific comments are located at the beginning of the notes for that specific room.



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		Path to Public Areas/ Elevator	In compliance.
		Minimum Width	In compliance.
		Protruding Objects	Several bathrooms and storage closets have shelving and racks at head height. The rooms are small rendering these areas part of the egress path. Recommendation – Install cane detection rails below the racks or remove the racks / shelving.
		Ramp Dimensions [landings 60"]	N/A
		Ramp Curb or 12" Beyond Rail	N/A
		Handrail Dimensions	N/A
4.	Elevators		N/A
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage.
6.	Transaction Counters		N/A
7.	Toilet Rooms		
		At Least 1 Accessible	Yes.
		Signage to locate	In compliance.
		Fixture Dimensions	Multi-person toilet rooms appear to meet ADA requirements. Single person toilet rooms do not appear to meet ADA requirements. Current ADA does not allow sinks to encroach upon clear floor area for toilet. Recommendation – For restrooms requiring ADA compliance, reconfigure restrooms to allow proper fixture clearances.
			



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			Paper towel dispenser exceeds 4" protrusion limit. 
8.	Drinking Fountains		Not in compliance, height incorrect for ADA access. Recommendation – Install hi-lo drinking fountain that complies with ADA cane detection requirement.

INTERIOR

1.	General: Room numbers are per the numbering system within the building.		
2.	Lobby and Main Vestibule		
		Floor	Good condition.
		Walls/ Columns	Fair condition. Outer corners show signs of chipping and peeling paint. Recommendation – Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.
		Ceiling	Good condition.
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Hardware is missing or broken. No ADA operator. Exit push button not working. Recommendation repair and or replace exit Devices and install ADA automatic operator. Recommendation - Provide new bottoms seals at exterior doors and replace all door hardware.
		Borrowed Lites	Good condition.
		Millwork	N/A



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3.	West Corridor and West Vestibule		
		Floor	Good condition.
		Walls/ Columns	Fair condition. Outer corners show signs of chipping and peeling paint. Recommendation – Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.
		Ceiling	Good condition.
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Recommendation - Provide new bottoms seals at exterior doors and replace all door hardware. Repaint doors.
		Borrowed Lites	Good condition.
		Millwork	Good condition.
4.	North Corridor and North Vestibule		Note: This area had furniture pushed up against walls. Visible areas were all reviewed.
		Floor	Good condition.
		Walls/ Columns	Fair condition. Paint chipping at vestibule walls. Recommendation – Repaint and provide new wall base. Outer corners show signs of chipping and peeling paint. Recommendation – Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.
		Ceiling	Good condition.
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Recommendation - Provide new bottoms seals at exterior doors and replace all door hardware.
		Borrowed Lites	Good condition.
		Millwork	N/A
5.	Corridor – Gym Lobby		
		Floor	Good condition.



		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	Good condition.
6.	Reception 4101		
		Floor	Good condition. Floor shows wear, but concrete is holding up well. 
		Walls/ Columns	Good condition.
		Ceiling	ACT in Good condition. Light fixtures are dated incandescent.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
7.	Library 4102		
		Floor	Fair condition. Portions of the floor are obscured by walk-off carpet mats. Minor discoloration. 
		Walls/ Columns	Fair condition. Minor denting at corners. Recommendation – Install corner guards at outside corners.
		Ceiling	Fair condition – GWB Soffits. Fair condition – ACT. Minor cracking at some corners. Recommendation – Patch / Repair / Repaint.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	Fair condition.
8.	Conference 4103		



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		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
9.	Storage 4104		
		Floor	Poor condition. Concrete floor has a large crack extending the width of door at entry. Recommendation – Repair crack and seal concrete.
		Walls/ Columns	Fair condition. Much of wall space was filled with storage and shelving and could not be assessed.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Fair condition for visible portion of millwork. 31" counter is in compliance between 28-34", however, there is so much stored underneath it is inaccessible. Recommendation – Cleanout / Purge to allow for proper knee ADA clearance at counter.
			
10.	Office 4105		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required. Basic wear and tear from hanging items / general wall use.



			
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
11.	Server 4106		
		Floor	Poor condition. Concrete floor has a large crack extending the width of the door at entry. Recommendation – Repair crack and seal concrete.
		Walls/ Columns	Fair condition some holes.  Recommendation - Patch holes, repaint wall.
		Ceiling	Good condition. There is a roof hatch ladder going in good condition. Hatch above has visible light coming through does not appear to be sealing properly. Recommendation – Review and repair or replace roof hatch.



			
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
12.	Guidance 4107, Health 4109		
		Floor	Good condition.
		Walls/ Columns	Fair condition, no immediate action required. Basic wear and tear from hanging items / general wall use. 
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Fair condition. 34" sink counter laminate but no clear ADA access below. Recommendation – Install ADA access sink cabinet.
13.	Conference 4108		
		Floor	Fair condition, no immediate action required. Minor damage in corner from removed furniture.

			
		Walls/ Columns	Fair condition, no immediate action required. Minor knicks and dings on one wall. 
		Ceiling	Fair condition. Water Damage at a couple ceiling tile near diffuser Recommendation – Replace stained ceiling tiles.  
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A



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14.	Storage 4110		
		Floor	Good condition.
		Walls/ Columns	Fair condition, no immediate action required. Minimal scuff marks - much of the walls were covered with shelving.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
15.	Bathroom 4111 in Health		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	Fair condition however does not meet ADA requirements - 39" sink height. Recommendation – Install sink at ADA height. Fair condition - Shower portion. Recommendation reseal around shower.
			
16.	SPED 4112		



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		Floor	Good condition.
		Walls/ Columns	Poor condition. Walls / paint chipped. Recommendation – Patch, repair, repaint walls.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	Good condition.
		Millwork	Fair condition, no immediate action required.
17.	Resource 4113		
		Floor	Good condition.
		Walls/ Columns	Good condition. Windowsills poor condition. Recommendation – Replace water damaged sills.
			
		Ceiling	Good condition.
		Doors	Poor condition – Scratches and rust on doors and hollow metal frame. Recommendation – Replace door and frame.
		Borrowed Lites	N/A
		Millwork	Poor condition. Cubbies poor condition chipped. Recommendation – Replace cubbies.



38" sink counter laminate but no clear ADA access below.
Recommendation – Install ADA access sink cabinet with proper counter height.

18.	SPED 4114		
		Floor	Good condition.
		Walls/ Columns	Poor condition. Walls / paint chipped with screwholes. Recommendation – Patch, repair, repaint walls.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
19.	Classrooms West Wing 4115, 4119, 4120 & 4126		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
20.	Staff Room 4116		
		Floor	Good condition.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	Good condition.



		Borrowed Lites	N/A
		Millwork	 Millwork in Fair condition however does not meet ADA requirements - 38" sink counter laminate but no clear ADA access below. Recommendation – Install ADA access sink cabinet with proper counter height. Overhead storage adjacent to entry door. Recommendation – Remove or move shelving up to provide min. 6'-8" head clearance.
21.	Project Room 4117		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Poor condition. Ding scrapes wall damage. Recommendation – Patch, Repair, Repaint all damaged wall areas.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Fair condition, no immediate action required.
22.	Staff Restroom 4118		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	Fair condition however does not meet ADA requirements - 39" sink height. Recommendation – Install sink at ADA height.
23.	Restroom 4121 in Classroom 4119		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	Good condition.



		Borrowed Lites	N/A
		Millwork	Poor condition. Overhead storage above with improper head clearance. Recommendation – Remove and repair wall or move shelving up to provide min. 6’-8” head clearance.
24.	Restroom 4122 in Classroom 4120		
		Floor	Good condition.
		Walls/ Columns	Poor condition. Adjacent to entry rough patched area. Recommendation – Patch again smooth, repair repaint to match existing.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Poor condition. Overhead storage above with improper head clearance. Recommendation – Remove and repair wall or move shelving up to provide min. 6’-8” head clearance.
25.	Electrical 4123		
		Floor	Good condition.
		Walls/ Columns	Good condition.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
26.	Janitor Closet		
		Floor	Poor condition concrete floor. Owner to review to determine if suitable for janitorial closet. Recommendation – Renovate space with new flooring, sink, GWB.
		Walls/ Columns	Scrapes and holes around sink area. Recommendation – Repair GWB and repaint wall.
		Ceiling	Good condition.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	Fair condition, no immediate action required.
27.	Project Room 4124		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Poor condition. Ding scrapes wall damage.



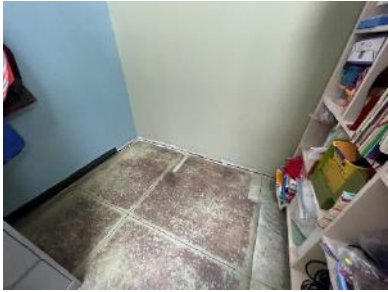
			Recommendation – Patch, Repair, Repaint all damaged wall areas.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	Fair condition, no immediate action required.
		Millwork	Fair condition, no immediate action required.
28.	Restroom 4125 in Classroom 4126		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Poor condition. Overhead storage above with improper head clearance. Recommendation – Remove and repair wall or move shelving up to provide min. 6'-8" head clearance.
29.	Room 4127 Girls Restroom		
		Floor	Poor condition. Damaged floor shows signs of water damage. Recommendation – Replace flooring or provide extensive cleaning / water damage repair to existing flooring.
			
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Good condition.



		Borrowed Lites	N/A
		Millwork	Poor condition. Rusted out base of partitions.  Recommendation – Replace partitions.
30.	Room 4129 Boys Restroom		Poor condition. Rusted out base of partitions.  Recommendation – Replace partitions.
		Floor	Good condition.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Good condition.
		Door	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
31.	Classrooms North Wing 4131, 4137, 4138 & 4140		Rooms missing ceiling tiles and window screens. Recommendation – replacing missing ACT tiles and screens.
		Floor	Good condition.
		Walls/ Columns	Fair condition. Knicks, dings scuff marks at doors to resource rooms. Peeling up drywall around frames and chipped paint at door frames. Minor cracking at drywall above most windows. Possible water penetration. Wall base torn or missing in several places in classrooms Recommendation – Exploratory demolition to verify there is no water leaking through; patch repair repaint cracked GWB. Install new wall base to match existing where damaged or missing.



		Ceiling	Good condition GWB except for some minor paint patch areas where the paint doesn't match. Recommendation - Repaint ceiling to match (Room 4137). Minor water marks on 1 ceiling tile
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	Fair condition. All rooms 34" sink counter laminate but no clear ADA access below. Recommendation – Install ADA access sink cabinet.
32.	Janitor Closet 4134		
		Floor	Poor condition concrete floor. Owner to review to determine if suitable for janitorial closet.  Recommendation – Renovate space with new flooring, sink, GWB.
		Walls/ Columns	Scrapes and gouges around sink area, rough edges at sink backsplash. Recommendation – Repair and repaint wall.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition, no immediate action required.
		Borrowed Lites	N/A
		Millwork	Fair condition. Suitable given use of space.
33.	Project Room 4135		Room missing Fire extinguisher
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition; some walls obscured by learning material. Minor knicks and scuffs.
		Ceiling	Good condition. ACT
		Door	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A

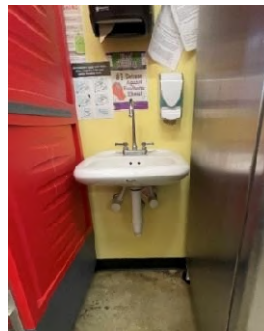
34.	Mechanical Room 4136		
		Floor	Floor obscured by stored material so only able to assess portion near entry door which has significant crack. Recommendation – Repair crack.  
		Walls/ Columns	Walls obscured by stored material, unable to assess.
		Ceiling	Exposed structure.
		Door	Poor condition, door missing panic bar. Missing Exit Sign. Recommendation – Install exit sign above door and required panic hardware devices.
		Borrowed Lites	N/A
		Millwork	N/A
35.	Storage 4141		
		Floor	Good condition.
		Walls/ Columns	Fair Condition. Holes and damage. Recommendation – Patch and paint.



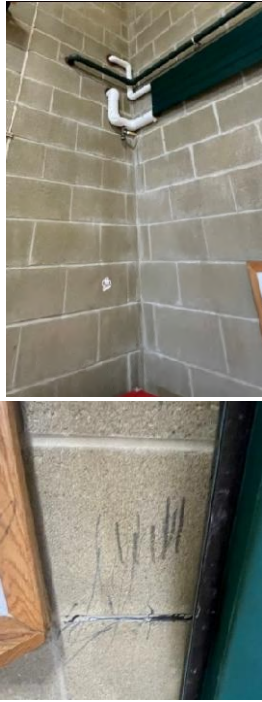
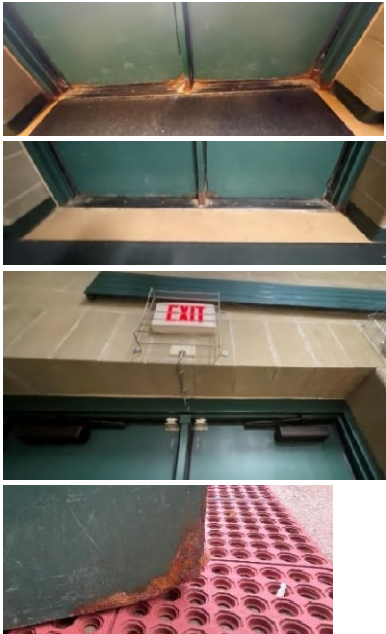
			
		Ceiling	Good condition.
		Doors	Good condition.
		Borrowed Lites	N/A
		Millwork	N/A
36.	Kitchen Room 4143		
		Floor	Poor condition. Recommendation – Replace VCT and trim.
		Walls/ Columns	Fair condition in general; wall base and trim at door is in poor condition. Recommendation – Replace wall base and door trim.
		Ceiling	Missing tiles at vertical portion diagonal near windows. Recommendation - Refinish ceiling / wall transition.
		Doors	Good condition. Missing exit sign over exterior door and missing Fire Extinguisher in space. Recommendation – Install exit sign above door and Fire Extinguishing Devices.
		Borrowed Lites	N/A
		Millwork	Fair condition. Could be sufficient for the use of the space, however, inaccessible for ADA clearances as an office space. No 5'-0" turning radius or clear desk access. Wear and tear at vertical portions of shelving.



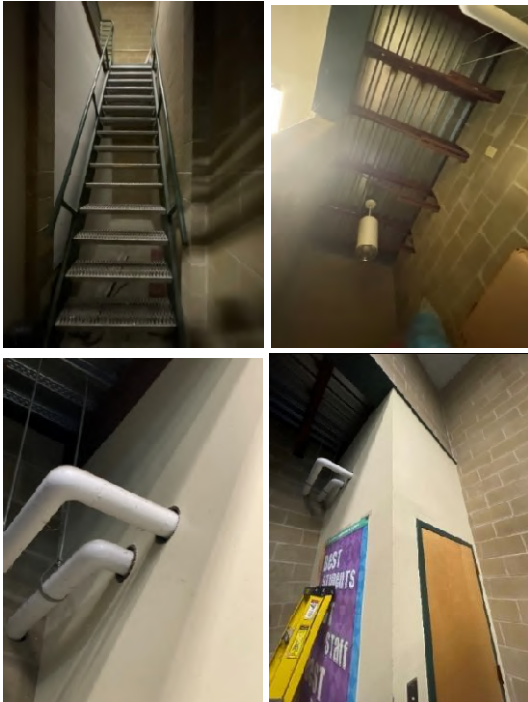
ADA clearance present under sink, however, left and right sides should be clear if full ADA Access required in kitchen spaces.

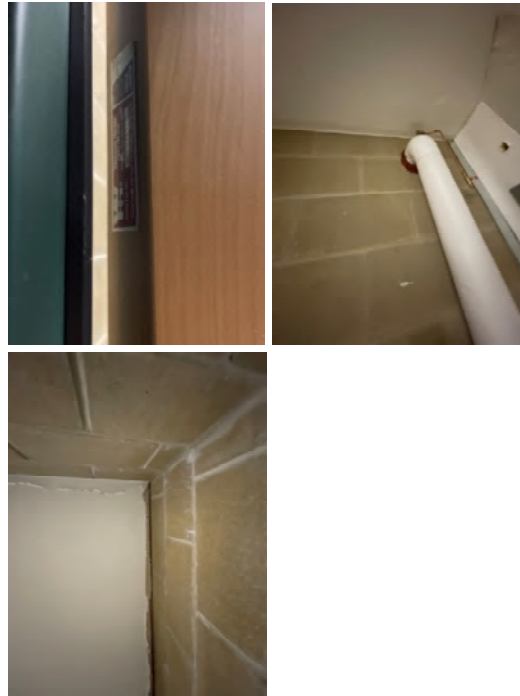


37.	Gym Room 4145		
		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition. Scuffs, scratches, marks typical for use of space.

			 Recommendation – Spot clean marked areas.
		Ceiling	Fair condition, no immediate action required.
		Doors	Poor Condition. Rusted door bottom, missing or broken hardware.  Recommendation – Replace doors and all hardware.
		Borrowed Lites	N/A
		Millwork	N/A
38.	Gym Storage 4147		



		Floor	Fair condition, no immediate action required.
		Walls/ Columns	Fair condition, no immediate action required.
		Ceiling	Fair condition, no immediate action required.
		Doors	Fair condition. Door hardware not ADA compliant. Recommendation – Replace operable door hardware with leverset compliant with ADA requirements.
		Borrowed Lites	N/A
		Millwork	N/A
39.	Mezzanine Access		
			Stair to mezzanine utility only, non ADA. Shown only for reference.  Space is in good condition overall; however, door is rated but only portions of the wall are sealed to meet the required 2-hour rating.



Recommendation – Verify the seal is complete around the perimeter of the mezzanine mechanical space. If not complete, then apply proper seal.

EXTERIOR

1.	General: Site elements are not included in the scope of work of this review.		
2.	Walls		
		Foundation	
			Concrete foundation in poor condition. Foundation parging at south façade deteriorating where it meets the ground and to the right of the entry door. Recommendation – Repair parging. 



Stone foundation and window infill panels at east façade are discolored where they meet the ground. Recommendation – Clean materials and assess for damage.



Siding / Trim

Poor condition. See below photos for a wide variety of siding issues rendering the need for replacement. Recommendation – Replace siding and all associated trim. Confirm no water damage behind siding.





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Windows

Fair condition, no immediate action required.



		Doors	Poor condition. Damaged base of door and frame, rusted, worn, and faded. Recommendation – Repair doors and replace door / frame where necessary.  
		Louvers	N/A
		Soffits	Fair condition.
		Fascia	Discoloration and damaged trim at west façade. Recommendation – Clean, repair/replace, repaint.
3.	Elements [e.g., Columns]		Siding Damage at base of Roof cupula. Cannot confirm if there is roof damage. Recommendation – Consult a roofing contractor to determine the probable cause of the leaks and to develop a plan to remediate them. 
4.	Roof	General	Roof not accessible during site visit. Assessment based upon information provided by facilities staff,



4.

visual observations from ground level, and data from 2023 FCA.

Poor condition, particularly at roof to wall intersection. Large area where the gabled roof meets the higher wall there are signs of significant water damage. The roof and wall damage tracks to the ground.

Recommendation – Consult a roofing contractor to determine the scope of work for the roof and best method to remediate the wall intersection problem.



ADDITIONAL NOTES / PHOTOS



View of South Entry Façade



View of Southwest Corner



View of Northeast Courtyard looking East



View of West Façade



View of Northeast Courtyard looking South



View of North Wing

RE: Westshire Elementary School MEP/FP Analysis Report**Existing Building Mechanical/Plumbing Infrastructure**

L.N. Consulting was retained by Freeman French Freeman Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting the Westshire Elementary School, West Fairlee, VT to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The goal of the building infrastructure report is to provide an overview of the existing conditions, the general age of the equipment and systems, and code compliance issues to help define the scope of work should the building undergo a major renovation.

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system, or equipment wear items. The report will provide general details about the systems and then offer a combined recommendations section for ease of reference. Included with each report of existing conditions will be photos of items that may be of interest and provide more explanation of our findings.

Note that this report is based on the site visit that, due to the amount of time available, and limited access to certain areas, involved general review of the building. Although LNC was able to perform a somewhat detailed analysis of the building, it was not possible to review every space or system for deficiency. The intent of this report is to provide an overview of the conditions, focusing on identifying

deficiencies, including any code deficiencies concerning code deficiencies, while actual corrections required would involve specific design work.

The following is the mechanical, plumbing and fire protection portion of the report.

Mechanical/Plumbing Overview

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Fire Protection Association (NFPA) codes including the Standard for the Installation of Air Conditioning and Ventilating Systems (90A-2015), National Fuel Gas Code (54-2015), Fire Code (1-2015), Life Safety Code (101-2015), 2015 New Hampshire Fire and Building Safety Code, International Plumbing Code (IPC-2021), New Hampshire Plumbing Rules, International Building Code (IBC-2015), International Existing Building Code (IEBC-2018), ASHRAE Ventilation and Acceptable Indoor Air Quality (62.1-2016), New Hampshire Commercial Building Energy Standards (CBES-2024) effective 7/1/24, with ASHRAE Energy Standard for Buildings Except Low-Rise Buildings (90.1-2019) as the alternative compliance path, and occasionally other codes. When these systems were installed, they were code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for tempered water protection at public lavatories and handwashing facilities and mechanical ventilation as natural ventilation utilizing operable windows was previously permitted but is no longer an approved ventilation method. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition.

Existing Conditions

General

LN Consulting made our observations of the Westshire Elementary School on June 17, 2025. This building is a single story facility, slab on grade. The building is heated with (2) oil fired, hot water, non condensing boilers.

Mechanical and Plumbing

Refer to the photo captions below for mention of the majority of the existing mechanical, plumbing, and fire protection equipment. Equipment that is at or near the end of useful service life is identified, making it an opportune time to switch to a more energy efficient solution and to address code issues.

Main Boiler Room Boiler #1 with an oil service burner and boiler. This existing burner/boiler was installed in 2019, has 2 zones, was installed in accordance with code, is well maintained, and is in very good operational condition.

Main Boiler Room Boiler #2 with an oil service burner and boiler. This existing burner/boiler was installed in 2019, has 2 zones, was installed in accordance with code, is well maintained, and is in very good operational condition.

Associated circulation pumps and VFD controls appear to be obsolete and should be upgraded.

Carbon monoxide (CO) detection was not noticed; however, it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

The electric water heaters serve the domestic hot water needs of the facility. The lifespan of a water heater is typically 15 years. It is in good condition. Water heater units should be replaced with upgraded electric water heaters.

Units and piping are in working condition. Welded, threaded black iron pipes are used for oil piping within the facility.

Recommended repairs, and equipment replacements;

Oil fired boilers supply hydronic heat to the terminal units in the classrooms. The loop feeds two air handling units (AHUs) in the gym and AHU Room, FCUs, several unit heaters, radiant baseboard in the office areas, meeting spaces, and throughout the facility. There is a Semco energy recovery unit providing ventilation air.

Heating system piping appears in fair condition however further inspection is required. Insulation needs to be repaired in some areas.

Hot water circulation pumps in the main boiler room are newer units and in good to fair condition.

Split heating and cooling system is used in the office areas of the facility. These units are in good condition but should be cleaned. Inner blower fans, filters, tested, and more closely evaluated. They have completed more than half of their expected 15 to 20 years life cycle. The facilities upgrade project should include the replacement or upgrade of these split systems.

The boiler room and main distribution pumps are in good to fair condition. System piping insulation should be repaired, the boiler room should be cleaned of stored items, debris, walls patched, piping penetrations fire stopped, and painted.

A review of the public records for lead in Vermont school drinking water shows no elevated levels requiring action. Westshire Elementary, West Fairlee <https://leadresults.vermont.gov/school/1305> For any project, this means that no domestic water piping would need to be replaced for that reason alone.

There is a Well-trol compression tank. The building is fed domestic water from a well.

Mechanical and plumbing photos from the LN Consulting site visit begin on the next page.

1. Mechanical

Boiler #1 and boiler #2 are in very good condition.



Electric hot water heater and piping – good condition



Electric hot water heater product data.



Older circulation pump.



Older VFDs



Newer VFDs.



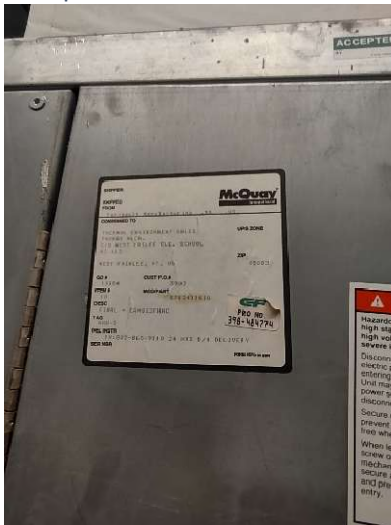
Abandoned circulation pump.



Hot water piping through gym to upper AHU Room.



AHU product data.



AHU Room piping arrangement.



Gym ductwork arrangement and large fans.



Ductwork diffuser arrangement in classroom – typical



AHU Room above boiler room – product data



AHU piping connections and controls



Grill hood in kitchen.



Heaters at entrances – typical.



Older outdoor condenser units.



Split duct condenser unit.



Infrastructure Recommendations:

General Mechanical Recommendations:

The Westshire School's main service is 800 amp, 120/240 volt, 1 phase. This may present some limitations on mechanical equipment selection but appears to be manageable given the building sizes.

We have outlined below (2) potential HVAC system solutions. Some pros and cons follow at the end.

1. The base / recommended solution is water source heat pump (WSHP) geothermal-based. This is a closed loop geothermal (ground source) WSHP system that is capable of using the earth as both a sink and source of energy, provides simultaneous heating and cooling year round and energy sharing between zones. This would distribute a heat pump loop throughout the building and would have water source heat pumps serving each zone. In addition, a Water-to-Water Heat Pump will provide heating hot water to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

WSHP options:

- Water Furnace International, Inc., commercial water to air heat pump equipment will be the basis of design. Typically, these will be concealed ducted units.
- ClimateMaster

Water-to-Water Heat Pump Options

- Water Furnace T1 (2, 4 or 5 Tons)
- Bosch TW or WT series (not sure which is more efficient)

2. The alternate solution will use air source heat pumps. Air-to-Water Heat Pumps would generate hot water and chilled water to be distributed throughout the building. 4-pipe fan coil units would serve each zone. Heating hot water would be provided to temper kitchen makeup air if the grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit (mentioned below) is not provided.

Air-to-Water Heat Pump Options:

- Hitachi air H2O Yutaki units (R32 refrigerant)
- Space Pak Solstice Extreme R32 (CC32-XX)
- Arctic Heat Pumps OXXZA/BE (R410A for the moment, probably switching soon)

Pumps Options:

Grundfos Magna3 or TPE3 (TPE3 can do up to 2 horsepower at single phase)

Hydronic systems Buffer Tank Options:

Lochinvar HP250G (R30 insulation) and many others

Refrigerant R410A is being phased out 12/31/24 and most manufacturers of WSHP equipment are changing to R454B.

Considering the first solution will be considerably more energy efficient and should come with incentives, we believe it will be the chosen solution.

We recommend a Building Management System (BMS) to be a direct digital controls (DDC) system installed to control the proposed equipment and facilitate maintenance with features such as remote internet access and alarm notification.

Immediate needs:

Remove abandoned circulation zone pump.
Remove abandoned condenser units outside in the back of facility.
Repair and replacement of heating system piping insulation. Inspect heating system piping.
Clean split duct cooling system for offices.
Paint mechanical rooms and repair through wall penetrations
Replace kitchen hood.

Shorter term needs:

Replace heating system circulation pumps and VFDs.
Replace split duct cooling systems.
Replace window mounted AC units.

Longer term needs and energy reduction:

If the building has not recently had a blower door test, we recommend this be completed to guide envelope upgrade recommendations. Assuming envelope upgrades and/or major program changes leads to a major building renovation, provide either the geothermal or air source option recommended above.

We recommend providing cooling throughout the facility, which will greatly improve occupant comfort during warmer times of the year as well as helping to preserve certain building finishes by helping to keep moisture levels within the facility in a desired range.

We recommend upgrading the building envelope to meet code minimum. In addition, as part of energy modeling, during the design we can perform envelope design assistance. We anticipate the building will ultimately be cooling dominant, and if so, as part of the major building renovation we recommend the existing boiler plant, regardless of the age or condition, be demolished as part of the switch to the recommended mechanical solutions.

Alternatively, if a major building renovation is not planned (that is, the geothermal or air source options are not being installed and the central heating plant is to remain intact), for any areas that are not presently cooled and yet are deficient in ventilation air, we could provide new energy recovery ventilation units with dehumidification to improve indoor air quality and provide a limited amount of cooling. While this solution isn't our first recommendation because it is not as energy efficient and does not provide fully comfortable spaces, it is a path with lower construction cost.

The geothermal system utilizes WSHP's throughout the facility to condition (both heat and cool) the entire facility. This system utilizes a closed loop borehole geothermal system to heat or cool the indoor heat pump loop which is utilized to heat and cool the facility. We suggest a new wall mount backup boiler be installed for an unlikely emergency if the geothermal field were to become unavailable for an extended period of time. We recommend new ERVs be utilized to provide fully ducted ventilation air to each space. The ventilation system will be appropriately sized and designed per ASHRAE 62.1 requirements. The geothermal system will be sized based on the cooling load of the facility which is anticipated to then easily meet the peak heating demand. Based upon a current project at Burlington High School we roughly estimate the cooling load for this project to be 20-25 Btu/sq.ft. and heating load to be 12 Btu/sq.ft. (actual, including no safety factor.) These will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design.

We recommend geothermal heat pump systems for schools such as this one because we have typically found these to be the most energy efficient method of conditioning schools based upon our energy modelling. In addition, the geothermal piping system is expected to survive for decades, reducing future maintenance costs. Replacing water source heat pumps when required is a relatively easy task.

Water source heat pumps utilize the refrigeration cycle to both heat and cool air. They accomplish this through the use of a refrigerant reversing valve allowing the equipment to run the cycle as an air conditioner or reverse the cycle to operate as a heater. The water source heat pump can extract heat from the air and transfer it to a water loop when in cooling mode or transfer heat from the water loop to the air in heating mode. The units are very efficient with Energy Efficiency Ratio (EER) values of 15-25 in cooling mode and the Coefficient of Performance (COP) values for heat pumps are in the range of 3.0-4.5. A COP value of 3.0 indicates that for every 1 unit of energy used to run the heat pump, 3 units of heat energy are transferred to the air. This represents a 300% increase in efficiency when compared to electric resistance heating and over 300% more efficient than any fuel fired heating equipment. A water source heat pump system has the added benefit of energy "sharing." Spaces that are in cooling mode can reject heat into the common water loop which can be used by spaces in heating. This condition can be common during shoulder seasons when the spaces with southern exposure require cooling while the spaces with northern exposure require heating. This can save significant amounts of energy in facilities that have many different exposures and variable occupancies such as this building.

We recommend installing energy recovery ventilation (ERVs) which utilize energy heat exchangers that transfer both sensible and latent energy from the exhaust air to pre-condition the ventilation air. Ductwork located above the ceilings will distribute the air.

The ventilation air will be controlled by CO2 sensors, occupancy sensors, and occupancy schedules to vary the ventilation air delivered to each space. Variable Air Volume (VAV) boxes will be utilized to modulate the ventilation air flow to each zone. The ventilation unit fans will modulate to deliver only as much ventilation air as necessary to satisfy space demands, which significantly reduces energy consumption.

A closed loop geothermal (ground source) / water source heat pump system uses a glycol and water fluid mixture as a medium to transfer energy to and from the heat pumps located throughout the facility. The geothermal closed-loop ground source heat exchanger will be installed on the site to condition the fluid.

The closed-loop heat exchanger will be a series of 500-700 ft. deep boreholes with 1-1/4" to 1-1/2" HDPE (High Density Polyethylene plastic) piping loops that utilize the near constant ground temperature to both heat and cool the facility. In the next phase we will prepare calculations to size the geothermal borehole field and these calculations will be refined following the completion of an energy model and based on the proposed specific building envelope and mechanical system design. The final borehole field design will also require the drilling of a test borehole to better understand the subsurface characteristics of this specific site.

A geothermal heat pump system utilizes only electricity to heat and cool the facility and the ventilation air. This will significantly reduce or eliminate the school building's use of fossil fuels. The heat pump loop piping interior to the building for this type of system is required to be insulated due to low temperature fluid temperatures that occur when the system is in heating mode.

The hydronic system will utilize a propylene glycol solution for freeze protection. The geothermal borehole fluid will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). The borehole circulators will inject into the internal building secondary heat pump loop which will be circulated by multiple high efficiency circulator pumps (1 circulator will be provided for redundant backup). All of the new circulator pumps will have either ECM's or IE5 motors with pump mounted Variable Frequency Drives (VFDs) to modulate the speed of the pumps to match the building heating or cooling loads. The DDC system will modulate the pumps to maintain a differential pressure set point in the heat pump hydronic system. This significantly reduces pumping energy as the pumps reduce speed as the facility heating or cooling demand decreases.

Base scope (geothermal / water source heat pump system), Facility Conditioning and Ventilating Equipment:

The classrooms throughout the facility would be conditioned using water source heat pumps. A typical classroom would be provided with a small closet located in a corner of the room that would house the heat pump. This will provide each classroom with a dedicated heating/cooling zone.

We estimate that a 5-ton water source heat pump with a variable speed compressor or 2-stages of capacity control will be installed. The heat pump will have variable speed EC fan motors, low sound package, insulated coils, hot gas reheat, MERV13 filters and BACnet controls package. The heat pump supply will be ducted above the ceiling (where applicable) or through the structure (where applicable). A return grille would be in the face of the closet to return the air back to the unit. Each heat pump would be equipped with a 2-way modulating control valve to match the compressor speed to reduce water flow during low load conditions along with a balance valve to control water flow through the unit. If there is available space, the heat pump will be suspended above the ceiling with the heat pump return ducted to ceiling grilles.

Common spaces based on our initial heat load estimates, will be included in the a 5-ton variable capacity heat pump with variable speed EC fan motors, low sound package, insulated coils, MERV13 filters, modulating control valve and BACnet controls package.

Each space will have a supply and return VAV (Variable Air Volume box) to control the ventilation air. Outdoor air and exhaust will be ducted to each classroom and generally ducted to the heat pump return plenum. Each classroom will be a single ventilation zone with Carbon Dioxide (CO₂) monitoring; the VAVs will modulate as necessary to maintain CO₂ levels below set point values in each zone.

The offices / administrative and meeting spaces in the facility will be conditioned using either a fully ducted heat pump or exposed console style (free standing) heat pump depending on the specific application. Each heat pump will be equipped with a 2-way control valve and balance valve to control water flow through the unit. The ducted heat pumps will have the same options indicated for the classroom units where applicable. Ducted heat pumps will typically serve 2-3 offices. Console heat pumps will be installed in each office where applicable. Typical office heat pumps will be single stage units.

The other spaces will have a supply and return VAV (Variable Air Volume box) to control the ventilation air to each zone. The ventilation supply air shall be ducted to the heat pump returns (where applicable) and an exhaust grille shall be in each space. Typical office ventilation zones will be for adjacent spaces on a single zone with large open common spaces being dedicated ventilation zones. Outdoor air and exhaust will be ducted to each space with the outdoor air ducted to each heat pump return plenum. Where multiple spaces are served by a single VAV unit, each normally occupied space will have CO₂ monitoring; the VAV's will modulate as necessary to maintain CO₂ levels below set point values in each zone.

We recommend a kitchen hood sized for the specific equipment that is located underneath it. The hood will have an Ansul fire suppression system, a U.L. Listed grease laden vapor rated isolation damper, and a supply air plenum. If the kitchen cooking equipment is electric, we recommend installing a grease laden vapor exhaust recirculation system equivalent to the Halton RAH Reco-Air unit. This unit, when paired with a Halton Capture Jet hood and the variable volume exhaust dampers, and the MARVEL controls package, this system allows for variable volume exhaust flow rate and recirculation back into the space. Exhausting air to the outdoors and conditioning outdoor air for make-up purposes consumes a significant amount of energy and recirculating the air reduces this energy consumption.

The recirculation unit will have (4) stages of filtration, and integral Ansul system, controls to interconnect with the exhaust hood system, supply air duct smoke detector, BACnet connections to the DDC system and the system is to be UL Listed (710B) for use with grease rated exhaust. The grease exhaust system will be installed per UL 762 and NFPA 96 requirements. To be determined based upon the size of the recirculated kitchen exhaust air will be how this air is cooled and how to ventilate and condition the kitchen and cafeteria spaces.

The corridors will be conditioned by either ducted or console type heat pumps. Heat pumps will be predominantly located near exterior entrances or exterior exposures. The corridors will have dedicated ventilation zones that are tied into the ventilation for restrooms off of the corridors.

A Direct Digital Controls (DDC) system will be installed to operate the HVAC equipment throughout the facility. The DDC system will have internet connectivity to enable monitoring and control of the system remotely. Web connected DDC systems can be programmed to send alerts to operators and

maintenance personnel when there is an equipment failure. A DDC system will enable the new HVAC system and components to operate efficiently and as designed.

For the alternate solution using air source heat pumps, thermal storage buffer tanks located in the mechanical room will be utilized for both the hot water and chilled water. This system will not qualify for incentives. It is entirely possible that the total installed cost of this system will not be cheaper than the geothermal / water source heat pump system, when considering incentives.

The four pipe fan coils with concealed ducted units located above the ceiling. The fan coils will have EC motors, elastomeric closed cell foam liners, inlet filters, 0.025" thickness tube wall coils, stainless steel insulated drain pans, and condensate overflow switches. Generally, fan coils will have MERV 13 filters. Modulating control valves will vary the heating/cooling capacity of the units based on the zone's call for heating or cooling. All cooling units will be provided with condensate lift pumps as required to ensure appropriate condensate drainage. Each zone (either a single space or multiple spaces) will be equipped with its own dedicated thermostat integrated into the DDC. For all spaces, modulating control valves tied into the DDC system will be installed to control the water flows to each fan coil unit.

Both solutions offer equipment with maintenance requirements that are relatively minimal.

Pros of the base/recommended solution:

- A geothermal system may qualify for state, federal, and utility incentives to offset construction costs, which could make the system economically advantageous to install compared to other non-geothermal options.

Cons of the base/recommended solution

- Site coordination required to determine where the borehole field can fit on the site.

Cons of the alternate solution:

- Geothermal systems are more energy efficient and there is no energy sharing for the alternate solution between spaces in heating mode and spaces in cooling mode so energy consumption will be higher.
- Possibly higher installed cost due to 4-pipe design rather than a 2-pipe system.

General Plumbing Recommendations:

For both solutions, domestic hot water will be produced by residential grade electric air-to-water heat pump (hybrid heat pump) water heaters. These absorb ambient heat from the surrounding air to heat water using a compressor and R134a refrigerant. Self-contained heat pump unit is integrated into the top of the tank.

- A.O. Smith Water Products Co; HPTU-80N (Basis of Design.)
- State Industries, State Water Heaters, HPSX-80DHPT

The hybrid heat pump water heater will operate on factory controls to maintain a set temperature within the tanks.

Domestic hot water discharge temperature will be controlled by an ASSE 1017 rated thermostatic water mixing valve. The mixing valve will utilize controls and temperature sensors to maintain the desired discharge water temperature. Basis of design is the Caleffi 520500AX tank mounted 3/4" master mixing valve which has tight hot water close off, ASSE 1017, 8 gpm, and is DZR low-lead brass.

Domestic hot water recirculation will be provided by a duplex set of potable water rated circulator pumps. Grundfos Pumps Corporation, Alpha HWR 15-29 or Alpha HWR 15-55 will be the Basis of Design. The domestic water distribution system shall be provided to support the bathrooms, drinking fountains, mop sinks, kitchen sinks and laundry.

All new water closets shall be high efficiency 1.28 GPF flushometers with anti-microbial surfaces, lavatories will be equipped with 0.5 GPM aerators, and break room sinks shall be equipped with 1.5 GPM aerators for water conservation. All facilities shall be ADA compliant where applicable. All public lavatories will be provided with ASSE 1070 point of use thermostatic mixing valves to provide tempered hot water to the fixtures. We recommend that all public lavatory faucets and all urinal/water closet flush valves be sensor operated.

All plumbing equipment including piping, valves, pumps, tanks, fixtures, etc. will be Lead-Free. The domestic water piping will be copper soldered. The sanitary waste piping will be PVC.

General Fire Protection Recommendations:

A fire protection system will be installed in the entire facility meeting NFPA 13.

Westshire Elementary School – Electrical

For this building, any code deficiencies noted are based on the latest adopted codes such as the National Electrical Code (NEC), fire safety including NFPA 72, life safety including National Fire Protection Association (NFPA) 101, 2015 Vermont and New Hampshire Fire and Building Safety Code, or other similar codes. When these systems were installed, they were most likely code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for weather-resistant receptacles in wet and exterior locations, and tamper resistant receptacles for schools. Other deficiencies, such as the use of shared neutrals on circuits with separate breakers, could not be investigated due to safety concerns. Due to the age of the buildings it is expected this is not an issue. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it is a safe or acceptable condition. Many of the changes to the electrical codes are a result of injuries and deaths because of less stringent regulations and enforcement in the past.

Any renovation work should consider the use of LED lighting technology. LED lighting provides more lumens (measure of light output) per watt compared to other technologies, has a longer life, is usually inherently dimmable, generates less Ultraviolet (UV) light than fluorescent bulbs and is essentially mercury-free. For all practical purposes, fluorescent and incandescent lighting is no longer used, and most commercial buildings have or are making the change to LED.

Electrical Distribution:

The Westshire School's main service is 800 amp, 120/240 volt, 1 phase, three wire service via a pole mounted transformer and an underground electrical service vault located between the emergency power generator, automatic transfer switch, and the pump house. This existing electrical service was installed in approximately 2001. The panelboards, subpanels, outlets, and power feeds are in operational working and good condition.

The pad mounted 80 kW emergency generator and automatic transfer switch is located in front of the pump house. This equipment appears to be recently installed, code compliant, well maintained, and in very good condition. Via a double throw switch and 400 amp disconnect switch, it appears to feed Panel PM.

There did not appear to be any surge protection at the main service to the building. Surge protection helps protect electrical systems within a building from surges in voltage that may occur. Of particular concern are spikes during lightning strikes. Although not required, they are recommended.

Electrical photos from the LN Consulting site visit begin on the next page.

2. Electrical

Pole mounted transformer electrical service feed underground to electric vault.



Electrical service vault manhole, generator, and ATS pad.



800 amp Main Breaker



Service Main Panelboard. 800 amp, single phase.



400 amp disconnect-double trouble safety switch for a generator. Switch is off.



Electrical service to boiler room.



400 amp breaker for boiler room.



Panelboard for boiler room.



Control panel for well pumps.



Automatic switches for pole and building lighting circuits.



Panel for lighting and outlets – typical.



Fully populated panel with emergency fire circuit.



200 amp breaker for kitchen.



Panelboard for kitchen.



Stage AHU disconnect and wiring in conduit arrangement.



Stage AHU controls.



AHU Room above boiler room – auto shut off switch.



AHU controls in upper boiler room AHU space.



Upper AHU Room - Power, VFD, and piping arrangement



Damper control wiring.



Control wiring for AHU arrangement.



AHU disconnect switch.



Wire circuiting is either via conduit or metal clad (MC) cable. Installation of electrical equipment, wiring, conduit, and metal clad has been done in a professional manner but in some areas of the facility show signs that it's exceeded its service life. Electrical systems have been well maintained and show no signs of damage or excessive corrosion. Abandoned conduit lines with pulled wire, sub panels not in use, old telephone panels still in place should be properly capped or removed.

Receptacles in spaces accessible to the public appear no to be tamper resistant (TR) type. Recent electrical code changes require TR receptacles in public facilities to protect everyone.

Lighting:

Some of the indoor lights are incandescent bulbs, T8 fluorescent, ceiling mounted 2" x 2", or 2" x 4" troffer type. This type of lighting is usually recommended for replacement with LED. All exterior lighting should be upgraded to LED type. The exterior mounted lighting is on timers and was not on during the day, suggesting either the time clock and a photocell controlling the lights are working correctly.

There does not appear to be much occupancy or daylight sensing. Vermont and New Hampshire Commercial Energy Standards are that unless a space uses very low lighting and more than one light fixture is in space, occupancy sensing is required. Sometimes "daylight harvesting" is required to essentially utilize the ambient light from the outdoors in lieu of lighting indoors. This is accomplished via "photo eyes" in the room that sense ambient light levels and either turn off or dim lighting accordingly.

There is emergency lighting, some of the fixtures appear to be as original to the building. Batteries can be replaced, often it is less expensive to simply buy new fixtures. Some exit signs also appear to be original to the building. There are a few newer ones.

Many of the common areas have wall switches. Any public egress path should not have the means to manually turn the lighting off. Similarly, multi-person restrooms are typically set up for automatic light control instead of switches.

3.	Lighting	Typical traditional lighting. The fixtures appear to still be incandescent and fluorescent type.
		
		T-8 lighting in the gym.
		

T-8s should be replaced with LED.



Exterior flood lights to be upgraded.



Fire Alarm:

The fire alarm system control panel is an audible and addressable type system. It appears to be in good condition. The front cover indicates no violations. Inspected in 2024. The fire alarm system, however, does not appear to have voice notification.

The existing fire alarm control panel is a Fire Controls Instruments 16 Zone system and is located at the main entrance. It is fairly old however it looks like some renovation work has occurred. It is assumed however that parts are difficult to procure as this fire alarm system is no longer serviced.

The Westshire Elementary School is considered an existing educational occupancy and it is not required to be provided with a voice notification fire alarm system. Simple alarms are adequate by code. However, if the fire alarm system were to be replaced, the fire marshal will most likely consider that a "system replacement", and if so the new fire alarm would be required to be provided with voice notification.

One item that should be confirmed by the Westshire Elementary School is that the "recall" alarm, indicating staff and visitors may reenter the building after a fire alarm, must be a distinct alarm from the fire alarm itself.

Carbon monoxide (CO) detection was not noticed, however it may have been missed. Confirm CO detection is installed at the entrance to any spaces with fuel burning equipment.

4. Fire Alarm

The main fire alarm panel. There were no violation notes on the front cover.



FACP – sub panel – typical



Telecommunications:

LNC did not investigate the telecommunication system. Telecom is typically done by an Owner's IT department and "methods" and "standards" for installation vary. Although there are some NEC rules to follow, for the most part telecommunication system installations do not require electricians to perform the work. The BDA system needs to be evaluated and possibly upgraded to meet local fire department requirements. Telecom hard drive and battery backup mounted in the corner meeting space should have a proper NEMA 1 enclosure.

Electrical Summary

- Some electrical distribution equipment is obsolete and should be replaced as part of any facility upgrade.
- All lighting should be upgraded to LED lighting. This should include emergency lighting for exterior exit paths. Exterior floodlights have LED bulbs but the fixture should be replaced.
- The lighting throughout the building appears to be incandescent bulbs and T8 fluorescent type lamps and fixtures. The troffer type fixtures tend to be less efficient and result in more glare than newer LED type fixtures. LED type fixtures also allow for easier controls, particularly dimming.
- Replace VFDs.
- Lighting control in many areas do not utilize occupancy sensors. There did not appear to be many areas utilizing dimming or daylight sensing controls.
- The lighting in some egress paths, including lobbies, corridors and stairs, is controlled by wall switches. This is a code violation for egress paths.
- Any upgrade may require some additional smoke detectors and carbon monoxide detection.

Infrastructure Recommendations:

General Electrical Recommendations:

There are some recommendations that should be implemented to bring the Westshire Elementary School up to the latest safety codes. This includes the following:

1. Selective electrical distribution equipment replacement.
2. Replace lighting and exit lighting to LED.
3. Replace VFDs.
4. Replace receptacles in public areas with tamper resistant type.
5. Remove switches in corridors with keyed switches that are only controllable by staff. This would be done in conjunction with the addition of occupancy sensors in the corridors or other egress paths.

The main recommendation that is not a safety issue is the replacement of the existing lighting with LED type. In conjunction with this, the controls would be upgraded to provide occupancy sensor control and dimming. The simplest way to accomplish this may be to provide new light fixtures with integral wireless controls. This would significantly reduce the amount of recircuiting required. There may be some incentives to upgrade.

Based on most selected mechanical system upgrades, the electric service to the building may not need to be increased. LNC can provide existing load information and based on that it can be determined if the existing service can accommodate the mechanical upgrades or not. If not, it may be the service entrance would be increased, and possibly the outdoor transformer as well. This should be relatively simple however and based on the total scope of work required for the mechanical system upgrade this should be small.

LNC does not have any power outage information.

Sincerely,

David Gass
Project Manager
LN Consulting, Inc.



**Study
Estimate**

Rivendell School District
Improvements Assessment
Orford, NH

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Prepared for:

Freeman French Freeman

September 23, 2025



Study

BASIS OF ESTIMATE

This cost estimate was produced from Study drawings, specifications and other documentation prepared by Freeman French Freeman and their design team dated 08/13/25. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, general contractor's profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be under:

Public bidding to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufacturers.

The estimate is based on **prevailing wage** rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT INCLUDED IN THIS ESTIMATE

Items not included in this estimate are:

All professional fees and insurance

Site or existing conditions surveys investigations costs, including to determine subsoil conditions

Items identified in the design as Not In Contract (NIC)

Items identified in the design as by others

Owner supplied and/or installed items (e.g. technology, furniture and equipment, etc.)

Hazardous material studies and any associated abatement.

ESTIMATE UNITS & ABBREVIATIONS LEGEND

ALW	ALLOWANCE	LS	LUMP SUM
ALT	ALTERNATE	LV(S)	DOOR LEAF/LEAVES
BF	BOARD FOOT	LVL	LAMINATED VENEER LUMBER
DY(S)	DAY	MTH(S)	MONTH
EA	EACH	NIC	NOT IN CONTRACT
FLT(S)	FLIGHT (OF STAIRS)	OPT	OPTION
GFA	GROSS FOOTAGE AREA	QTY	QUANTITY
GSF	GROSS SQUARE FOOTAGE	SF	SQUARE FOOTAGE
HR(S)	HOURLY	STOP	ELEVATOR STOP
HSS	HOLLOW STRUCTURAL SECTION	SY	SQUARE YARD
LBS	POUNDS	TN(S)	TONS (STEEL TONNAGE)
LF	LINEAR FOOTAGE	WK(S)	WEEK
LOC	LOCATION	YD(S)	YARD



MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Cost
RIVENDELL ACADEMY - WEST WING				
Life Safety		29,469	\$	53,600
Accessibility		29,469	\$	307,319
Interior		29,469	\$	554,629
Exterior		29,469	\$	672,040
Systems Upgrades		29,469	\$	3,705,314
SUBTOTAL TRADE COSTS	Jul-26			\$5,292,902
Design and Estimating Contingency		15.0%		\$793,935
Escalation to Bid		4.8%		\$255,509
SUBTOTAL				\$6,342,347
Subcontractor Bonds				In rates
General Conditions	8.0%			\$507,388
General Requirements	3.0%			\$190,270
Winter Conditions				excl
Insurances - GLI/Builders Risk	1.40%			\$88,793
Bond	0.70%			\$44,396
Building Permit				Waived
Overhead & Profit	5.0%			\$317,117
TOTAL ESTIMATED CONSTRUCTION COST				\$7,490,311
Alternates (Markedup) :				
ALT1 Add geothermal HVAC system ilo of base scope			ADD	\$ 1,295,370



MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Cost
RIVENDELL ACADEMY - EAST WING				
Life Safety		45,778	\$	-
Accessibility		45,778	\$	80,778
Interior		45,778	\$	195,883
Exterior		45,778	\$	131,600
Systems Upgrades		45,778	\$	4,466,354
SUBTOTAL TRADE COSTS	Jul-26			\$4,874,615
Design and Estimating Contingency		15.0%		\$731,192
Escalation to Bid		4.8%		\$235,317
SUBTOTAL				\$5,841,124
Subcontractor Bonds				In rates
General Conditions	8.0%			\$467,290
General Requirements	3.0%			\$175,234
Winter Conditions				excl
Insurances - GLI/Builders Risk	1.40%			\$81,776
Bond	0.70%			\$40,888
Building Permit				Waived
Overhead & Profit	5.0%			\$292,056
TOTAL ESTIMATED CONSTRUCTION COST				\$6,898,368

Alternates (Markedup) :

ALT1 Add geothermal HVAC system ilo of base scope	ADD	\$	3,534,710
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MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Cost
SAMUEL MOREY ELEMENTARY SCHOOL				
Life Safety		28,424	\$	3,790
Accessibility		28,424	\$	96,974
Interior		28,424	\$	303,656
Exterior		28,424	\$	239,676
Systems Upgrades		28,424	\$	1,756,974
SUBTOTAL TRADE COSTS	Jul-26			\$2,401,070
Design and Estimating Contingency		15.0%		\$360,161
Escalation to Bid		4.8%		\$115,909
SUBTOTAL				\$2,877,140
Subcontractor Bonds				In rates
General Conditions	8.0%			\$230,171
General Requirements	3.0%			\$86,314
Winter Conditions				excl
Insurances - GLI/Builders Risk	1.40%			\$40,280
Bond	0.70%			\$20,140
Building Permit				Waived
Overhead & Profit	5.0%			\$143,857
TOTAL ESTIMATED CONSTRUCTION COST				\$3,397,902
Alternates (Markedup) :				
ALT1 Add geothermal HVAC system ilo of base scope			ADD \$	3,781,657
ALT2 Replace single ply roof membrane ¹			ADD \$	614,000

¹ Expedited cost information provided by FFF as requested by client on 10/16/2025. Calculations are based on 2023 Bureau Veritas FCA roof area square footage and square foot costs escalated for 2025 which have then been factored by the PM&C markup values listed above.



MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Cost
WESTSHIRE ELEMENTARY SCHOOL				
Life Safety		23,804	\$	-
Accessibility		23,804	\$	27,804
Interior		23,804	\$	234,958
Exterior		23,804	\$	607,634
Systems Upgrades		23,804	\$	1,302,952
SUBTOTAL TRADE COSTS	Jul-26			\$2,173,348
Design and Estimating Contingency		15.0%		\$326,002
Escalation to Bid		4.8%		\$104,916
SUBTOTAL				\$2,604,267
Subcontractor Bonds				In rates
General Conditions	8.0%			\$208,341
General Requirements	3.0%			\$78,128
Winter Conditions				excl
Insurances - GLI/Builders Risk	1.40%			\$36,460
Bond	0.70%			\$18,230
Building Permit				Waived
Overhead & Profit	5.0%			\$130,213
TOTAL ESTIMATED CONSTRUCTION COST				\$3,075,639
Alternates (Markedup) :				
ALT1 Add geothermal HVAC system ilo of base scope			ADD	\$ 3,451,825

Building #1 Rivendell Academy – East Wing							9/23/2025
Constructed: 2000							
Last Renovated: N/A Stories: 2 above grade Gross Area: 45,778 SF							
Use: School							
CONSTRUCTION							
1.	Foundation	Concrete					
2.	Superstructure	CMU					
3.	Exterior Walls	Wood Clapboard					
4.	Roof	Low Slope Roof: Single-ply membrane Pitched Roof: Metal					
CODE							
1.	Occupancy	NFPA Educational, IBC Group E					
2.	Construction Type	NFPA Type II, IBC Type II					
3.	Sprinklers	Yes					
4.	Fire Alarm	Yes					
During a visual assessment of the building, the following conditions required modification, repair, or replacement were observed.							
LIFE SAFETY			LIFE SAFETY COSTS		\$ -		
1.	Exits						
		Discharge to Public Way	Yes				
		Number	Level 1 has 4, Level 2 has 2.				
		Egress Width	In compliance.				
		Separation Distance	In compliance.				
		Travel Distance	In compliance.				
		Signage	In compliance.				
		Hardware	In compliance.				
2.	Stairs						
		Rise/Run	In compliance.				
		Width	In compliance.				
		Rated Enclosure	In compliance.				
		Handrail	In compliance.				
		Guardrail	In compliance.				
3.	Rated Rooms		In compliance.				
4.	Fire Extinguishers		Yes				
ACCESSIBILITY			ACCESSIBILITY COSTS		\$ 80,778		
1.	Main Entrance or Alternate Entrance		Yes				
2.	Door Dimensions		In compliance. However upper level is missing and ADA operator.	1	ea	\$ 5,000.00	\$ 5,000
		Clear Width	Yes				
		Push/Pull	In Compliance.				
		Threshold	In Compliance.				
		Lever set/height [34-48]	In Compliance.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000**Last Renovated:** N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF**Use:** School

		Distance Between Sequential Doors	In Compliance.				
3.	Accessible Route		In Compliance.				
		Path to Public Areas/ Elevator	In Compliance.				
		Minimum Width	In Compliance.				
		Protruding Objects	In Compliance.				
		Ramp Dimensions [landings 60"]	N/A				
		Ramp Curb or 12" Beyond Rail	N/A				
		Handrail Dimensions	N/A				
4.	Elevators						
		Call Button Height [54" max]	In Compliance.				
		Elevator Cab [51"D x 51"W or 54"D x 36"W]	In Compliance.				
		Elevator Cab [51"D x 36"W]	In Compliance.				
		Controls Requirements	No Braille at controls. Recommendation – Install controls in accordance with ADA guidelines.	1	ls	\$ 25,000.00	\$ 25,000
		Signage	No Braille signage. Signage appears to be temporary. Recommendation –Install signage in accordance with ADA guidelines.	1	ls	\$ 5,000.00	\$ 5,000
		Lift Platform Size & Clearance	N/A				
5.	Signage		No ADA compliant room, stairs, or building directory signage. Recommendation – Install ADA compliant signage.	45,778	gsf	\$ 1.00	\$ 45,778
6.	Transaction Counters		N/A				
7.	Toilet Rooms						

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		At Least 1 Accessible	Not all restrooms are required to be ADA accessible. One restroom in each pod of stalls appears to meet ADA compliance.				
		Signage to locate	No Braille signage. Recommendation – Install compliant signage.	w/ signage work above			
		Fixture Dimensions	All restrooms appear to meet ADA				
8.	Drinking Fountains		In compliance				
INTERIOR							
				INTERIOR COSTS			\$ 195,883
1.	General: Room numbers are per the numbering system within the building.						
2.	Stair 1						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	N/A				
3.	Lower Level Corr. Northwest						
		Floor	Fair condition.				
		Walls/ Columns	Good condition – CMU. Fair condition – Connection at split face at interior walls is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.	100	lf	\$ 10.00	\$ 1,000
		Ceiling	Fair condition.				
		Doors	Fair condition. 45-minute wood doors with narrow lite wire glass. On magnetic hold opens				
		Borrowed Lites	N/A				
		Millwork	N/A				
4.	Lower Level West (entry)						
		Floor	Poor condition. Several cracks. Recommendation – VCT replacement.	714	sf	\$ 12.00	\$ 8,568

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Walls/ Columns	Good condition – CMU. Fair condition – Connection at split face at interior walls is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.	132	lf	\$ 10.00	\$ 1,320
		Ceiling	Poor condition. Several scrapes, chips stains. Recommendation – Replace ACT tiles.	714	sf	\$ 8.00	\$ 5,712
		Doors	Fair condition. Fire rated doors on hold open.				
		Borrowed Lites	N/A				
		Millwork	N/A				
5.	Lower-Level Vestibule South						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Fair condition. ACT has stains. Recommendation – Replace stained tile. Verify there are no active water leaks. Replace unseated tiles.	172	sf	\$ 8.00	\$ 1,376
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
6.	Main Corridor Central						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
7.	Music Room 1101						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	N/A				
8.	Art Room 1104						

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Floor	Fair condition – VCT.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition. Wood doors fair but steel frame is unprotected. Recommendation – replace existing door frame with protected steel frame.	1	ea	\$ 1,500.00	\$ 1,500
		Borrowed Lites	N/A				
		Millwork	Not in compliance with ADA regulations; base cabinets at 3'-4". Recommendation – Replace base cabinets with ADA height cabinet.	60	lf	\$ 500.00	\$ 30,000
9.	Stage 1105		Stair from gym to stage is non-compliant; incorrect rise and run dimensions and only one railing. Recommendation – Renovate stage area to be fully complaint.				
		Floor	Good condition – Main floor. Poor condition – Landing from stairs. Recommendation – Replace floor leading to gym and stairs as nosing lacks differentiated color.	1305	sf	\$ 30.00	\$ 39,150
		Walls/ Columns	Paint walls	1764	sf	\$ 2.00	\$ 3,528
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
10.	Gymnasium 1106		Fair condition. All surfaces have stains, scuffs, and wear consistent with use of space.				
		Floor	Fair condition.				
		Walls/ Columns	Fair condition. Bottom of split face at exterior wall is treated with sealant. Recommendation – Reseal bottom of wall with proper soft joint.	100	lf	\$ 10.00	\$ 1,000
		Ceiling	Fair condition.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000**Last Renovated:** N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF**Use:** School

		Doors	Fair condition – Door frames to gym to all be confirmed as rated. Poor condition – Doors to exterior all missing bottom seals and bottoms of frames rusted out. Recommendation – Replace all exterior doors and frames.	2	pr	\$ 5,000.00	\$ 10,000
		Borrowed Lites	N/A				
		Millwork	N/A				
11.	Café 1107						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
12.	Cafés 1107 Vestibule						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
13.	Rooms 1108, 1110 & 1112						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
14.	Boys / Girls Locker Room 1109		Boys locker room has 2'-0" wide clear area at low urinal. Recommendation – Reconfigure space to meet minimum 30" wide urinal size (currently 2'-0").				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000**Last Renovated:** N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF**Use:** School

		Floor	Poor condition. Epoxy worn in shower areas. Poor condition at the remainder of Locker room floors. Recommendation – replace all locker room tile and remaining flooring.	1298	sf	\$ 30.00	\$ 38,940
		Walls/ Columns	Fair condition. Gang Shower stalls removed leaving unpatched holes in CMU walls and in floors. Recommendation – Patch, repair, repaint holes to match existing space.	2220	sf	\$ 10.00	\$ 22,200
		Ceiling	Fair condition. Acoustic deck.				
		Doors	Poor condition – Door frames from hallway to locker rooms to all be confirmed as requiring fire rating. Recommendation – Install new doors and hardware.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
15.	PE Office 1111						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	N/A				
16.	Learning Center 1114, Room 1118, and Room 1120						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
17.	Kitchen 1115		Note: Kitchen Equipment not reviewed.				
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
18.	Computer Room 1116						
		Floor	Good Condition.				
		Walls/ Columns	Good Condition.				
		Ceiling	Good Condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
19.	Janitor's Room 1117		Condition suitable for the function of space.				
		Floor	Fair condition, suitable for the function of space.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	N/A				
20.	Elevator Mech. Room 1119		Space could be left as-is if it is functioning well for its intended use.				
		Floor	Fair condition. Floor shows significant wear. Recommendation – Seal cracks in concrete floor.	72	sf	\$ 5.00	\$ 360
		Walls/ Columns	Fair condition. Various areas of wall paint color variation. Recommendation – Repaint walls.	340	sf	\$ 2.00	\$ 680
		Ceiling	Good condition. GWB ceiling has minor staining. Recommendation – Repaint stained GWB. Verify there are no active water leaks.	72	sf	\$ 3.00	\$ 216
		Doors	Fair condition. Dings and marks, basic wear to door. Hinges show significant wear. Closer is missing but hardware on door is still present. Recommendation – Repair and replace door hardware including closer arm.	1	ea	\$ 500.00	\$ 500
		Borrowed Lites	N/A				
		Millwork	N/A				
21.	Mechanical Room 1121						
		Floor	Fair condition.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition. Most portions of ceiling concealed by mechanical piping.				
		Doors	Poor condition. Rated Door has several dings and scrapes. However, could be acceptable for use of the space. Recommendation - Verify rated door is within rated walls as required for use of space.				
		Borrowed Lites	N/A				
		Millwork	N/A				
22.	Humanities 1122						
	Room 1124	Floor	Good condition.				
	Room 1126	Walls/ Columns	Fair condition. Recommendation – Repaint areas where plaques were removed.	1	ls	\$ 500.00	\$ 500
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
23.	Electrical 1123						
		Floor	Poor condition. Exposed cracking and chipping of concrete floor. Recommendation – patch, repair, and seal concrete floor.	143	sf	\$ 5.00	\$ 715
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
24.	Boys/Girls Restroom 1125, Room 1127						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Doors	Good condition. The hardware locking mechanism at entry appears broken. Recommendation – Replace broken mechanism.	2	ea	\$ 1,500.00	\$ 3,000
		Borrowed Lites	N/A				
		Millwork	N/A				
25.	Janitor's Room 1129		Condition suitable for the function of space.				
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
26.	Admin Offices 1201, Room 1203						
		Floor	Poor condition. Recommendation – Replace VCT.	370	sf	\$ 12.00	\$ 4,440
		Walls/ Columns	Good condition.				
		Ceiling	ACT has stains. Recommendation – Replace stained tile. Verify there are no active water leaks. Replace unseated tiles.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition. Shelving along the sides of walls for storage only. Inaccessible but suitable for storage use.				
27.	Admin 1205						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
28.	Boys/Girls Restroom 1207, Room 1211						

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Good condition.				
29.	English 1208, Room 1210						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
30.	Math 1212, 1216, & 1218						
		Floor	Fair condition. Many large scuff marks. Recommendation – Clean.	2347	sf	\$ 0.50	\$ 1,174
		Walls/ Columns	Fair condition. Main walls / whiteboard walls have many scuffs, marks and general wear. Recommend repainting CMU walls.	3470	sf	\$ 2.00	\$ 6,940
		Ceiling	Fair condition. GWB soffits have some scuffs, marks and general wear. Recommend repainting GWB soffits. ACT dropped ceiling clouds are in fair condition. However, they need to be realigned and spaces out evenly with the intended pattern.	2347	sf	\$ 1.25	\$ 2,934
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	N/A				
31.	Art 1213						
		Floor	Fair condition. Lots of large scuff marks.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				

Building #1 Rivendell Academy – East Wing							9/23/2025
Constructed: 2000							
Last Renovated: N/A Stories: 2 above grade Gross Area: 45,778 SF							
Use: School							
		Millwork	N/A				
32.	Rooms 1217, 1219, & 1223		Fair condition. Lots of large scuff marks. Recommend cleaning.	3562	sf	\$ 0.50	\$ 1,781
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	Fair condition – Millwork and counters all rooms generally. 38” height work counters with 34” ADA portion at each space. Poor condition – Approximately 10% of laminate faces of counters peeling off. Recommendation – Repair delaminated portions.	93	sf	\$ 50.00	\$ 4,650
EXTERIOR				EXTERIOR COSTS			\$ 131,600
1.	General: Site elements are not included in the scope of work of this review.						
2.	Walls						
		Foundation	Good condition.				
		Siding	Fair condition. Wood clapboards and trim boards have peeling paint and paint appears faded; most prevalent around entry drop off area. Recommendation – Repair, Prep, and repaint clapboards and trim. Replace clapboards beyond repair. Replace missing shingle siding and repair deteriorated portions of shingle siding and vertical board and batten siding where it meets and shows excessive warping.	22,032	sf	\$ 3.00	\$ 66,096
		Windows / Skylights	Windows - Good condition. Skylights – Poor condition. Roof was not accessible. Deterioration is visible from the ground. Recommendation – Consult a skylight and roofing contractor to determine the probable cause, repair, or replace deteriorated skylights to match existing.				
		Doors	Good condition.				

Building #1 Rivendell Academy – East Wing

9/23/2025

Constructed: 2000

Last Renovated: N/A **Stories:** 2 above grade **Gross Area:** 45,778 SF

Use: School

		Louvers	N/A				
		Soffits	Poor condition. Recommendation – Reseal and stain wood soffits.	2448	sf	\$ 3.00	\$ 7,344
		Fascia	Fascia Poor condition. Discolored and dirty. Recommendation – Clean, repair/replace, repaint.	1632	lf	\$ 5.00	\$ 8,160
3.	Elements [e.g. Columns]	Concrete Pads at Exterior Doors	Concrete foundation in poor condition. Recommendation – Repair cracks, clean misc. paint and seal all concrete pads.	1	ls	\$ 50,000.00	\$ 50,000
4.	Roof	General	Roof not accessible during site visit. Assessment based upon information provided by facilities staff, visual observations from ground level, and data from 2023 FCA.				
			Fair condition. Some discoloration visible around skylights. No signs of active leaks on the building interior.				

SYSTEMS UPGRADES				SYSTEMS UPGRADES COSTS		\$ 4,466,354	
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1.	Mechanical						
			Immediate Projects				
			Replace boilers #1 & #2	1	ls	\$ 160,000.00	\$ 160,000
			Repair heating piping	1	ls	\$ 1,000.00	\$ 1,000
			Repair heating piping	1	ls	\$ 3,000.00	\$ 3,000
			Replace piping insulation	1	ls	\$ 2,500.00	\$ 2,500
			Replace AHUs in gyn and mechanical room	1	ls	\$ 65,000.00	\$ 65,000
			Shorter Term Projects				
			Replace mini ductless splits	4	ea	\$ 10,000.00	\$ 40,000
			Replace window mounted AC units	1	ls	\$ 5,000.00	\$ 5,000
			Install new vertical unit ventilators w/DX cooling in	40	rms	\$ 50,000.00	\$ 2,000,000
2.	Electrical						
			Allow for selective distribution replacement	1	ls	\$ 25,000.00	\$ 25,000
			Mechanical Equipment feed and connections	45,778	gsf	\$ 3.00	\$ 137,334
			Replace all Lighting	45,778	gsf	\$ 7.00	\$ 320,446
			Replace all exit and emergency lighting	45,778	gsf	\$ 1.50	\$ 68,667
			Lighting controls	45,778	gsf	\$ 1.50	\$ 68,667
			Replace receptacles with tamper proof receptacles	45,778	gsf	\$ 0.50	\$ 22,889
			Allow for circuitry to new lighting	45,778	gsf	\$ 1.00	\$ 45,778
			Allow for demolition work	1	ls	\$ 15,000.00	\$ 15,000
3.	Plumbing						
			Equipment				

Building #1 Rivendell Academy – East Wing							9/23/2025
Constructed: 2000							
Last Renovated: N/A Stories: 2 above grade Gross Area: 45,778 SF							
Use: School							
		Domestic water service, meter and BFP	1	ls	\$	15,000.00	\$ 15,000
		Heat pump water heaters & accessories (AO Smith HPTU or	1	ls	\$	45,000.00	\$ 45,000
		Plumbing Fixtures & Specialties					
		Misc. fixtures and specialties	45,778	gsf		6.00	\$ 274,668
		Water Piping					
		Domestic water piping and valves	45,778	gsf		6.00	\$ 274,668
		Sanitary Waste & Vent					
		Waste and vent piping	45,778	gsf		5.50	\$ 251,779
		Storm Drainage					
		Roof drains and stormwater piping	45,778	gsf		3.00	\$ 137,334
		Pipe Insulation					
		Domestic water pipe insulation	45,778	gsf	\$	0.50	\$ 22,889
		Horizontal storm pipe insulation	45,778	gsf	\$	0.10	\$ 4,578
		Miscellaneous					
		Coring, cutting, sleeves & sealing	1	ls	\$	5,000.00	\$ 5,000
		Project management, coordination and job conditions	1	ls	\$	103,100.00	\$ 103,100
		Fees & permits	1	ls			assume waived
4.	Fire Protection						
		Equipment					
		Fire service, BFP and alarm valve	1	ls	\$	15,000.00	\$ 15,000
		Fire pump, jockey pump and accessories - not included					NIC
		Sprinkler Heads & Piping					
		Sprinkler heads and distribution piping	45,778	gsf	\$	6.50	\$ 297,557
		Miscellaneous					
		Hydraulic calculations	1	ls	\$	2,000.00	\$ 2,000
		Coring, cutting, sleeves & sealing	1	ls	\$	2,000.00	\$ 2,000
		Hydraulic lifts/rigging	1	ls	\$	3,500.00	\$ 3,500
		Project management, coordination and job conditions	1	ls	\$	32,000.00	\$ 32,000
		Fees & permits					assume waived
Additional Notes / Photos							
View of South Facade							
View of West Façade from courtyard							
View of Northeast corner							
View of East Façade entry							
View of South Façade second floor							

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Use: School

1.	Foundation	Original & Addition: Concrete				
2.	Superstructure	Original & Addition: Primary: Conventional wood frame structure Secondary: Structural steel frame & metal studs				
3.	Exterior Walls	Primary: Wood clapboards Secondary: Wood shakes & vertical ribbed panels				
4.	Roof	Low Slope Roof: Single-ply membrane Pitched Roof: Asphalt shingles				

1.	Occupancy	NFPA Educational, IBC Group E				
2.	Construction Type	Original: NFPA Type V, IBC Type V Addition: NFPA Type V, IBC Type V				
3.	Sprinklers	Yes				
4.	Fire Alarm	Yes				

LIFE SAFETY	LIFE SAFETY COSTS	\$	53,600
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1.	Exits			QTY	UNIT	UNIT RATE	SUBTOTAL
		Discharge to Public Way	Yes				
		Number	In compliance. Summary: Level 1 has 8 exits from common areas, 6 exterior exits from program rooms, and 3 exterior exits from utility spaces. Specific detail for assembly spaces: - Multi-Purpose Room 2131 has 2 exterior exits & 1 exit to corridor. - Gymnasium 2119 has 3 exits to corridors. Second exit from basement is bulkhead as existing condition.				
		Egress Width	In compliance.				
		Separation Distance	In compliance.				
		Travel Distance	In compliance.				
		Signage	Signage does not meet code / regulation requirements. Recommendation – Install compliant signage.	w/ Accessibility			
		Hardware	In compliance except the following: North Corridor door and South Corridor door to Connector have lever sets. Recommendation – Install panic devices. Mechanical Room 2129 exterior door has knob. Recommendation – Install panic device.	3	ea	\$ 1,500.00	\$ 4,500
2.	Stairs		Normally unoccupied space directly off stair is not allowed by code. Recommendation - Existing condition so modifications to bring into conformance are not necessary until other modifications are made in this area. Consult AHJ.				
		Rise/Run	Rise exceeds maximum height. Recommendation – Existing condition so modifications to bring into conformance are not necessary until other modifications are made in this area.	1	ls	\$ 10,000.00	\$ 10,000

Building #2: Rivendell Academy – West Wing							9/23/2025
Constructed: 1957 original building, c.1990 south addition							
Last Renovated: C.1990 major renovation of original building; numerous minor renovations							
Stories: 1 above grade, partial mechanical basement							
Gross Area: 29,469 SF							
Use: School							
			necessary until other modifications are made in this area.				
		Width	Does not meet minimum width for existing stairs. Recommendation – Existing condition so modifications to bring into conformance are not necessary until other modifications are made in this area.	1	ls	\$ 10,000.00	\$ 10,000
		Rated Enclosure	Stair/Exit corridor bottom level has unprotected openings, door to 2101 Fitness Center has louver. Recommendation – Install fire rated doors and frames.	2	ea	\$ 5,000.00	\$ 10,000
		Rated Enclosure	Stair 2105 door to Storage has push/pull. Recommendation – Install latch/leverset and automatic closer.	1	ea	\$ 1,500.00	\$ 1,500
		Handrail	There is no handrail on the wall side of the stair. Recommendation – Install code compliant handrail.	15	lf	\$ 200.00	\$ 3,000
		Guardrail	Guardrail does not meet height requirements. Recommendation – Install code compliant guardrail.	15	lf	\$ 300.00	\$ 4,500
3.	Rated Rooms		Electrical Room 2122 is not fire rated. Recommendation – Create new 1-hour fire rated enclosure included door and frame.	1	ls	\$ 10,000.00	\$ 10,000
4.	Fire Extinguishers		Yes. Facilities Shop 2104 fire extinguisher mounted higher than ADA maximum. Recommendation – Mount fire extinguisher at required height.	1	ea	\$ 100.00	\$ 100
ACCESSIBILITY				ACCESIBILITY COSTS			\$ 307,319
Note that some room specific comments are located within the notes for that room.							
1.	Main Entrance or Alternate Entrance						
			Main entrance is intended to be accessible; concrete pad lip exceeds allowable maximum height. Most exits do not meet ADA requirements. Recommendation – Raise adjacent grade or grind down edge of slab to meet requirements. Modify exits as required to meet minimum number of required ADA exits.	6	ea	\$ 200.00	\$ 1,200
2.	Door Dimensions						
		Clear Width & Height	In compliance.				

Building #2: Rivendell Academy – West Wing Constructed: 1957 original building, c.1990 south addition Last Renovated: C.1990 major renovation of original building; numerous minor renovations Stories: 1 above grade, partial mechanical basement Gross Area: 29,469 SF Use: School							9/23/2025
		Push/Pull	The following doors are not in compliance: Stair 2105 door to Gym 2119 lacks pull distance. Stair 2105 door to exterior lacks push distance. Boys Bathroom 2110 lacks pull distance. Classroom 2142 entry door lacks push and pull distance. Classroom 2154 entry door lacks push distance. Classroom 2162 entry door lacks push distance. Recommendation – Install automatic door operators or reconfigure rooms.	6	ea	\$ 5,000.00	\$ 30,000
		Threshold	In Compliance.				
		Leverset/height	The following doors have knobs: Weight Room 2101 door to Corridor 2105. Shop entry 2104. Restroom corridor 2109.1. Restroom 2109.2. Storage 2111. Janitor's Closet between 2113 and 2115. Electrical Room 2122. Janitor's closet 2124. Janitor's Closet 2135. 2148 entry door and shared door to 2150. Multi-Purpose 2131 closet. Mechanical Room 2129 entry. Nurse 2140 entry door. Nurse's 2142 Office door. Bathroom 2160. Recommendation – Install leverset except door to Electrical Room 2122 to receive panic device.	1	ea	\$ 1,500.00	\$ 1,500
			The following doors have no handle: Patient Room 2143. Storage 2144. Recommendation – Provide push/pull hardware if leverset with latch is not desired.	2	ea	\$ 1,000.00	\$ 2,000
		Distance Between Sequential	In Compliance.				
3.	Accessible Route						
		Path to Public Areas/ Elevator	In Compliance.				
		Minimum Width	In Compliance.				
		Protruding Objects greater than allowed 4"	AED is in surface mounted cabinet. Recommendation – Install AED in semi-recessed AED cabinet.	1	ls	\$ 650.00	\$ 650
			Multi-Purpose 2131 has surface mounted fire extinguisher. Recommendation – Reinstall fire extinguisher in semi-recessed cabinet.	1	ls	\$ 500.00	\$ 500
			South corridor bench and drinking fountain. Recommendation – Install cane rail or end panel at bench	1	lf	\$ 500.00	\$ 500

Building #2: Rivendell Academy – West Wing Constructed: 1957 original building, c.1990 south addition Last Renovated: C.1990 major renovation of original building; numerous minor renovations Stories: 1 above grade, partial mechanical basement Gross Area: 29,469 SF Use: School							9/23/2025
			South corridor bench and drinking fountain. Recommendation – install ADA compliant drinking fountain.	1	ls	\$ 3,500.00	\$ 3,500
		Ramp Dimensions [landings 60"]	2123 ramp exceeds allowable slope, does not meet required width for push side clearance at door.				
			Recommendation – Options include: Removing raised stage floor, increasing length and width of ramp, installing stairs and lift.	1	ls	\$ 15,000.00	\$ 15,000
		Ramp Curb or 12" Beyond Rail	N/A				
		Handrail Dimensions	2123 ramp lacks handrails. Recommendation – Install handrails in new ramp configuration if ramp is to be retained.	1	ls		alt. option
4.	Elevators		N/A				
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage including braille.	29,469	gsf	\$ 1.00	\$ 29,469
6.	Transaction Counters		N/A				
7.	Toilet Rooms						
		At Least 1 Accessible	Bathroom in Nurse 2140 is only ADA compliant bathroom.				
		Signage to locate	Not in compliance. Recommendation – Install compliant signage.	w/ signage work above			

Building #2: Rivendell Academy – West Wing

9/23/2025

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		Fixture Dimensions	Restroom 2109.2 does not meet ADA requirements. Recommendation – To meet ADA requirements room must be enlarged and reconfigured. Boys Bathroom 2120 no ADA toilet stall, sinks do not have required clear width, sinks lack drain pipe insulation, accessory locations do not meet ADA Recommendation – Enlarge bathroom to achieve ADA toilet stall, and sink clear width. Install pipe insulation. Girls Bathroom 2112 no ADA toilet stall, sinks do not have required clear width, sinks lack drain pipe insulation. Recommendation – Reconfigure to achieve ADA toilet stall and sink clear width, install pipe insulation. Boys Bathroom 2133 & Girls Bathroom 2137 bottom of mirror exceeds maximum height, rim of sink exceeds maximum height, width of ADA stall does not meet minimum width. Recommendation – Remount mirrors and sinks at appropriate height, enlarge ADA stall. Restroom 2158 Staff Restroom does not meet minimum ADA requirements for clearance space between toilet and sink, toilet distance off of side wall, and rear grab bar is missing. Recommendation – To meet ADA requirements room must be enlarged. Toilet Room 2160 does not meet ADA requirements. Recommendation – To meet ADA requirements room must be enlarged and reconfigured.				
		Fixture Dimensions	To meet ADA requirements room must be enlarged and reconfigured. @ Restroom 2109.2	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	Enlarge bathroom to achieve ADA toilet stall, and sink clear width. Install pipe insulation. @ Boys Bathroom 2120	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	Reconfigure to achieve ADA toilet stall and sink clear width, install pipe insulation. @ Girls Bathroom 2112	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	Remount mirrors and sinks at appropriate height, enlarge ADA stall. @ Boys Bathroom 2133	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	Remount mirrors and sinks at appropriate height, enlarge ADA stall. @ Girls Bathroom 2137	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	To meet ADA requirements room must be enlarged and reconfigured. @ Staff Restroom 2158	1	ea	\$ 30,000.00	\$ 30,000
		Fixture Dimensions	To meet ADA requirements room must be enlarged and reconfigured. @ Toilet Room 2160	1	ea	\$ 30,000.00	\$ 30,000
8.	Drinking Fountains						
		Drinking Fountains	North and south corridor drinking fountains are not high-low fountains. Recommendation – Replace fountains with High- Low model that meets ADA requirements.	2	ea	\$ 6,500.00	\$ 13,000

Building #2: Rivendell Academy – West Wing

9/23/2025

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INTERIOR				INTERIOR COSTS			\$ 554,629
1.	General: Room numbers are per the numbering system within the building.						
2.	North Corridor						
		Floor	Fair condition; scrapes, scuffs, and some joint gaps. VCT tile near drinking fountain damaged.	1	loc	\$ 500.00	\$ 500
		Walls/ Columns	Fair condition panelized system.				
		Ceiling	Fair condition.				
		Doors	Good condition – North aluminum entry door pair; weather stripping worn.				
			Good condition – West aluminum entry door pair.				
		Borrowed Lites	N/A				
		Millwork	Fair condition – Chair rail.				
3.	North Corridor – West						
		Floor	Good condition. Half of the floor is covered by walk-off carpet and is not able to be				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Good condition. Aluminum doors are slightly out of alignment and there are gaps at weatherstripping. Recommendation – Align doors, install new weatherstripping.	1	ls	\$ 1,200.00	\$ 1,200
		Borrowed Lites	N/A				
		Millwork	Fair condition – Chair rail.				
4.	North Corridor – South						
		Floor	Good condition.				
		Walls/ Columns	Good condition. External corners chipped/damaged. Recommendation – Install corner guards.	4	ea	\$ 150.00	\$ 600
		Ceiling	Fair condition. Several ACT tiles damaged. Recommendation – Replace damaged tiles.	1	loc	\$ 100.00	\$ 100
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	Fair condition – Chair rail.				
5.	Northeast Corridor						
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Recommendation – Replace wood trim at opening to North Corridor.	1	ls	\$ 3,500.00	\$ 3,500
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Wooden storage cabinets have been added to north wall. Recommendation – Confirm with AHJ that combustible storage cabinets are acceptable in exit access corridor.				
6.	South Corridor						
		Floor – North End	Poor condition. Cracks and differential settlement in VCT along assumed slab joint lines, scrapes, gouges, discoloring. Recommendation – Install new flooring after flashing concrete slab.	120	sf	\$ 20.00	\$ 2,400

Building #2: Rivendell Academy – West Wing

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		Floor – South End	Poor condition. Bubbling under VCT, edge of flooring at exterior door threshold chipped. Recommendation – Replace flooring.	996	sf	\$ 12.00	\$ 11,952
		Walls/ Columns – North End	Poor condition. External corners damaged, wall base damaged, paint scraped / missing.	11	ea	\$ 200.00	\$ 2,200
		Walls/ Columns – South End	Fair condition. Some damage at external corners, dings and scratches.				
			Recommendation – Patch and repaint walls.	2580	sf	\$ 13.00	\$ 33,540
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition.				
7.	East Corridor						
		Floor	Good condition. Rough edge at exterior door threshold. Recommendation – Intsall wider threshold.	1	ea	\$ 300.00	\$ 300
		Walls/ Columns	Fair condition – Dings and cracks, wall base poor, exterior windows stuck shut. Recommendation – Repair damage and replace wall base.	112	lf	\$ 5.00	\$ 560
		Ceiling	Fair condition.				
		Doors	Fair condition overall – exterior door. No bottom seals, threshold poor, hardware poor. Recommendation – Install new weatherstripping, threshold, and hardware.	1	ls	\$ 1,500.00	\$ 1,500
		Borrowed Lites	Good condition.				
		Millwork	N/A				
8.	Fitness Center 2101						
		Floor	Good condition.				
		Walls/ Columns	Poor condition. Multiple areas of damage. Recommendation – Fixed damaged areas and repaint.	1160	sf	\$ 2.00	\$ 2,320
		Ceiling	Poor condition. Bulkhead and numerous ceiling tiles damaged. Recommendation – Repair bulkhead and replace damaged 2x4 ACT.	1	ls	\$ 5,000.00	\$ 5,000
		Doors	Poor condition.				
		Borrowed Lites	Painted over (see Doors).	2	ea	\$ 120.00	\$ 240
		Millwork	N/A				
9.	Operations Entry						
		Floor	Obscured by walk-off carpet.				
		Walls/ Columns	Fair condition; wall base missing. Recommendation – Install wall base.	1	ls	\$ 300.00	\$ 300
		Ceiling	Fair condition.				
		Doors	Fair condition; many chips and scratches. Recommendation – Refinish door.	1	ls	\$ 150.00	\$ 150
		Borrowed Lites	N/A				
		Millwork	N/A				
10.	Operations Office						
		Floor	Fair condition, joint separation north end of room. Recommendation – Seal joint.	1	ls	\$ 100.00	\$ 100

Building #2: Rivendell Academy – West Wing

9/23/2025

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		Walls/ Columns	Fair condition, some damage at east wall. Recommendation – Repair and repaint damaged areas.	1	rm	\$ 1,200.00	\$ 1,200
		Ceiling	Fair condition.				
		Doors	Poor condition.				
			Recommendation – Replace door and frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	Wall mounted adjustable shelves protrude beyond 4". Recommendation – Remove shelves or move piece of furniture below shelving as cane detection.	1	ls	\$ 200.00	\$ 200
11.	Kitchen Storage 2103		Many surfaces covered by furniture. Notes reflect only areas that are observable.				
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Exposed structure.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
12.	Facilities Shop 2104		Many surfaces covered by tools, equipment, work surfaces, and materials. Notes				
		Floor	Fair condition. Concrete has crack near sink. Painted finish has worn off. Recommendation – Repair crack and recoat surface.	1	ls	\$ 10,000.00	\$ 10,000
		Walls/ Columns	Fair condition for shop space; walls have dings, dents, scrapes.				
		Ceiling	Fair condition for shop space.				
		Doors	Interior door fair condition for shop space. Door lacks ADA pull clearance due to stored material. Wall closure around door frame is incomplete. Recommendation – Replace door frame trim, relocate stored material to achieve pull clearance.	1	ea	\$ 3,500.00	\$ 3,500
			Exterior door poor condition with rust, dents, scrapes. Recommendation – Replace door and frame. Overhead door poor condition.	1	ea	\$ 5,000.00	\$ 5,000
			Overhead door poor condition. Recommendation – Replace overhead door.	1	ea	\$ 10,000.00	\$ 10,000
		Borrowed Lites	N/A				
		Millwork	Fair condition for shop space.				
13.	Kitchen Storage 2105		Not assessed – unable to access area.				
14.	Stair / Exit Corridor		This space appears to have numerous life safety code deficiencies. Any work in this area should be coordinated with the AHJ.				
		Floor	Poor condition. Concrete is unfinished and has cracks. Recommendation – Seal cracks and install flooring.	114	sf	\$ 12.00	\$ 1,368
		Walls/ Columns	Poor condition. Walls have numerous unfinished patches, wall base missing. Recommendation – Repair and repaint wall, install wall base.	1	ls	\$ 2,464.00	\$ 2,464
		Ceiling	Exposed structure.				
		Doors	Poor condition. Recommendation – Replace door and frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
15.	Room 2106		Note that material is stacked below electrical panels and should be removed.				

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		Floor	Poor condition. Concrete floor has cracks and finish has worn off. Recommendation – Repair cracks and repaint.	635	sf	\$ 5.00	\$ 3,175
		Walls/ Columns	Good condition. Most of wall surfaces are covered and cannot be fully assessed.				
		Ceiling	Fair condition. Some tiles need to be replaced. Recommendation – Replace several 2x4 ACT tiles.	1	loc	\$ 200.00	\$ 200
		Doors	Fair condition. Recommendation – Repaint.	1	ea	\$ 200.00	\$ 200
		Borrowed Lites	N/A				
		Millwork	N/A				
16.	Kitchen 2107						
		Floor	VCT fair condition. For sanitary purposes floor should have no/seamless joints, integral wall base, and floor drain. Recommendation – If kitchen is used for commercial food preparation, upgrade flooring to high-traffic seamless with integral base and install floor drain with slope to drain.	250	sf	\$ 25.00	\$ 6,250
		Walls/ Columns	Fair condition with some damage. Recommendation – Repair and paint damaged areas.	670	sf	\$ 2.00	\$ 1,340
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition. Counter height not in compliance with ADA standards, sink drain lacks ADA required insulation. Recommendation – Install ADA compliant sink/counter with drain insulation.	48	lf	\$ 250.00	\$ 12,000
17.	Classroom 2108						
		Floor	Fair condition. Numerous scuffs and scrapes, areas of discoloration. Recommendation – Replace VCT.	881	sf	\$ 12.00	\$ 10,572
		Walls/ Columns	Fair condition. Recommendation – Repaint wall panels with paint spatter.	1220	sf	\$ 3.00	\$ 3,660
		Ceiling	Poor condition. 2x4 ACT bowed and stained. Recommendation – Replace ACT.	865	sf	\$ 8.00	\$ 6,920
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Poor condition. Sink not ADA compliant. Recommendation – Replace millwork, provide ADA compliant sink.	60	lf	\$ 500.00	\$ 30,000
18.	Access Corridor to						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Poor condition. Recommendation – Replace door and frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
19.	Toilet Room 2109						

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		Floor	Poor condition. Bare concrete. Recommendation – Install flooring.	55	sf	\$ 30.00	\$ 1,650
		Walls/ Columns	Poor condition. No wall base, dings and dents. Recommendation – Patch and paint walls, install wall base.	1	ls	\$ 1,728.00	\$ 1,728
		Ceiling	Good condition.				
		Doors	Poor condition. Metal door has holes, damaged edges. Recommendation – Replace	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
20.	Boys Bathroom 2110						
		Floor	Poor condition. Recommendation – Replace flooring.	134	sf	\$ 12.00	\$ 1,608
		Walls/ Columns	Poor condition. Panelized walls with cracks and large chips, wall base has much damage.	1	ls	\$ 2,500.00	\$ 2,500
		Ceiling	Fair condition.				
		Doors	Poor condition. Recommendation – Replace door and frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
21.	Storage 2111						
		Floor	Poor. Most of floor is concrete slab with perimeter rough cut topping material. Recommendation – Prep floor and install new flooring.	100	sf	\$ 12.00	\$ 1,200
		Walls/ Columns	Obscured so not able to be assessed.				
		Ceiling	Fair – Stained 2x4 ACT tiles. Recommendation – Replace stained tiles.	1	loc	\$ 200.00	\$ 200
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	N/A				
22.	Girls Bathroom 2112						
		Floor	Poor condition. Cracks at doorway, bubbling around partition feet. Recommendation – Repair/replace flooring.	100	sf	\$ 3.00	\$ 300
		Walls/ Columns	Fair condition. Poor patch panel on west wall. Recommendation – Remove patch and repair wall.	120	sf	\$ 3.00	\$ 360
		Ceiling	Good condition.				
		Doors	Poor condition. Recommendation – Replace door.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
23.	Former Boys Locker						
		Floor	Poor condition overall. Painted concrete has slopes from previous floor drains, patches from removed walls, and chips / scrapes. Toilet stall has new flooring in good condition.	100	sf	\$ 10.00	\$ 1,000
		Walls/ Columns	Fair condition. Poorly plugged holes at former location of shower heads. Recommendation – Replace CMU units at plugged holes.	1	ls	\$ 3,500.00	\$ 3,500
		Ceiling	Fair condition.				
		Door	N/A				
		Borrowed Lites	Fair condition.				

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		Millwork	Good condition.				
24.	Room 2114						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Fair condition. A few chipped/cracked ceiling tiles. Recommendation – Replace damaged 2x4 ACT tiles.	1	ls	\$ 1,200.00	\$ 1,200
		Door	Good condition. Interior door scraped, paint worn. Recommendation – Repaint interior door.	1	loc	\$ 150.00	\$ 150
		Borrowed Lites	Good condition.				
		Millwork	N/A				
25.	Former Girls Locker						
		Floor	Fair condition. Unpainted concrete, slopes to drain in two locations with loose flooring used to cover one location. Recommendation – If floors are intended for everyday use, remove drains, flash concrete, install new flooring.	200	sf	\$ 20.00	\$ 4,000
		Walls/ Columns	Fair condition. Poorly plugged holes at former location of shower heads, damage from entry door handle, damaged CMU at entry half wall. Recommendation – Replace CMU units at plugged holes, repair GWB behind entry door & install door stop, repair damaged CMU at half wall.	1	loc	\$ 2,500.00	\$ 2,500
		Ceiling	Fair condition				
		Doors	Poor condition. Recommendation – Replace door and frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	Fair condition. Recommendation – Repaint underside of sill.	1	ls	\$ 1,500.00	\$ 1,500
		Millwork	N/A				
26.	2116						
		Floor	Poor condition. Portion of floor discolored and scraped. Recommendation – Replace VCT flooring.	420	sf	\$ 12.00	\$ 5,040
		Walls/ Columns	Poor condition.				
		Ceiling	Poor condition.				
			Recommendation – Replace 2x4 ACT tiles.	420	sf	\$ 10.00	\$ 4,200
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
27.	Former Coach Office						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	N/A				
		Borrowed Lites	N/A				
		Millwork	N/A				
28.	Office 2118						

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Floor	Poor condition. Area near desk worn and joints of adjacent VCT tile discolored. Recommendation – Replace VCT tile.	115	sf	\$ 12.00	\$ 1,380
		Walls/ Columns	Good condition. Finned tube convactor missing end panel. Recommendation – Replace end panel.	1	ea	\$ 500.00	\$ 500
		Ceiling	Fair condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	N/A				
29.	Gymnasium 2119						
		Floor	Good condition.				
		Walls/ Columns	Good condition. Some minor damage. Recommendation – Minor repair and touch up painting.	5580	sf	\$ 1.00	\$ 5,580
		Ceiling	Exposed structure.				
		Doors	Fair condition. Some dings and scratches, missing parts on surface rods to east double doors. Recommendation – Repair and repaint doors and frames, repair surface rods.	9	leaves	\$ 200.00	\$ 1,800
		Borrowed Lites	N/A				
		Millwork	N/A				
30.	Mechanical Room 2120		Entire room is in poor condition. Recommendation – Renovate entire room. Room to have fire rating.	138	sf	\$ 100.00	\$ 13,800
31.	Gym Storage 2121						
		Floor	Poor condition. Recommendation – Repaint concrete.	224	sf	\$ 5.00	\$ 1,120
		Walls/ Columns	Fair condition. Large portion of wall surface obscured by storage shelving and is not able to be assessed.				
		Ceiling	Fair condition. GWB scraped at center of room. Recommendation – Patch and paint.	650	sf	\$ 2.00	\$ 1,300
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
32.	Electrical Room 2122						
		Floor	Fair condition. Painted finish worn off concrete. Recommendation – Repaint floor.	55	sf	\$ 3.00	\$ 165
		Walls/ Columns	Fair condition.				
		Ceiling	Poor condition. Utility room so not critical.				
		Doors	Fair condition. Some damage at bottom of metal door. Recommendation – Repair damage, repaint door.	1	ea	\$ 150.00	\$ 150
		Borrowed Lites	N/A				
		Millwork	N/A				
33.	Room 2123.1						
		Floor	Good condition – Carpet at ramp.				

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition. Some sag in 2x4 ACT.				
		Doors	Good condition – Interior door.				
		Borrowed Lites	N/A				
		Millwork	N/A				
34.	Janitor's Closet 2124						
		Floor	Fair condition. Most of floor is covered by walk-off mat and cannot be fully assessed. Visible portions are concrete that is sound, painted finish worn off. Recommendation – Repaint floor.	55	sf	\$ 5.00	\$ 275
		Walls/ Columns	Fair condition for visible portions of wall surfaces.				
		Ceiling	Poor condition. ACT damaged. Utility space so not critical.	1	loc	\$ 200.00	\$ 200
		Doors	Fair condition. Door edge scraped. Recommendation – Repaint door edge.	1	ea	\$ 100.00	\$ 100
		Borrowed Lites	N/A				
		Millwork	N/A				
35.	Classroom 2125						
		Floor	Fair condition. Some carpet stains and runs. Recommendation – Clean carpet.	926	sf	\$ 2.00	\$ 1,852
		Walls/ Columns	Good condition. Some dings and scrapes on blue wall. Surface mounted fire extinguisher exceeds ADA maximum allowed projection. Recommendation – Touch up damage and repaint blue wall. Place fire extinguisher out of path of travel or mount in semi-recessed cabinet.	1	ea	\$ 1,000.00	\$ 1,000
		Ceiling	Good condition.				
		Doors	Fair condition. Paint scrapes on door and frame. Recommendation – Repaint door and frame.	1	ea	\$ 150.00	\$ 150
		Borrowed Lites	N/A				
		Millwork	Fair condition. Door and drawer faces have dents, scrapes, door misalign.	1	ls	\$ 1,500.00	\$ 1,500
36.	Storage 2126						
		Floor	Fair condition. Most of floor is covered by furniture and material so not fully assessed.				
		Walls/ Columns	Fair condition. Most walls are covered by furniture and material so not fully assessed. Visible portion shows some damage. Recommendation – Repair, repaint damaged areas.	300	sf	\$ 2.00	\$ 600
		Ceiling	Fair condition. Two ACT tiles appear to be too short. Recommendation – Replace short ACT tiles.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
37.	Classroom 2127						
		Floor	Fair condition.				
		Walls/ Columns	xxx. Window sills paint peeling.	4	loc	\$ 300.00	\$ 1,200
		Ceiling	Fair condition.				
		Doors	Fair condition – Interior door. Scrapes and missing paint.	1	ea	\$ 150.00	\$ 150
		Borrowed Lites	N/A				

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Millwork	Fair condition.				
38.	District Office 2128, 2134						
		Floor	Fair condition. Numerous scrapes.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition. Some chips and scrapes on exterior of 2134, damaged threshold to storage room. Recommendation – Repaint exterior face of door 2134, replace threshold to storage room.	1	ea	\$ 1,500.00	\$ 1,500
		Borrowed Lites	N/A				
		Millwork	N/A				
39.	Storage for District						
		Floor	Fair condition. Sealed concrete floor. Damaged threshold.	1	ea	\$ 200.00	\$ 200
		Walls/ Columns	Fair condition. Large portion of wall surface obscured by storage shelving and is not able to be assessed.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Good condition. Exceeds maximum ADA counter height, sink is not accessible, path				
40.	Connector						
		Floor	Good condition. Most of the floor is covered by walk-off carpet and is not fully				
		Walls/ Columns	Good condition. Window sills have chips, finned tube convactor has scrapes.				
		Ceiling	Good condition.				
		Doors	Good condition – North door and exterior door. Poor condition – South door.				
		Borrowed Lites	Fair condition – South door sidelite, see door notes above.				
		Millwork	Fair condition – Chair rail.				
41.	Mechanical Room						
		Floor	Fair condition. Unsealed concrete. Recommendation – Seal concrete.	138	sf	\$ 4.00	\$ 552
		Walls/ Columns	Wall surface obscured by equipment and is not able to be assessed.				
		Ceiling	Ceiling obscured by equipment and is not able to be assessed.				
		Doors	Fair condition – Interior door. Frame rusted at bottom. Poor condition – Exterior door. Recommendation – Patch and repaint interior door frame, replace exterior door.	1	ls	\$ 4,000.00	\$ 4,000
		Borrowed Lites	N/A				
		Millwork	N/A				
42.	Offices 2130, 2032, 2036, 2038						
		Floor	Fair condition. 2130 has wear pattern at desk. 2132 has mismatched VCT and wear pattern at desk. Recommendation – Replace worn and mismatched VCT, may require replacement of all VCT in room if product no longer available.	423	sf	\$ 12.00	\$ 5,076

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Walls/ Columns	Good condition.				
		Ceiling	Fair condition. 2136 has unseated ACT and debris on grid. Recommendation – Reseat tiles and remove debris.	107	sf	\$ 4.00	\$ 428
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
43.	Multi-Purpose 2131						
		Floor	Fair condition. Some discoloration, surface finish scrapes, chips.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	Good condition – Interior door entry door, closet doors. Fair condition – South door. Scrapes. Poor condition – North door. Bottom of door rusted. Recommendation – Paint south door, replace north door.	1	ls	\$ 4,000.00	\$ 4,000
		Borrowed Lites	Good condition. Sidelites at entry door have glazing painted over.				
		Millwork	Fair condition.				
44.	Boys Bathroom 2133						
		Floor	Fair condition. Some wear, some staining at perimeter.				
		Walls/ Columns	Fair condition. Boys 2133 unusual joint line at shared wall with JC 2135.				
		Ceiling	Poor condition. Chipped, cut, stained 2x4 ACT. Chipped, stained grid. Recommendation – Replace ACT and grid.	1	loc	\$ 200.00	\$ 200
		Doors	Poor condition. Wear patterns, scratches, discoloration. Recommendation – Replace doors.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
45.	Janitor's Closet 2135						
		Floor	Very poor condition. Portion of VCT missing, remaining VCT is damaged.	53	sf	\$ 12.00	\$ 636
		Walls/ Columns	Poor condition. Utility space so may be acceptable.				
		Ceiling	Poor condition. Most 2x4 ACT are stained. Utility space so may be acceptable until scheduled replacement.	53	sf	\$ 10.00	\$ 530
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
46.	Classrooms 2139, 2141, 2143, 2154, 2156, 2162						
		Floor	Fair condition. Polished concrete worn, scratched, but is sound.				

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

			Poor condition – VCT Room 2162. Worn, scraped, rough edge at joint with polished concrete. Recommendation – Refinish concrete, replace VCT.	977	sf	\$ 12.00	\$ 11,724
		Walls/ Columns	Fair condition. Dings, scratches, scuffs. Windows difficult to open. Shades in poor condition. Recommendation – Patch and paint walls, determine if window operation can be improved, replace shades.				
		Ceiling	Poor condition. 2x4 ACT chips, stains. Recommendation – Replace ACT and grid.	5589	sf	\$ 10.00	\$ 55,890
		Doors	Poor condition – Entry doors. Worn finishes, chips, scrapes, loose hardware. Recommendation – Replace doors and hardware.	6	ea	\$ 3,500.00	\$ 21,000
		Borrowed Lites	N/A				
		Millwork	Poor condition. Worn finishes, counter and sink not ADA accessible. Recommendation – Replace millwork.	192	lf	\$ 800.00	\$ 153,600
47.	Nurse 2140						
		Floor	Good condition. Some scrapes.				
		Walls/ Columns	Good condition. Large portion of wall surface obscured by furniture/stored material				
		Ceiling	Good condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Obscured by material, not able to be assessed.				
48.	Bathroom in Nurse						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
49.	Storage Room in Nurse 2140						
		Floor	Fair condition. Wear pattern in VCT.				
		Walls/ Columns	Good condition. Large portion of wall surface obscured and is not fully assessed.				
		Ceiling	Fair condition.				
		Doors	Fair condition. Operable hardware missing. Recommendation – Install latching leverset or push/pull.	1	ea	\$ 1,200.00	\$ 1,200
		Borrowed Lites	N/A				
		Millwork	N/A				
50.	Nurse Office 2142						
		Floor	Fair condition. Wear pattern in VCT.				
		Walls/ Columns	Good condition. Large portion of wall surface obscured and is not fully assessed.				
		Ceiling	Good condition.				

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Doors	Poor condition. Large portion of door surface obscured and is not fully assessed. Frame has chips and screw holes. Recommendation – Replace door, fill and repaint frame.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
51.	Patient Room 2144						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition. Operable hardware missing. Recommendation – Install latching lever set or push/pull.	1	ea	\$ 1,200.00	\$ 1,200
		Borrowed Lites	N/A				
		Millwork	N/A				
52.	Public Entry –						
		Floor	Good condition – Vestibule.				
		Walls/ Columns	Good condition – Vestibule. Some paint discoloration and chips at “wainscot”, unknown device on south wall. Fair condition – Lobby. Recommendation – Repaint discolored areas, properly conceal device on south wall.	1	ls	\$ 2,000.00	\$ 2,000
		Ceiling	Good condition – Vestibule. Fair condition – Lobby.				
		Doors	Good condition. Aluminum entry doors weatherstripping has gaps. Recommendation – Replace weatherstripping.	1	ls	\$ 1,500.00	\$ 1,500
		Borrowed Lites	Good condition – door sidelites.				
		Millwork	Fair condition – wood wainscot.				
53.	Counseling 2146,						
	2148, Office						
	2150						
		Floor	Fair condition. Some wear patterns in VCT.				
		Walls/ Columns	Fair condition. Some dings and chips, Office 2148 external corner chipped. Recommendation – Repaint Office 2148 corner.	540	sf	\$ 2.00	\$ 1,080
		Ceiling	Fair condition. Some stained, chipped, cracked 2x4 ACT. Recommendation – Replace damaged ACT.	480	sf	\$ 10.00	\$ 4,800
		Doors	Fair condition. Office 2148 entry door operating hardware does not conceal holes for previous hardware. Office 2150 entry door lite frame and bottom of door frame have rust. Recommendation – Replace knobs with levers having rosette sized to conceal holes if door is not replaced. Prep and paint rusted elements.	3	ea	\$ 1,200.00	\$ 3,600
		Borrowed Lites	Good condition.				
		Millwork	N/A				
54.	Computer Room 2152						

Building #2: Rivendell Academy – West Wing							
Constructed: 1957 original building, c.1990 south addition							
Last Renovated: C.1990 major renovation of original building; numerous minor renovations							
Stories: 1 above grade, partial mechanical basement							
Gross Area: 29,469 SF							
Use: School							
		Floor	Poor condition. Random sizes of sheet flooring loose laid on VCT. Recommendation – Install static dissipative flooring.	86	sf	\$ 12.00	\$ 1,032
		Walls/ Columns	Poor condition. Wall base is missing. Large portion of wall surface obscured by furniture/equipment and is not fully assessed. Recommendation – Patch and repaint, install wall base.	370	sf	\$ 2.00	\$ 740
		Ceiling	Poor condition. Ripped, cracked, chipped 2x4 ACT. Recommendation – Replace ACT.	86	sf	\$ 10.00	\$ 860
		Doors	Fair condition. Outside face has discoloration at bottom of door, bottom of frame chipped and scraped. Recommendation – Install kickplate on push side of door, prep and paint frame.	1	ea	\$ 1,200.00	\$ 1,200
		Borrowed Lites	N/A				
		Millwork	Fair condition.				
55.	Staff Toilet 2158						
		Floor	Poor condition. Recommendation – Replace VCT.	36	sf	\$ 12.00	\$ 432
		Walls/ Columns	Fair condition. Blemish and holes near sink. Recommendation – Patch and paint wall adjacent to sink.	240	sf	\$ 2.00	\$ 480
		Ceiling	Good condition.				
		Doors	Fair condition – Entry door. Poor condition – Side door. Water stains on classroom side, holes around leverset. Recommendation – Replace side door or infill opening if door not used.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
56.	Toilet Room 2160						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
EXTERIOR				EXTERIOR COSTS			\$ 672,040
1.	General: Site elements are not included in the scope of work of this review.						
2.	Walls						
		Foundation	Fair condition. Southern portion of building foundation insulation cover has broken / bowed sections. Recommendation – Repair / replace damaged areas. Allow 10%	500	sf	\$ 10.00	\$ 5,000

Building #2: Rivendell Academy – West Wing								9/23/2025
Constructed: 1957 original building, c.1990 south addition								
Last Renovated: C.1990 major renovation of original building; numerous minor renovations								
Stories: 1 above grade, partial mechanical basement								
Gross Area: 29,469 SF								
Use: School								
		Siding	Poor condition – Southern portion. Wood clapboards have numerous areas of rot. Trim boards under exterior doors have areas of rot. Gable end shakes have areas of cupping and deterioration. Trim boards at bottom of wall show discoloration. All siding and trim should be painted. Recommendation – Replace wood siding and replace trim under doors. Clean and repaint any wood elements to remain.	8,000.00	sf	\$ 24.00	\$ 192,000	
		Siding	Good condition – North portion. Various locations have cracked / broken vinly clapboards and broken vinyl trim pieces. Damage and makeshift corner pieces at panels above vinyl clapboards. Recommendation – Replace broken vinyl clapboards and trim, replace panels.	12,160.00	sf	\$ 24.00	\$ 291,840	
		Windows	Overall fair condition – South portion. Wood hung windows difficult to open, some screens damaged. Fair condition vinyl, poor condition wood – North portion. Wood windows deteriorated / rotted. Seal is broken on some thermal panes, some screen frames show signs of rust. Recommendation – Replace wood windows, replace thermal panes with broken seals, replace rusty screens.	978	sf	\$ 150.00	\$ 146,700	
		Doors	Good condition – Aluminum doors. Fair condition – Hollow metal doors. South portion of building has several HM doors with rust at bottom of door. Fair condition – Overhead door. Door has dents. Recommendation – Replace rusted doors, replace dented section of overhead door.	1	overhead door	\$ 20,000.00	\$ 20,000	
		Louvers	Good condition. Two exhaust vents on west side of north portion of building in very					
		Soffits	Fair condition.					
		Fascia	Fair condition.					
3.	Elements [e.g. Columns]	Hose Bib	Poor condition. Hose bib surround broken at north portion west façade. Recommendation – Replace vinyl trim at hose bib.	1	ea	\$ 500.00	\$ 500	
		Concrete Pads at Exterior Doors	Poor condition. Cracks and rust at concrete pad at main entry. Crooked concrete pad at exit from Room 2136. Concrete pad eroded at north entry. No concrete pad at stair exit door. Recommendation – Install new concrete pads at exterior doors to meet ADA requirements.	400	sf	\$ 40.00	\$ 16,000	
4	Roof	General	Roof not accessible during site visit. Assessment based upon information provided by facilities staff, visual observations from ground level, and data from 2023 FCA.					
		Single-Ply Membrane	Fair condition.					
		Asphalt Shingles	Good condition – Northeast roof installed around 2023. Fair condition – South roofs.					
SYSTEMS UPGRADES				SYSTEMS UPGRADES COSTS		\$ 3,705,314		
1.	Mechanical							
			Immediate Projects					

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition**Last Renovated:** C.1990 major renovation of original building; numerous minor renovations**Stories:** 1 above grade, partial mechanical basement**Gross Area:** 29,469 SF**Use:** School

		Replace boiler #1	1	ls	80,000.00	\$	80,000
		Inspect heating piping	1	ls	1,000.00	\$	1,000
		Repair heating piping	1	ls	3,000.00	\$	3,000
		Replace piping insulation	1	ls	2,500.00	\$	2,500
		Replace AHUs in gym and mechanical room	1	ls	50,000.00	\$	50,000
		Shorter Term Projects					
		Replace mini ductless splits	4	ea	10,000.00	\$	40,000
		Replace window mounted AC units	1	ls	5,000.00	\$	5,000
		Install new vertical unit ventilators w/DX cooling in classrooms	40	rms	50,000.00	\$	2,000,000
2.	Electrical						
		800A 120/208V distribution panelboard	1	ls	25,000.00	\$	25,000
		225A 120/208V panelboard	1	ls	3,500.00	\$	3,500
		Allow for other panelboard and feeders not depicted	29,469	gsf	2.00	\$	58,938
		800A feed (allow)	50	lf	382.00	\$	19,100
		Grounding	1	ls	3,500.00	\$	3,500
		Mechanical Equipment feed and connections	29,469	gsf	2.00	\$	58,938
		Replace all Lighting	29,469	gsf	7.00	\$	206,283
		Replace all exit and emergency lighting	29,469	gsf	1.50	\$	44,204
		Lighting controls	29,469	gsf	1.50	\$	44,204
		Replace receptacles with tamper proof receptacles	29,469	gsf	0.50	\$	14,735
		Allow for circuitry to new lighting	29,469	gsf	1.00	\$	29,469
		Allow for demolition work	1	ls	25,000.00	\$	25,000
3.	Plumbing						
		Equipment					
		Domestic water service, meter and BFP	1	ls	15,000.00	\$	15,000
		Heat pump water heaters & accessories (AO Smith HPTU or similar)	1	ls	45,000.00	\$	45,000
		Plumbing Fixtures & Specialties					
		Misc. fixtures and specialties	29,469	gsf	6.00	\$	176,814
		Water Piping					
		Domestic water piping and valves	29,469	gsf	6.00	\$	176,814
		Sanitary Waste & Vent					
		Waste and vent piping	29,469	gsf	5.50	\$	162,080
		Storm Drainage					
		Roof drains and stormwater piping	29,469	gsf	3.00	\$	88,407
		Pipe Insulation					
		Domestic water pipe insulation	29,469	gsf	0.50	\$	14,735
		Horizontal storm pipe insulation	29,469	gsf	0.10	\$	2,947
		Miscellaneous					
		Coring, cutting, sleeves & sealing	1	ls	5,000.00	\$	5,000
		Project management, coordination and job conditions	1	ls	68,700.00	\$	68,700
		Fees & permits	1	ls			assume waived
4.	Fire Protection						
		Equipment					
		Fire service, BFP and alarm valve	1	ls	15,000.00	\$	15,000
		Fire pump, jockey pump and accessories - not included					NIC
		Sprinkler Heads & Piping					

Building #2: Rivendell Academy – West Wing

9/23/2025

Constructed: 1957 original building, c.1990 south addition

Last Renovated: C.1990 major renovation of original building; numerous minor renovations

Stories: 1 above grade, partial mechanical basement

Gross Area: 29,469 SF

Use: School

		Sprinkler heads and distribution piping	29,469	gsf	6.50	\$	191,549
		Miscellaneous					
		Hydraulic calculations	1	ls	2,000.00	\$	2,000
		Coring, cutting, sleeves & sealing	1	ls	2,000.00	\$	2,000
		Hydraulic lifts/rigging	1	ls	3,500.00	\$	3,500
		Project management, coordination and job conditions	1	ls	21,400.00	\$	21,400
		Fees & permits					assume waived

ADDITIONAL NOTES/ PHOTOS

View from Southwest Entering Drop-off Loop

View of Northwestern Facade of Building

View of East Façade from Courtyard to Academy East Wing

Building #3: Samuel Morey Elementary School

9/23/2025

Constructed: 1957 original building, c.2000 Gym + Eastern Wing**Last Renovated:** C.2000 major renovation of original building; numerous minor renovations**Stories:** 1 above grade**Gross Area:** 28,424 SF**Use:** School

CONSTRUCTION							
1.	Foundation	Original & Addition: Concrete slab foundation w/ linear concrete footings					
2.	Superstructure	Original: CMU, wood framing (assumed) Addition: CMU, steel bar joists					
3.	Exterior Walls	Original: Primary – EIFS Secondary – Painted Wood					
4.	Roof	Low Slope Roof: Single-ply EPDM membrane Pitched Roof: Standing seam metal					
CODE							
1.	Occupancy	NFPA Educational, IBC Group E					
2.	Construction Type	Original: NFPA Type III, IBC Type III (assumed) Addition: NFPA Type II, IBC Type II					
3.	Sprinklers	No					
4.	Fire Alarm	Yes					
During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed:							
LIFE SAFETY				LIFE SAFETY COSTS			
				\$ 3,790			
1.	Exits						
		Discharge to Public Way	Yes				
		Number	In compliance. There 9 exits from common areas (6 from corridors), 1 from each classroom, 2 from mechanical rooms, and 1 from kitchen.				
		Egress Width	In compliance				
		Separation Distance	In compliance				
		Travel Distance	In compliance				
		Signage	In compliance				
		Hardware	Panic devices or push/pull hardware at all exit doors and vestibule doors along path.				
2.	Stairs						
		Rise/Run	Not applicable				
		Width	Not applicable				
		Rated Enclosure	Not applicable				
		Handrail	Not applicable				
		Guardrail	Not applicable				
3.	Rated Rooms		Mechanical rooms, storage rooms, multi- purpose room and lobby rated 1-hour.				

Building #3: Samuel Morey Elementary School Constructed: 1957 original building, c.2000 Gym + Eastern Wing Last Renovated: C.2000 major renovation of original building; numerous minor renovations Stories: 1 above grade Gross Area: 28,424 SF Use: School							9/23/2025
4.	Fire Extinguishers		Not in compliance; fire extinguishers are missing from kitchen and Media space. Recommendation - Add Fire Extinguishers.	9	ea	\$ 400.00	\$ 3,790
ACCESSIBILITY				ACCESSIBILITY COSTS			
1.	Main Entrance or Alternate Entrance		Yes				
2.	Door Dimensions		In Compliance.				
		Clear Width	Yes. Clear height not present. All doors in the building appear to be below the recommended minimum height of 6'-8". All building doors were observed to be below this height threshold. Doors measured were between 6'-5" and 6-6". Recommendation – Given the building is an elementary school and is assumed to be approved for occupancy by the Authority Having Jurisdiction, no action is needed at this time. If significant renovation work is undertaken, the AHJ will need to be consulted on the potential requirement to bring all doors into code compliance.				
		Push/Pull	In Compliance.				
		Threshold	ADA entrance threshold exceeds allowable (5/8" actual vs. 1/2" maximum). Recommendation – Install new code compliant thermally broken threshold and address transition from exterior concrete pad to threshold as applicable.	1	ea	\$ 2,500.00	\$ 2,500
		Leverset/height [34-48]	In Compliance.				
		Distance Between Sequential Doors	In Compliance.				

Building #3: Samuel Morey Elementary School

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3.	Accessible Route		Note that some room specific comments are located at the beginning of the notes for that specific room.				
		Path to Public Areas/ Elevator	In Compliance.				
		Minimum Width	In Compliance.				
		Protruding Objects	AED are in surface mounted cabinets that protrude greater than the allowed 4". Recommendation – Install AED in semi-recessed AED cabinets.	1	ea	\$ 650.00	\$ 650
		Ramp Dimensions [landings 60"]	N/A				
		Ramp Curb or 12" Beyond Rail	N/A				
		Handrail Dimensions	N/A				
4.	Elevators	Call Button Height [54" max]	N/A				
		LULA Cab [51"D x 51"W or 54"D x 36"W]	N/A				
		Elevator Cab [51"D x 36"W]	N/A				
		Controls Requirements	N/A				
		Signage	N/A				
		Lift Platform Size & Clearance	N/A				
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage including braille requirements.	28,424	gsf	\$ 1.00	\$ 28,424
6.	Transaction Counters		N/A				
7.	Toilet Rooms						

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		At Least 1 Accessible	Yes				
		Signage to locate	No Braille signage. Recommendation – Install compliant signage.	w/ signage work above			
		Fixture Dimensions	Multi-person toilet rooms appear to meet ADA requirements. Single person toilet rooms do not appear to meet ADA requirements. Current ADA does not allow sinks to encroach upon clear floor area for toilet. Recommendation – For restrooms requiring ADA compliance, reconfigure restrooms to allow proper fixture clearances. (Assume Boys Toilet Room Girls Toilet Room)	327	sf	\$ 200.00	\$ 65,400
8.	Drinking Fountains		Not in compliance, protrudes more than 4” into hallway.				
Recommendation – Install hi-lo drinking fountain that complies with ADA cane detection requirement.							
INTERIOR				INTERIOR COSTS \$ 303,656			
1.	General: Room						
2.	North corridor – East (outside kitchen)						
		Floor	Fair condition. Cracked portions of VCT near entrance.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition. Ceiling tiles outside gym entrance door shows signs of water leak. Recommendation – Replace damaged ceiling tiles.	1	ls	\$ 500.00	\$ 500
		Doors	Poor condition. Recommendation – replace exterior storefront doors.	2	pr	\$ 6,000.00	\$ 12,000
		Borrowed Lites	N/A				
		Millwork	N/A				
3.	North Corridor -						

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		Floor	Fair condition. Cracked portions of VCT near entrance. Recommendation – Replace damaged floor tiles. (allow 10%)	87	sf	\$ 12.00	\$ 1,043
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition. Minimal eiling tiles outside shows signs of water leak. Recommendation – Replace damaged ceiling tiles.	87	sf	\$ 8.00	\$ 695
		Doors	Poor condition. Recommendation – Replace exterior doors and frames.	1	pr	\$ 6,000.00	\$ 6,000
		Borrowed Lites	N/A				
		Millwork	N/A				
4.	Corridor at Southwest exit						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Poor condition. Water staining outside room 3135. Recommendation – Replace damaged tiles.	1	ls	\$ 1,500.00	\$ 1,500
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
5.	Room 3102, 3103 & 3109						
		Floor	VCT Fair condition.				
		Walls/ Columns	Fair condition				
		Ceiling	Tiles around lights were unseated or not fitting properly, visible portions of ACT are in good condition.				
		Door	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
		Millwork	N/A				
6.	Room 3106						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition.				

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		Borrowed Lites	N/A				
		Millwork	Shelving within space not ADA compliant. Recommendation – Install shelving full height.	20	lf	\$ 50.00	\$ 1,000
7.	Room 3108						
		Floor	Fair condition. Rug concealed much of the floor so only visible portion assessed.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition. Some chipped finish and wear at edges.				
		Borrowed Lights	N/A				
		Millwork	N/A				
8.	Expedition Rm 3112						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
9.	Conference Room 3113						
		Floor	Fair condition. Wall base is in poor condition peeling away and deteriorating. Recommendation – Replace vinyl base.	50	lf	\$ 5.00	\$ 250
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
10.	Server Room 3115						
		Floor	Poor condition. VCT shows wear, fading. Recommendation – Replace VCT; determine if static dissipative flooring is required.	74	sf	\$ 12.00	\$ 888
		Walls/ Columns	Poor condition. Recommendation – Patch and paint several areas.	400	sf	\$ 2.00	\$ 800

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		Ceiling	Fair condition. ACT stained at multiple locations, light fixtures have debris. Recommendation – Replace tile, clean light fixtures.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Shelves protruding beyond 4" allowed by ADA regulations. Recommendation – Address ADA cane detection requirements.	10	lf	\$ 50.00	\$ 500
11.	Room 3117						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition. Mainly concealed by shelving so only visible portion assessed.				
		Ceiling	Fair condition. ACT has one tile with water damage. Recommendation – Verify there is no active leak and replace damaged tile.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition. Materials in fair condition but the cabinet height is not in compliance. Base cabinets at 34.5" with non-accessible sink. Recommendation – Replace cabinets and sink with ADA compliant units.	12	lf	\$ 500.00	\$ 6,000
12.	Room 3118 Girls / 3120 Boys Toilets						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition. CMU chipping. Recommendation – Repaint chipped paint areas to match existing.	910	sf	\$ 2.00	\$ 1,820
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				

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13.	Media Room 3119						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Poor condition. Majority of ceiling in good condition however two small portions where GWB soffit shows cracking at corners. Recommendation – Patch, repair, repaint cracking soffit areas o match existing.	885	sf	\$ 3.00	\$ 2,655
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	Fair condition.				
14.	Nurse 3121						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition. Glass lite cracked inside. Recommendation – Replace door with new glass light. This door was also locked and described as not in use. From the interior side there is no additional door for students to reach the nurses office other than through the adjacent restroom space. Recommendation – Provide access to Nurse 3121 through space other than adjacent restroom.	1	ea	\$ 4,000.00	\$ 4,000
		Borrowed Lites	Good condition.				
		Millwork	Poor Condition. Nurse’s Station counter height not in compliance with ADA standards. No ADA access to the sink. Recommendation – Install new ADA open cabinet below sink and 34” counter above base cabinets. Install new door to the right (leading to Office 3135) of the cabinets.	1	ea	\$ 6,500.00	\$ 6,500

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15.	Nurse 3121 Bathroom @ Nurse					
		Floor	Good condition.			
		Walls/ Columns	Good condition.			
		Ceiling	Good condition.			
		Doors	Good condition.			
		Borrowed Lites	N/A			
		Millwork	Poor condition. Counters not in compliance and in poor condition. Recommendation – Install new ADA sink at 34" height. Missing 5'-0" turning radius at toilet by way of furniture. Shelves protrude into toilet clearance. Missing complaint ADA grab bars. Shower adjacent to toilet space was filled with supplies but appeared to be ADA complaint unit. Recommendation – Remove all wall shelving and cabinets from toilet area. Install ADA complaint grab bars. Refinish wall and floor areas where shelves were removed to match exiting.	1	ls	\$ 2,500.00 \$ 2,500
16.	Custodial Room 3122		Portions of wall and floor surfaces obscured by stored materials and are not fully assessed.			
		Floor	Poor condition. VCT is discolored and worn. Recommendation – Replace flooring.	147	sf	\$ 12.00 \$ 1,764
		Walls/ Columns	Good condition. Wall base is discolored. Recommendation – Replace wall base.	61	lf	\$ 4.00 \$ 244
		Ceiling	Fair condition.			
		Doors	Good condition.			
		Borrowed Lites	N/A			
		Millwork	N/A			
17.	Room 3123					

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		Floor	Fair / Poor condition. Majority of VCT is in fair condition, however, there are isolated areas where furniture locations have left damage and discoloration. Recommend – Replace stained and damaged tiles.	157	sf	\$ 12.00	\$ 1,884
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
18.	Mechanical Room 3124	Millwork	N/A Portions of wall and floor surfaces obscured by stored materials and are not fully assessed.				
		Floor	Fair condition. Floor is concrete and is assumed suitable for room and use. Crack at doorway between two mechanical rooms. Floor slopes up immediately upon entry to rooms from corridor or exterior. Recommendation – Repair crack and seal floor.	410	sf	\$ 15.00	\$ 6,150
		Walls/ Columns	Fair condition. Suitable for room type and use. Some wall penetrations (conduit, etc.) lack fire rated sealant.				
		Ceiling	Good condition. Unfinished but sound and suitable for room type and use.				

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		Doors	Fair condition. Some scrapes, but solid. Door frame between rooms below minimum required height of 6'-8" due to floor being raise. Note that door to mechanical room is only 2'-6" wide and fire rating tags are painted over. Recommendation –Existing condition of door frame between rooms assumed acceptable to Authority Having Jurisdiction. Opening height to be raised if any alterations are made to mechanical rooms. Replace door and frame to corridor with fire rated / tagged units.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
19.	Closet 3125 (in Staff Room 3127)						
		Floor	Good condition.				
		Walls/ Columns	Poor condition. Much of wall has wiring or holes in places where electrical is hanging. Upper half not painted. Visible caulking and sealant joint areas.				
		Ceiling	Fair condition.				
		Door	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
20.	Rooms 3126, 3130, & 3132		Note Room 3132 not reviewed as space was occupied; assuming similar conditions as adjacent classrooms.				
		Floor	Poor condition. Gaps between VCT tiles and cracked corners. Recommendation – Replace VT tiles throughout space.	2,790	sf	\$ 12.00	\$ 33,480
		Walls/ Columns	Fair condition – CMU. Some rough areas. Poor condition – Wall base in room 3126. Recommendation – Replace wall base in room 3126.	133	lf	\$ 4.00	\$ 532

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		Ceiling	Fair condition – ACT. Some stained tiles. Good condition – Acoustic Clouds. Recommendation – Replace stained ACT.				
		Doors	Fair condition. Wood doors have chips, worn edges. Plywood surround on corridor side of door shows wear. Recommendation – Replace doors and surround when door height issue is addressed.	3	ea	\$ 3,500.00	\$ 10,500
		Borrowed Lites	N/A				
		Millwork	Fair condition – Plam at counters. Poor condition – Wood backsplashes. No clear floor area ADA access at sink. Recommendation – Replace wood backsplashes with Plam. Replace sink cabinet to meet ADA requirements.	125	lf	\$ 600.00	\$ 75,000
21.	Staff Room 3127						
		Floor	Fair condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Non-compliant sink access. Delamination of countertop at edges. Trim around countertops in poor condition. Recommendation – install new base cabinets with ADA sink access and new finish trim.	20	lf	\$ 600.00	\$ 12,000
22.	Bathroom 3129		Unisex				
		Floor	Fair condition				
		Walls/ Columns	Fair condition. Wall base in fair condition. Recommendation – replace wall base.	50	lf	\$ 4.00	\$ 200
		Ceiling	Fair condition. Cut out hole in center of room roughly 4 ft. Recommendation - close off repaint and refinish to match existing.	150	sf	\$ 2.00	\$ 300
		Doors	Good condition.				

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		Borrowed Lites	N/A				
		Millwork	N/A				
23.	Room 3133						
		Floor	Poor condition. Scuffing and markings through central portion.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Fair, dings and marks along door. Paint peeling at entry door frames – Recommend repainting.	1	ea	\$ 125.00	\$ 125
		Borrowed Lites	N/A				
		Millwork	N/A				
		Closet 3131	Wires exposed from conduit				
24.	Office 3135						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	N/A				
25.	Room 3136 Girls / 3138 Boys Toilets North Wing						
		Floor	VCT Poor condition.				
		Walls/ Columns	CMU / GWB Fair condition.				
		Ceiling	GWB ceiling good condition within restroom. Vestibule between restrooms has water tiles damaged with water. Recommendation – replace damaged tiles.	2	rms	\$ 500.00	\$ 1,000
		Doors	Fair condition. 3138 Boys Toilet has broken hinge at entrance door with makeshift solution. Recommendation – Replace hinge.	1	ea	\$ 1,200.00	\$ 1,200
		Borrowed Lites	N/A				
		Millwork	Partitions are in good condition. Mirrors not in compliance with ADA requirements. Reinstall mirrors at bottom of glass at 40" A.F.F.	1	ls	\$ 150.00	\$ 150
26.	Project Room 3128						

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		Floor	Poor condition. Cracks in VCT mid-room, ripples at door to corridor. Recommendation – Replace VCT.	224	sf	\$ 12.00	\$ 2,688
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	Good condition.				
		Millwork	Fair condition. No ADA access at sink. Recommendation – Replace sink cabinet with ADA compliant unit.	20	lf	\$ 600.00	\$ 12,000
27.	Room 3139						
		Floor	Good condition.				
		Walls/ Columns	Good condition. Wall base is in poor condition. Recommendation - Replacement when floor is replaced.	156	sf	\$ 12.00	\$ 1,872
		Ceiling	Fair condition. Ceiling tile placement has gaps between frame and tiles. Recommendation – Adjust tiles along edges.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
28.	Room 3140 Gymnasium						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Fair condition. Skylights have visible signs of water penetration. Water leaking at pipes at ceiling. Recommendation – Investigate skylight leaks for repairs, repair leaks at pipes.				
		Doors	Fair condition. Dings and dents at all doors, water damage / rust at base of hollow metal doors. Caulking joint above door deteriorating. Recommendation – Repair / replace mortar and soft joints above exterior doors. Repair damage to doors and frame or replace.	5	loc	\$ 2,000.00	\$ 10,000

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		Borrowed Lites	N/A				
		Millwork	N/A				
29.	Room 3143 / 3145						
		Floor	Poor condition. Cracks in VCT at exterior door area. Recommendation – Replace damaged tiles.	1,517	sf	\$ 12.00	\$ 18,204
		Walls/ Columns	Fair condition – CMU. Crack at corner near exterior door. Poor condition – Wall base and GWB finish. Recommendation – Replace wall base, patch and paint GWB, create soft joint at CMU crack and paint to match wall.	236	lf	\$ 20.00	\$ 4,720
		Ceiling	Fair condition. Some ACT stained. Recommendation – Replace stained tiles.	2	rms	\$ 200.00	\$ 400
		Doors	Poor condition. HM frames fair condition, door seals missing under exterior door. Recommendation – Replace door seals.	2	ea	\$ 300.00	\$ 600
		Borrowed Lites	Fair				
		Millwork	No clear floor area ADA access at sink. Wall base as backsplash behind sink in poor condition. Recommend replacement of sink	55	lf	\$ 600.00	\$ 33,000
			cabinet to meet ADA requirements. Replacement of backsplash.				
30.	Room 3147 & 3149						
		Floor	Poor condition.				
		Walls/ Columns	Fair condition – CMU, Poor condition – GWB. Recommend Patch repair repaint all GWB.	2,300	sf	\$ 2.00	\$ 4,600
		Ceiling	Fair condition.				
		Doors	Poor condition. HM frames fair condition.				
		Borrowed Lites	Fair, Broken casement handle at southern portion of window 3149				

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Use: School							
		Millwork	No clear floor area ADA access at sink. Wood backsplash behind sink in poor condition. Recommend replacement of sink cabinet to meet ADA requirements. Replacement of backsplash.	12	lf	\$ 600.00	\$ 7,200
31.	Room 3151						
		Floor	Poor condition. Paint finish worn away in many locations, cracks in concrete. Recommendation – Repair cracks, install new seamless flooring and integral wall base suitable for kitchen sanitation requirements.	616	sf	\$ 12.00	\$ 7,392
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition. Some tiles are damaged. Recommendation – Replace damaged tiles.	1	ls	\$ 200.00	\$ 200
		Doors	Poor condition. HM frames fair condition. Door seals missing under door to outside. Recommendation – Replacement.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	Fair				
		Millwork	N/A				
EXTERIOR				EXTERIOR COSTS			\$ 239,676
1.	General: Site elements are not included in the scope of work of this review.						
2.	Walls						
		Foundation	Fair condition. Synthetic stucco over insulation board generally in fair condition; corner conditions throughout the building show significant deterioration. Recommendation – Repair corner conditions, patch, repair refinish to match existing.	4,284	sf	\$ 20.00	\$ 85,680
		Siding	Fair condition overall. Isolated areas of very poor conditions; deterioration / chipping at bottoms of vertical siding boards where they meet the water table and over some openings (see window section and door section below). Recommendation – Replace all chipped / damaged conditions. Refinish to match existing. Approximately 10% of facade	1,458	sf	\$ 30.00	\$ 43,731

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			Isolated areas of siding discoloration for various reasons. Recommendation – Repaint all discolored areas. Patch, repair refinish to match existing. Approximately 10% of façade.	1,458	sf	\$ 30.00	\$ 43,731
			Deterioration at control joints / soft joints between siding panels. Recommendation – Replace all soft joints.	14,577	sf	\$ 2.00	\$ 29,154
			Some exterior wall penetrations are not sealed. Recommendation – Seal around all exterior wall penetrations.	allow w/ above			
		Windows	Fair condition. Seals around operable units are falling off. Windows losing finish color. Recommendation – Provide new seals on operable windows. Repaint windows.	1,488	sf	\$ 10.00	\$ 14,880
			Additional areas of siding damage at windows specifically. Refer to above siding section for recommendations. Approximately 90% of windows.				
		Doors	Fair condition in general. Garden storefront doors are in poor condition with interior face rusting; exterior is equally poor with deteriorated trim boards, rusting and gaps at base showing signs of water penetration.				
			Recommendation – Replace storefront door and all trim, thresholds seals etc.	1	ea	\$ 10,000.00	\$ 10,000
			Deteriorated wood skirt under classroom doors. Recommendation – Replace wood.	10	ea	\$ 300.00	\$ 3,000
			Additional areas of siding damage at doors specifically. Refer to above siding section for recommendations. Approximately 80% of doors.				
		Louvers	N/A				
		Soffits	Fair condition				
		Fascia	Fair condition				

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3.	Elements [e.g., Columns]		Deterioration at wood post base. Recommendation – Replace deteriorated wood elements. Rusted post base plate and bottom of posts (5 posts). Recommendation – Replace posts and base plates.	5	ea	\$ 1,000.00	\$ 5,000
4.	Roof		Fair condition. Low Slope Roof single-ply EPDM membrane at gym installed c.1999 so may be approaching end of service life. Pitched Roof standing seam metal installed c.2019. Water shedding from pitched roof on south side above Media Room is deteriorating siding below. Recommendation – Install rain diverter or gutter to protect siding.	180	lf	\$ 25.00	\$ 4,500

SYSTEMS UPGRADES				SYSTEM UPGRADES COSTS				\$ 1,756,974
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1.	Mechanical						
			Immediate Projects				
			Inspect heating piping	1	ls	\$ 1,000.00	\$ 1,000
			Repair heating piping	1	ls	\$ 3,000.00	\$ 3,000
			Repair heating piping insulation	1	ls	\$ 2,500.00	\$ 2,500
			Test RTUs	1	ls	\$ 1,200.00	\$ 1,200
			Repair/refurbish RTUs	1	ls	\$ 4,500.00	\$ 4,500
			Replace kitchen hoods, MAUs and exhaust fans	1	ls	\$ 40,000.00	\$ 40,000
			Shorter Term Projects				
			Replace RTUs	3	ea	\$ 75,000.00	\$ 225,000
			Replace mini ductless splits	4	ea	\$ 10,000.00	\$ 40,000
2.	Electrical						
			Allow for selective distribution replacement	1	ls	\$ 25,000.00	\$ 25,000
			Mechanical Equipment feed and connections	28,424	gsf	\$ 4.00	\$ 113,696
			Replace all Lighting	28,424	gsf	\$ 7.00	\$ 198,968
			Replace all exit and emergency lighting	28,424	gsf	\$ 1.50	\$ 42,636
			Lighting controls	28,424	gsf	\$ 1.50	\$ 42,636
			Replace receptacles with tamper proof receptacles	28,424	gsf	\$ 0.50	\$ 14,212
			Allow for circuitry to new lighting	28,424	gsf	\$ 1.00	\$ 28,424

Building #3: Samuel Morey Elementary School

9/23/2025

Constructed: 1957 original building, c.2000 Gym + Eastern Wing**Last Renovated:** C.2000 major renovation of original building; numerous minor renovations**Stories:** 1 above grade**Gross Area:** 28,424 SF**Use:** School

		Allow for demolition work	1	ls	\$	15,000.00	\$	15,000
3.	Plumbing							
		Equipment						
		Domestic water service, meter and BFP	1	ls	\$	15,000.00	\$	15,000
		Heat pump water heaters & accessories (AO Smith HPTU	1	ls	\$	45,000.00	\$	45,000
		Plumbing Fixtures & Specialties						
		Misc. fixtures and specialties	28,424	gsf		6.00	\$	170,544
		Water Piping						
		Domestic water piping and valves	28,424	gsf		6.00	\$	170,544
		Sanitary Waste & Vent						
		Waste and vent piping	28,424	gsf		5.50	\$	156,332
		Storm Drainage						
		Roof drains and stormwater piping	28,424	gsf		3.00	\$	85,272
		Pipe Insulation						
		Domestic water pipe insulation	28,424	gsf	\$	0.50	\$	14,212
		Horizontal storm pipe insulation	28,424	gsf	\$	0.10	\$	2,842
		Miscellaneous						
		Coring, cutting, sleeves & sealing	1	ls	\$	5,000.00	\$	5,000
		Project management, coordination and job conditions	1	ls	\$	66,500.00	\$	66,500
		Fees & permits	1	ls				assume waived
4.	Fire Protection							
		Equipment						
		Fire service, BFP and alarm valve	1	ls	\$	15,000.00	\$	15,000
		Fire pump, jockey pump and accessories - not included						NIC
		Sprinkler Heads & Piping						
		Sprinkler heads and distribution piping	28,424	gsf	\$	6.50	\$	184,756
		Miscellaneous						
		Hydraulic calculations	1	ls	\$	2,000.00	\$	2,000
		Coring, cutting, sleeves & sealing	1	ls	\$	2,000.00	\$	2,000
		Hydraulic lifts/rigging	1	ls	\$	3,500.00	\$	3,500
		Project management, coordination and job conditions	1	ls	\$	20,700.00	\$	20,700

ADDITIONAL NOTES/ PHOTOS**View of West entry Façade****View of North entry Façade****View of North East Corner towards gym****View of North Entry**

Building #3: Samuel Morey Elementary School

9/23/2025

Constructed: 1957 original building, c.2000 Gym + Eastern Wing**Last Renovated:** C.2000 major renovation of original building; numerous minor renovations**Stories:** 1 above grade**Gross Area:** 28,424 SF**Use:** School**View of South East corner****View of South Facade**

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
CONSTRUCTION							
1.	Foundation	Concrete					
2.	Superstructure	Wood framing, CMU					
3.	Exterior Walls	Fiber cement siding					
4.	Roof	Asphalt Shingles					
CODE							
1.	Occupancy	NFPA Educational, IBC E					
2.	Construction Type	NFPA Type V, IBC Type V					
3.	Sprinklers	No					
4.	Fire Alarm	Yes					
View of South Entry Façade							
<i>During a visual assessment of the building, the following conditions requiring modification, repair, or replacement were observed:</i>							
LIFE SAFETY				LIFE SAFETY COSTS		\$	-
1.	Exits						
		Discharge to Public Way	Yes				
		Number	In compliance. In summary: 3 exterior exits from corridors. 3 exterior exits from common program areas. 4 exterior exits from staff areas. 1 exterior exit from each classroom.				
		Egress Width	In compliance.				
		Separation Distance	In compliance.				
		Travel Distance	In compliance.				
		Signage	In compliance.				
		Hardware	Panic hardware present at each set of exit doors at corridors and assembly space.				
2.	Stairs		No stairs; two (2) ships ladders accessing utility space.				
3.	Rated Rooms		In compliance.				
4.	Fire Extinguishers		Yes				
ACCESSIBILITY				ACCESSIBILITY COSTS		\$	27,804
1.	Main Entrance or Alternate Entrance		Yes				
2.	Door Dimensions						
		Clear Width	In compliance.				
		Push/Pull	In compliance.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Threshold	In compliance.				
		Leverset/height [34-48]	In compliance.				
		Distance Between Sequential Doors	In compliance.				
3.	Accessible Route		Note that some room specific comments are located at the beginning of the notes for that specific room.				
		Path to Public Areas/ Elevator	In compliance.				
		Minimum Width	In compliance.				
		Protruding Objects	Several bathrooms and storage closets have shelving and racks at head height. The rooms are small rendering these areas part of the egress path. Recommendation – Install cane detection rails below the racks or remove the racks / shelving.	8	ea	\$ 500.00	\$ 4,000
		Ramp Dimensions [landings 60"]	N/A				
		Ramp Curb or 12" Beyond Rail	N/A				
		Handrail Dimensions	N/A				
4.	Elevators		N/A				
5.	Signage		No ADA compliant room, stair, or building directory signage. Recommendation – Install compliant signage.	23,804	gsf	\$ 1.00	\$ 23,804
6.	Transaction Counters		N/A				
7.	Toilet Rooms						
		At Least 1 Accessible	Yes.				
		Signage to locate	In compliance.				
		Fixture Dimensions	Multi-person toilet rooms appear to meet ADA requirements. Single person toilet rooms do not appear to meet ADA requirements. Current ADA does not allow sinks to encroach upon clear floor area for toilet. Recommendation – For restrooms requiring ADA compliance, reconfigure restrooms to allow proper fixture clearances.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
INTERIOR				INTERIOR COSTS		\$	234,958
Paper towel dispenser exceeds 4" protrusion limit.							
8.	Drinking Fountains	Not in compliance, height incorrect for ADA access. Recommendation – Install hi-lo drinking fountain that complies with ADA cane detection requirement.		4	ea	\$ 6,500.00	\$ 26,000
1.	General: Room numbers are per the numbering system within the building.						
2.	Lobby and Main Vestibule						
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Outer corners show signs of chipping and peeling paint. Recommendation – Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.	4	ea	\$ 500.00	\$ 2,000
		Ceiling	Good condition.				
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Hardware is missing or broken. No ADA operator. Exit push button not working. Recommendation – Provide new bottoms seals at exterior doors and replace all door hardware, repair and or replace exit Devices and install ADA automatic operator.	1	ls	\$ 10,000.00	\$ 10,000
		Borrowed Lites	Good condition.				
3.	West Corridor and West Vestibule	Millwork	N/A				
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Outer corners show signs of chipping and peeling paint. Recommendation – Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.	4	ea	\$ 500.00	\$ 2,000

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Ceiling	Good condition.				
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Recommendation – Provide new bottoms seals at exterior doors and replace all door hardware. Repaint doors.	1	ls	\$ 10,000.00	\$ 10,000
		Borrowed Lites	Good condition.				
		Millwork	Good condition.				
4.	North Corridor and North Vestibule		Note: This area had furniture pushed up against walls. Visible areas were all reviewed.				
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Paint chipping at vestibule walls. Outer corners show signs of chipping and peeling paint. Recommendation – Repaint and provide new wall base. Repair and repaint corners to match existing. Install Corner guards at all exterior corners in corridors.	4	ea	\$ 500.00	\$ 2,000
		Ceiling	Good condition.				
		Doors	Fair condition. Visible light underneath exterior doors. Hardware missing covers and mismatching finishes. Recommendation - Provide new bottom seals at exterior doors and replace all door hardware.	1	ls	\$ 10,000.00	\$ 10,000
		Borrowed Lites	Good condition.				
		Millwork	N/A				
5.	Corridor – Gym Lobby						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	Good condition.				
6.	Reception 4101						

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Floor	Good condition. Floor shows wear, but concrete is holding up well.				
		Walls/ Columns	Good condition.				
		Ceiling	ACT in Good condition. Light fixtures are dated incandescent.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
7.	Library 4102						
		Floor	Fair condition. Portions of the floor obscured by walk- off carpet mats were not assessed. Minor discoloration.				
		Walls/ Columns	Fair condition. Minor denting at corners. Recommendation – Install corner guards at outside corners.	4	ea	\$ 500.00	\$ 2,000
		Ceiling	Fair condition – GWB Soffits. Fair condition – ACT. Minor cracking at some corners. Recommendation – Patch, repair, repaint.	811	sf	\$ 2.00	\$ 1,622
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	Fair condition.				
8.	Conference 4103						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
9.	Storage 4104						
		Floor	Poor condition. Concrete floor has a large crack extending the width of door at entry. Recommendation – Repair crack and seal concrete.	61	sf	\$ 20.00	\$ 1,220
		Walls/ Columns	Fair condition. Much of wall space was filled with storage and shelving and could not be assessed.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Millwork	Fair condition for visible portion of millwork. Counter height of 31" is in compliance, however, material stored underneath makes it is inaccessible. Recommendation – Cleanout / purge to allow for proper knee ADA clearance under counter.	8	lf	\$ 150.00	\$ 1,200
10.	Office 4105						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition. Basic wear and tear from hanging items / general wall use.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
11.	Server 4106						
		Floor	Poor condition. Concrete floor has a large crack extending the width of the door at entry. Recommendation – Repair crack and seal concrete.	73	sf	\$ 20.00	\$ 1,460
		Walls/ Columns	Fair condition some holes. Recommendation - Patch holes, repaint wall.	410	sf	\$ 2.00	\$ 820
		Ceiling	Good condition. There is a roof hatch ladder in good condition. Hatch above has visible light coming through does not appear to be sealing properly. Recommendation – Review and repair or replace roof hatch.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
12.	Guidance 4107, Health 4109						
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Basic wear and tear from hanging items / general wall use.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Millwork	Fair condition. No clear ADA access below sink counter. Recommendation – Install ADA accessible sink installation.	2	ea	\$ 4,000.00	\$ 8,000
13.	Conference 4108						
		Floor	Fair condition. Minor damage in corner from removed furniture.				
		Walls/ Columns	Fair condition. Minor knicks and dings on one wall.				
		Ceiling	Fair condition. Water Damage at a couple ceiling tile near diffuser Recommendation – Replace stained ceiling tiles.	1	ls	\$ 200.00	\$ 200
		Doors	Good condition.				
		Borrowed Lites	N/A				
14.	Storage 4110	Millwork	N/A				
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Minimal scuff marks; much of the walls were obscured by shelving and not assessed.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
15.	Bathroom 4111 in Health						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	Fair condition.				
		Millwork	Fair condition. Sink height does not meet ADA requirements. Recommendation – Install sink at ADA height. Fair condition – Shower portion. Recommendation – Reseal around shower.	1	ls	\$ 4,500.00	\$ 4,500
16.	SPED 4112						
		Floor	Good condition.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Walls/ Columns	Poor condition. Walls / paint chipped. Recommendation – Patch, repair, repaint walls.	960	sf	\$ 2.00	\$ 1,920
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	Good condition.				
		Millwork	Fair condition.				
17.	Resource 4113						
		Floor	Good condition.				
		Walls/ Columns	Good condition. Window sills poor condition. Recommendation – Replace water damaged sills.	13	lf	\$ 65.00	\$ 845
		Ceiling	Good condition.				
		Doors	Poor condition – Scratches and rust on doors and hollow metal frames. Recommendation – Replace doors and frames.	1	ea	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	Poor condition. Cubbies poor condition; chipped. Recommendation – Replace cubbies. Sink counter exceeds maximum ADA height and lacks ADA knee space below. Recommendation – Install ADA access sink cabinet with proper counter height.	17	lf	\$ 600.00	\$ 10,200
18.	SPED 4114						
		Floor	Good condition.				
		Walls/ Columns	Poor condition. Walls / paint chipped with screw holes. Recommendation – Patch, repair, repaint walls.	360	sf	\$ 2.00	\$ 720
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
19.	Classrooms West Wing 4115, 4119, 4120 & 4126						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
20.	Staff Room 4116						
		Floor	Good condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition – Does not meet ADA requirements: Sink counter exceeds maximum ADA height and lacks ADA knee space below.				
			Recommendation – Install ADA access sink cabinet with proper	11	lf	\$ 720.00	\$ 7,920
21.	Project Room 4117						
		Floor	Fair condition.				
		Walls/ Columns	Poor condition. Ding scrapes wall damage. Recommendation – Patch, repair, repaint all damaged wall areas.	660	sf	\$ 2.00	\$ 1,320
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition.				
22.	Staff Restroom 4118						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	Fair condition.				
		Millwork	Fair condition, however, sink height exceeds maximum allowed by ADA. Recommendation – Install sink at ADA height.	7	lf	\$ 600.00	\$ 4,200
23.	Restroom 4121 in Classroom 4119						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Poor condition. Overhead storage above with improper head clearance.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
			Recommendation – Remove and repair wall or move shelving up to provide minimum 6’-8” head clearance.	9	lf	\$ 100.00	\$ 900
24.	Restroom 4122 in Classroom 4120						
		Floor	Good condition.				
		Walls/ Columns	Poor condition. Adjacent to entry rough patched area. Recommendation – Repair and repaint.	280	sf	\$ 2.00	\$ 560
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Poor condition. Overhead storage above with improper head clearance. Recommendation – Remove and repair wall or move shelving up to provide minimum 6’-8” head clearance.	9	lf	\$ 100.00	\$ 900
25.	Electrical 4123						
		Floor	Good condition.				
		Walls/ Columns	Good condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
26.	Janitor Closet						
		Floor	Poor condition concrete floor. Owner to review to determine if acceptable for janitorial closet. Recommendation – Renovate space with new flooring, sink, GWB.	45	sf	\$ 250.00	\$ 11,250
		Walls/ Columns	Scrapes and holes around sink area. Recommendation – Repair GWB and repaint wall.	290	sf	\$ 6.00	\$ 1,740
		Ceiling	Good condition.				
		Doors	Fair condition.				
		Borrowed Lites	Fair condition.				
		Millwork	Fair condition.				
27.	Project Room 4124						
		Floor	Fair condition.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Walls/ Columns	Poor condition. Dings, scrapes, general wall damage. Recommendation – Patch, repair, repaint all damaged wall areas.	700	sf	\$ 2.00	\$ 1,400
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	Fair condition.				
		Millwork	Fair condition.				
28.	Restroom 4125 in Classroom 4126						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Poor condition. Overhead storage above with improper head clearance. Recommendation – Remove and repair wall or move shelving up to provide minimum 6'-8" head clearance.	9	lf	\$ 100.00	\$ 900
29.	Room 4127 Girls Restroom						
		Floor	Poor condition. Flooring shows signs of water damage. Recommendation – Replace flooring.	172	sf	\$ 12.00	\$ 2,064
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Poor condition. Rusted out base of partitions privacy. Recommendation – Replace partitions.	3	ea	\$ 3,500.00	\$ 10,500
30.	Room 4129 Boys Restroom						
		Floor	Good condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Good condition.				
		Door	Good condition.				
		Borrowed Lites	N/A				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Millwork	N/A				
31.	Classrooms North Wing 4131, 4137, 4138 & 4140						
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Knicks, dings, scuff marks at doors to resource rooms. Peeling drywall around frames and chipped paint at door frames. Minor cracking at drywall above most windows. Possible water penetration. Wall base torn or missing in several places in classrooms Recommendation – Exploratory demolition to verify there is no water leaks; patch, repair, repaint cracked GWB. Install new wall base to match existing where damaged or missing.	978	lf	\$ 4.00	\$ 3,912
		Ceiling	Good condition GWB except for some minor paint patch areas where the paint doesn't match. Recommendation – Repaint ceiling to match (Room 4137). Minor water marks on 1 ceiling tile	775	sf	\$ 3.00	\$ 2,325
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition. All rooms sink counters lack ADA knee space below. Recommendation – Install ADA access sink cabinet.	68	lf	\$ 600.00	\$ 40,800
32.	Janitor Closet 4134						
		Floor	Poor condition concrete floor. Owner to review to determine if acceptable for janitorial closet. Recommendation – Renovate space with new flooring, sink, GWB.	35	sf	\$ 250.00	\$ 8,750
		Walls/ Columns	Fair condition. Scrapes and gouges around sink area, rough edges at sink backsplash. Recommendation – Repair and repaint wall.	300	sf	\$ 2.00	\$ 600
		Ceiling	Fair condition.				
		Doors	Fair condition.				
		Borrowed Lites	N/A				
		Millwork	Fair condition. Suitable given use of space.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
33.	Project Room 4135		Room missing fire extinguisher. Recommendation – Install fire extinguisher.	1	ea	\$ 600.00	\$ 600
		Floor	Fair Condition.				
		Walls/ Columns	Fair condition. Minor knicks and scuffs. Some walls obscured by stored material so not assessed.				
		Ceiling	Good condition.				
		Door	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
34.	Mechanical Room 4136						
		Floor	Floor obscured by stored material so only able to assess portion near entry door which has significant crack. Recommendation – Repair crack and seal concrete.	381	sf	\$ 20.00	\$ 7,620
		Walls/ Columns	Walls obscured by stored material, unable to assess.				
		Ceiling	Exposed structure.				
		Door	Poor condition. Door missing panic bar, missing exit sign. Recommendation – Install exit sign above door and required panic hardware devices.	1	ls	\$ 3,500.00	\$ 3,500
		Borrowed Lites	N/A				
		Millwork	N/A				
35.	Storage 4141						
		Floor	Good condition.				
		Walls/ Columns	Fair condition. Holes and damage. Recommendation – Patch and paint.	630	sf	\$ 2.00	\$ 1,260
		Ceiling	Good condition.				
		Doors	Good condition.				
		Borrowed Lites	N/A				
		Millwork	N/A				
36.	Kitchen Room 4143		Missing fire extinguisher. Recommendation – Install kitchen fire extinguisher.	1	ea	\$ 600.00	\$ 600
		Floor	Poor condition. Recommendation – VCT and trim.	330	sf	\$ 20.00	\$ 6,600
		Walls/ Columns	Fair condition in general; wall base and trim at door are in poor condition. Recommendation – Replace wall base and door trim.	120	lf	\$ 4.00	\$ 480

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Ceiling	Fair condition. Missing ACT tiles at vertical portion diagonal near windows. Recommendation - Refinish ceiling / wall transition, replace missing tiles.	330	sf	\$ 5.00	\$ 1,650
		Doors	Good condition. in space. Missing exit sign over exterior door. Recommendation – Install exit sign above door.	1	ea	\$ 1,500.00	\$ 1,500
		Borrowed Lites	N/A				
		Millwork	Fair condition. May be sufficient for the use of the space, however, inaccessible for ADA clearances as an office space. No 5'-0" turning radius or clear desk access. Wear and tear at vertical portions of shelving. ADA clearance present under sink, however, left and right sides should be clear if full ADA Access desired in kitchen spaces.				
37.	Gym Room 4145						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition. Scuffs, scratches, marks typical for use of space. Recommendation – Spot clean marked areas.	1	ls	\$ 1,500.00	\$ 1,500
		Ceiling	Fair condition.				
		Doors	Poor Condition. Rusted door bottom, missing or broken hardware. Recommendation – Replace doors and all hardware.	2	ea	\$ 3,500.00	\$ 7,000
		Borrowed Lites	N/A				
		Millwork	N/A				
38.	Gym Storage 4147						
		Floor	Fair condition.				
		Walls/ Columns	Fair condition.				
		Ceiling	Fair condition.				
		Doors	Fair condition. Door hardware not accessible. Recommendation – Replace with operable door hardware adequate for storage space.	2	ea	\$ 1,200.00	\$ 2,400
		Borrowed Lites	N/A				
		Millwork	N/A				
39.	Mezzanine Access						

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
			Stair to mezzanine utility only, non ADA. Shown only for reference. Space is in good condition overall; however, door is rated but only portions of the wall appear to be sealed to meet the required 2-hour rating. Recommendation – Verify the seal is complete around the perimeter of the mezzanine mechanical space. If not complete, then apply proper seal.				
EXTERIOR				EXTERIOR COSTS			
				\$ 607,634			
1.	General: Site elements are not included in the scope of work of this review.						
2.	Walls						
		Foundation					
			Concrete foundation in poor condition. Foundation parging at south façade deteriorating where it meets the ground and to the right of the entry door. Recommendation – Repair parging. Stone foundation and window infill panels at east façade are discolored where they meet the ground. Recommendation – Clean materials and assess for damage.	5,208	sf	\$ 6.00	\$ 31,248
		Siding / Trim	Poor condition. See below photos for a wide variety of siding issues rendering the need for replacement. Recommendation – Replace siding and all associated trim. Confirm no water damage behind siding.	15,624	sf	\$ 24.00	\$ 374,976
		Windows	Fair condition.				
		Doors	Poor condition. Damaged base of door and frame, rusted, worn, and faded. Recommendation – Repair doors and replace door / frame where necessary. Single leaf	15	leaves	\$ 4,500.00	\$ 67,500
			Poor condition. Damaged base of door and frame, rusted, worn, and faded. Recommendation – Repair doors and replace door / frame where necessary. Double leaf	5	leaves	\$ 8,000.00	\$ 40,000
		Louvers	N/A				
		Soffits	Fair condition.				

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Fascia	Discoloration and damaged trim at west façade. Recommendation – Clean, repair/replace, repaint.	1,302	lf	\$ 5.00	\$ 6,510
3.	Elements [e.g., Columns]		Siding Damage at base of Roof cupula. Unable to confirm if there is roof damage. Recommendation – Consult contractor to determine the probable cause of the leaks and to develop a plan to remediate them.				
4.	Roof		Poor condition at roof to wall intersection. Large location where the gabled roof meets higher wall there are signs of significant water damage. Damage tracks to the ground. Recommendation – Consult a contractor to determine the best method to remediate the problem. (improvements to extg 20 yr old asphalt roof per previous assessment)	1	ls	\$ 87,400.00	\$ 87,400
SYSTEMS UPGRADES				SYSTEM UPGRADES COSTS \$ 1,302,952			
1.	Mechanical						
		Immediate Projects					
		Remove circulation pump, cap piping	1 ls	\$ 800.00	\$ 800		
		Remove and dispose of condensing unit	1 ls	\$ 2,000.00	\$ 2,000		
		Inspect heating piping	1 ls	\$ 1,000.00	\$ 1,000		
		Repair heating piping	1 ls	\$ 3,000.00	\$ 3,000		
		Repair heating piping insulation	1 ls	\$ 2,500.00	\$ 2,500		
		Clean mini splits	1 ls	\$ 800.00	\$ 800		
		Shorter Term Projects					
		Replace circulation pumps and VFDs	1 ls	\$ 20,000.00	\$ 20,000		
		Replace mini ductless splits	4 ea	\$ 10,000.00	\$ 40,000		
		Replace window mounted AC units	1 ls	\$ 5,000.00	\$ 5,000		
2.	Electrical						
		Allow for selective distribution replacement					
		Mechanical Equipment feed and connections	1 ls	\$ 25,000.00	\$ 25,000		
		Replace all Lighting	23,804 gsfc	\$ 4.00	\$ 95,216		
		Replace all exit and emergency lighting	23,804 gsfc	\$ 7.00	\$ 166,628		
		Lighting controls	23,804 gsfc	\$ 1.50	\$ 35,706		
		Replace receptacles with tamper proof receptacles	23,804 gsfc	\$ 1.50	\$ 35,706		
		Allow for circuitry to new lighting	23,804 gsfc	\$ 0.50	\$ 11,902		
		Allow for demolition work	23,804 gsfc	\$ 1.00	\$ 23,804		
		Miscellaneous	1 ls	\$ 15,000.00	\$ 15,000		
3.	Plumbing						

Building #4: Westshire Elementary School							9/23/2025
Constructed: 2001							
Last Renovated: N/A Stories: 1 above grade Gross Area: 23,804 sf							
Use: School							
		Equipment					
		Domestic water service, meter and BFP	1	ls	\$ 15,000.00	\$	15,000
		Heat pump water heaters & accessories (AO Smith HPTU or	1	ls	\$ 45,000.00	\$	45,000
		Plumbing Fixtures & Specialties					
		Misc. fixtures and specialties	23,804	gsf	6.00	\$	142,824
		Water Piping					
		Domestic water piping and valves	23,804	gsf	6.00	\$	142,824
		Sanitary Waste & Vent					
		Waste and vent piping	23,804	gsf	5.50	\$	130,922
		Storm Drainage					
		Roof drains and stormwater piping	23,804	gsf	3.00	\$	71,412
		Pipe Insulation					
		Domestic water pipe insulation	23,804	gsf	\$ 0.50	\$	11,902
		Horizontal storm pipe insulation	23,804	gsf	\$ 0.10	\$	2,380
		Miscellaneous					
		Coring, cutting, sleeves & sealing	1	ls	\$ 5,000.00	\$	5,000
		Project management, coordination and job conditions	1	ls	\$ 56,700.00	\$	56,700
		Fees & permits	1	ls			assume waived
4.	Fire Protection						
		Equipment					
		Fire service, BFP and alarm valve	1	ls	\$ 15,000.00	\$	15,000
		Fire pump, jockey pump and accessories - not included					NIC
		Sprinkler Heads & Piping					
		Sprinkler heads and distribution piping	23,804	gsf	\$ 6.50	\$	154,726
		Miscellaneous					
		Hydraulic calculations	1	ls	\$ 2,000.00	\$	2,000
		Coring, cutting, sleeves & sealing	1	ls	\$ 2,000.00	\$	2,000
		Hydraulic lifts/rigging	1	ls	\$ 3,500.00	\$	3,500
		Project management, coordination and job conditions	1	ls	\$ 17,700.00	\$	17,700
		Fees & permits					assume waived
ADDITIONAL NOTES / PHOTOS							
View of South Entry Façade							
View of Southwest Corner							
View of Northeast Courtyard looking East							
View of West Façade							
View of Northeast Courtyard looking South							
View of North Wing							



Concept Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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HVAC Options - Geothermal

GROSS FLOOR AREA CALCULATION

First Floor

45,778

TOTAL GROSS FLOOR AREA (GFA)

45,778 sf

Rivendell High School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	29,469	gsf	20.00	\$	589,380	
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	29,469	gsf	18.00	\$	530,442	
230000	Perimeter heating devices, electric	29,469	gsf	2.00	\$	58,938	
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	29,469	gsf	20.00	\$	589,380	
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	29,469	gsf	18.00	\$	530,442	
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	29,469	gsf	1.00	\$	29,469	
230000	Insulation						
230000	Duct insulation	29,469	gsf	4.00	\$	117,876	
230000	Hydronic pipe insulation	29,469	gsf	1.25	\$	36,836	
230000	Condensate drain pipe insulation	29,469	gsf	0.25	\$	7,367	
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	29,469	gsf	8.00	\$	235,752	
230000	Balancing						
230000	System testing & balancing	29,469	gsf	1.00	\$	29,469	
230000	Miscellaneous						
230000	Testing and start-up	1	ls	10,000.00	\$	10,000	
230000	Coring, cutting, sleeves & sealing	1	ls	15,000.00	\$	15,000	
230000	Hydraulic lifts/rigging	1	ls	20,000.00	\$	20,000	
230000	Commissioning Support	1	ls	15,000.00	\$	15,000	
230000	Project management, coordination and job conditions	1	ls	281,500.00	\$	281,500	
	less Base HVAC				\$	(2,181,500)	
	NET HVAC TOTAL					915,352	

Rivendell Middle School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	45,778	gsf	\$ 20.00	\$	915,560	
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	45,778	gsf	\$ 18.00	\$	824,004	
230000	Perimeter heating devices, electric	45,778	gsf	\$ 2.00	\$	91,556	
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	45,778	gsf	20.00	\$	915,560	
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	45,778	gsf	18.00	\$	824,004	
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	45,778	gsf	1.00	\$	45,778	
230000	Insulation						
230000	Duct insulation	45,778	gsf	4.00	\$	183,112	
230000	Hydronic pipe insulation	45,778	gsf	1.25	\$	57,223	
230000	Condensate drain pipe insulation	45,778	gsf	0.25	\$	11,445	
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	45,778	gsf	8.00	\$	366,224	
230000	Balancing						
230000	System testing & balancing	45,778	gsf	\$ 1.00	\$	45,778	
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$ 10,000.00	\$	10,000	
230000	Coring, cutting, sleeves & sealing	1	ls	\$ 15,000.00	\$	15,000	
230000	Hydraulic lifts/rigging	1	ls	\$ 20,000.00	\$	20,000	
230000	Commissioning Support	1	ls	\$ 15,000.00	\$	15,000	
230000	Project management, coordination and job conditions	1	ls	\$ 434,000.00	\$	434,000	
	less Base HVAC				\$	(2,276,500)	
	NET HVAC TOTAL					2,497,743	



Concept Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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HVAC Options - Geothermal

Samuel Morey Elementary School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	28,424	gsf	\$	20.00	\$	568,480
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	28,424	gsf	\$	18.00	\$	511,632
230000	Perimeter heating devices, electric	28,424	gsf	\$	2.00	\$	56,848
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	28,424	gsf	\$	20.00	\$	568,480
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	28,424	gsf	\$	18.00	\$	511,632
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	28,424	gsf	\$	1.00	\$	28,424
230000	Insulation						
230000	Duct insulation	28,424	gsf	\$	4.00	\$	113,696
230000	Hydronic pipe insulation	28,424	gsf	\$	1.25	\$	35,530
230000	Condensate drain pipe insulation	28,424	gsf	\$	0.25	\$	7,106
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	28,424	gsf	\$	8.00	\$	227,392
230000	Balancing						
230000	System testing & balancing	28,424	gsf	\$	1.00	\$	28,424
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$	10,000.00	\$	10,000
230000	Coring, cutting, sleeves & sealing	1	ls	\$	15,000.00	\$	15,000
230000	Hydraulic lifts/rigging	1	ls	\$	20,000.00	\$	20,000
230000	Commissioning Support	1	ls	\$	15,000.00	\$	15,000
230000	Project management, coordination and job conditions	1	ls	\$	271,800.00	\$	271,800
230000		less Base HVAC				\$	(317,200)
	HVAC TOTAL						2,672,244

Westshire Elementary School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	23,804	gsf	\$	20.00	\$	476,080
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	23,804	gsf	\$	18.00	\$	428,472
230000	Perimeter heating devices, electric	23,804	gsf	\$	2.00	\$	47,608
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	23,804	gsf	\$	20.00	\$	476,080
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	23,804	gsf	\$	18.00	\$	428,472
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	23,804	gsf	\$	1.00	\$	23,804
230000	Insulation						
230000	Duct insulation	23,804	gsf	\$	4.00	\$	95,216
230000	Hydronic pipe insulation	23,804	gsf	\$	1.25	\$	29,755
230000	Condensate drain pipe insulation	23,804	gsf	\$	0.25	\$	5,951
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	23,804	gsf	\$	8.00	\$	190,432
230000	Balancing						
230000	System testing & balancing	23,804	gsf	\$	1.00	\$	23,804
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$	10,000.00	\$	10,000
230000	Coring, cutting, sleeves & sealing	1	ls	\$	15,000.00	\$	15,000
230000	Hydraulic lifts/rigging	1	ls	\$	20,000.00	\$	20,000
230000	Commissioning Support	1	ls	\$	15,000.00	\$	15,000
230000	Project management, coordination and job conditions	1	ls	\$	228,600.00	\$	228,600
230000		less Base HVAC				\$	(75,100)
	HVAC TOTAL						2,439,174



Concept Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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HVAC Options - Geothermal

GROSS FLOOR AREA CALCULATION

First Floor

45,778

TOTAL GROSS FLOOR AREA (GFA)

45,778 sf

Rivendell High School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	29,469	gsf	20.00	\$	589,380	
230000	HVAC Equipment						
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230000	Perimeter heating devices, electric	29,469	gsf	2.00	\$	58,938	
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	29,469	gsf	20.00	\$	589,380	
230000	Hydronic Piping						
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230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	29,469	gsf	1.00	\$	29,469	
230000	Insulation						
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230000	Hydronic pipe insulation	29,469	gsf	1.25	\$	36,836	
230000	Condensate drain pipe insulation	29,469	gsf	0.25	\$	7,367	
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	29,469	gsf	8.00	\$	235,752	
230000	Balancing						
230000	System testing & balancing	29,469	gsf	1.00	\$	29,469	
230000	Miscellaneous						
230000	Testing and start-up	1	ls	10,000.00	\$	10,000	
230000	Coring, cutting, sleeves & sealing	1	ls	15,000.00	\$	15,000	
230000	Hydraulic lifts/rigging	1	ls	20,000.00	\$	20,000	
230000	Commissioning Support	1	ls	15,000.00	\$	15,000	
230000	Project management, coordination and job conditions	1	ls	281,500.00	\$	281,500	
	less Base HVAC				\$	(2,181,500)	
	NET HVAC TOTAL					915,352	

Rivendell Middle School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	45,778	gsf	\$ 20.00	\$	915,560	
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	45,778	gsf	\$ 18.00	\$	824,004	
230000	Perimeter heating devices, electric	45,778	gsf	\$ 2.00	\$	91,556	
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	45,778	gsf	20.00	\$	915,560	
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	45,778	gsf	18.00	\$	824,004	
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	45,778	gsf	1.00	\$	45,778	
230000	Insulation						
230000	Duct insulation	45,778	gsf	4.00	\$	183,112	
230000	Hydronic pipe insulation	45,778	gsf	1.25	\$	57,223	
230000	Condensate drain pipe insulation	45,778	gsf	0.25	\$	11,445	
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	45,778	gsf	8.00	\$	366,224	
230000	Balancing						
230000	System testing & balancing	45,778	gsf	\$ 1.00	\$	45,778	
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$ 10,000.00	\$	10,000	
230000	Coring, cutting, sleeves & sealing	1	ls	\$ 15,000.00	\$	15,000	
230000	Hydraulic lifts/rigging	1	ls	\$ 20,000.00	\$	20,000	
230000	Commissioning Support	1	ls	\$ 15,000.00	\$	15,000	
230000	Project management, coordination and job conditions	1	ls	\$ 434,000.00	\$	434,000	
	less Base HVAC				\$	(2,276,500)	
	NET HVAC TOTAL					2,497,743	



Concept Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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HVAC Options - Geothermal

Samuel Morey Elementary School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	28,424	gsf	\$	20.00	\$	568,480
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	28,424	gsf	\$	18.00	\$	511,632
230000	Perimeter heating devices, electric	28,424	gsf	\$	2.00	\$	56,848
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	28,424	gsf	\$	20.00	\$	568,480
230000	Hydronic Piping						
230000	Condenser water distribution piping (WSHPs)	28,424	gsf	\$	18.00	\$	511,632
230000	Condensate Drain Piping						
230000	Condensate piping with fittings & hangers	28,424	gsf	\$	1.00	\$	28,424
230000	Insulation						
230000	Duct insulation	28,424	gsf	\$	4.00	\$	113,696
230000	Hydronic pipe insulation	28,424	gsf	\$	1.25	\$	35,530
230000	Condensate drain pipe insulation	28,424	gsf	\$	0.25	\$	7,106
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230000	Automatic temperature controls DDC	28,424	gsf	\$	8.00	\$	227,392
230000	Balancing						
230000	System testing & balancing	28,424	gsf	\$	1.00	\$	28,424
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$	10,000.00	\$	10,000
230000	Coring, cutting, sleeves & sealing	1	ls	\$	15,000.00	\$	15,000
230000	Hydraulic lifts/rigging	1	ls	\$	20,000.00	\$	20,000
230000	Commissioning Support	1	ls	\$	15,000.00	\$	15,000
230000	Project management, coordination and job conditions	1	ls	\$	271,800.00	\$	271,800
230000		less Base HVAC				\$	(317,200)
	HVAC TOTAL						2,672,244

Westshire Elementary School

D30 HVAC, GENERALLY

230000	Geothermal Borefield						
230000	Geothermal wells, piping and earthwork	23,804	gsf	\$	20.00	\$	476,080
230000	HVAC Equipment						
230000	Water source heat pumps, ERVs and perimeter heating devices	23,804	gsf	\$	18.00	\$	428,472
230000	Perimeter heating devices, electric	23,804	gsf	\$	2.00	\$	47,608
230000	Sheet Metal & Accessories						
230000	Ductwork, duct accessories and RGDs	23,804	gsf	\$	20.00	\$	476,080
230000	Hydronic Piping						
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230000	Condensate piping with fittings & hangers	23,804	gsf	\$	1.00	\$	23,804
230000	Insulation						
230000	Duct insulation	23,804	gsf	\$	4.00	\$	95,216
230000	Hydronic pipe insulation	23,804	gsf	\$	1.25	\$	29,755
230000	Condensate drain pipe insulation	23,804	gsf	\$	0.25	\$	5,951
230000	Automatic Temperature Controls						
230000	Automatic temperature controls DDC	23,804	gsf	\$	8.00	\$	190,432
230000	Balancing						
230000	System testing & balancing	23,804	gsf	\$	1.00	\$	23,804
230000	Miscellaneous						
230000	Testing and start-up	1	ls	\$	10,000.00	\$	10,000
230000	Coring, cutting, sleeves & sealing	1	ls	\$	15,000.00	\$	15,000
230000	Hydraulic lifts/rigging	1	ls	\$	20,000.00	\$	20,000
230000	Commissioning Support	1	ls	\$	15,000.00	\$	15,000
230000	Project management, coordination and job conditions	1	ls	\$	228,600.00	\$	228,600
230000		less Base HVAC				\$	(75,100)
	HVAC TOTAL						2,439,174