FACILITY ASSESSMENT REPORT- WASHINGTON STREET SCHOOL

Prepared for Merrimack Valley School District

April 29, 2025

EEI ENERGY EFFICIENT INVESTMENTS INC.

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1. Executive Summary

Property Overview and Assessment Details

General Information	
Property Type Address	26 Washington Street Penacook NH 603 753-0194
Year Developed	Multiple years original 1936, 1950 (east addition), 1956 (rear addition)
Site Acreage Parking Spaces	2.6 acres
Building SF	TBD
Number of Stories	2, with full basement occupied
Date of Visit	Multiple
Report Prepared by	Banwell Architects, architectural Seacoast Engineering, Electrical James Steve Goan Engineering, structural
School Contact Title	Fred Reagan
Additional Contac Info	

Significant/Systemic Findings and Deficiencies

Historical Summary

Building was built as a public school. See the attached NH Division of Historical Resources Report dated August 2010. The building is now occupied by SCI Charter School for 17-22 year old students.

Architectural Upgrades Recommended:

ADA Improvements:

1. Building is not fully ADA Accessible. An elevator will need to be installed and connect all three floors.
2. Bathrooms are not fully ADA Accessible. Bathrooms should be reconfigured to meet ADA standards and convert to single use bathrooms.
3. Door hardware is currently not consistent, and not all are ADA compliant.

Code Improvements:

1. Stairways need to be fire rated for egress requirements.
2. Stairway railing and guardrails do not meet code and should be upgraded.
3. Stair riser heights vary and should be reviewed for adequate landing widths and lengths and may need to be rebuilt.
4. Stair doors have been recently upgraded to be rated and not include windows due to wall rating requirements.
5. Main entry stairs have railings that do not meet code.

General Improvements:

1. New pull down stair needed at attic scuttle.
2. Some classrooms have chalkboards. Review whiteboard locations and infill around with tack board.
3. There are roof vents above the stage that should be reviewed and removed if no longer being used.
4. Rooftop units are being replaced so will need to review roof structure. If reduce the number of units, will require infilling of roofing.
5. Classrooms should be reviewed for use and review if sinks need to be added for educational use.

6. Windows (first and third floor in classroom wing along street) are near the end of their life and should be replaced.
7. Science room at the third floor is currently not being used as a science room. Remove the old prep hood.
8. Nurse area should be reviewed for current layout guidelines.
9. Classroom cabinetry should be reviewed for current design requirements
10. Doors into classrooms are 45" rough opening. If redoing new doors, will need to infill part of opening to have standard 36" doors.

Mechanical, Electrical, Plumbing and Fire (MEPF)

Electrical Recommendations:

Upgrade Electrical service as required to support new HVAC equipment and new elevator. Existing electrical service size is 400 Amps, 120/208 Volts, 3-Phase. New service size is estimated to be 600 Amps to 800 Amps at 120/208 Volts, 3-Phase. Final size to be determined based on new electrical loads added to existing loads. New Main Distribution Panel would back-feed existing panelboards.

Reroute new service around the building into the Electrical Room so it is not under the main entry stairway. A new electrical system was recently installed in the single-story building as a separate entrance.

Building needs new addressable fire alarm system with voice evacuation and new addressable fire alarm devices.

Old school clocks are still mounted around the school and should be removed.

Natural gas- also comes in to the front of the building, if rerouting the electric, does it make sense to reroute this as well?

Mechanical system upgrades

We were requested to provide a mechanical and plumbing review of the Washington Street School and propose recommendations for upgrading the heating and ventilation systems.

The recommendations incorporate and are not limited to meeting code requirements and to meet best design and engineering practices based on ASHREA (American Society of Heating Refrigerating and Air-Conditioning), and current New Hampshire building codes.

Existing heating plant

The existing heating plant is serviced by a steam boiler system that is beyond the service life of the boiler. The steam system components such as piping, boiler feed system are outdated and need repairs. The boiler room is below grade and had standing water during the site visit (4/19/2023).

The boiler system distributes steam throughout the building to cast iron radiators, heat exchangers and steam coils on air handlers. A significant amount of steam condensate and steam piping is not insulated and rejects uncontrolled heat into space. This adds to overheating in areas and energy loss in the system.

The existing ventilation system is comprised of the original passive gravity ventilation systems which relies on hoods on the roof and fans to draw air through the classrooms. The newer back section has exhaust fans and room grilles to exhaust air through the spaces. There is no heat recovery used for the existing building ventilation systems.

Mechanical HVAC Recommendations

We recommend removing the older boiler and replacing them with 2 Lochinvar condensing boilers based on Lochinvar Crest sized at 1,750 MBH each. Each boiler would be sized for 60% of the load each providing better backup when one boiler is off line. The existing boiler room below grade would be filled in with compacted fill and a new floor installed. A new first level mechanical and electrical room will be created for the new systems. (Boiler Electrical: 208v, 3phase) (Boiler pump Electrical: (2) 120v, 1/2hp)

The installation of the new boiler system would include venting of the boilers through the existing chimney with sealed combustion air intake.

In addition to the new boilers, new hydronic appurtenances such as an air separator, chemical feeder, expansion tank, makeup water connection and safety control devices would be installed.

Hot water distribution to the building would be provided by standby/duty pumps that would be controlled by variable frequency drives. The pump speed would be controlled by system pressure and zone demand through the building automation system. (Electrical: 2 @ 7.5hp, 208/230volt)

The existing steam and condensate piping would be removed throughout the building and new sch-40 black steel supply and return headers will be installed in the boiler space and sch-40 steel distribution piping will be installed for the distribution to new radiators and heating coils.

Zone Heating

For heating classrooms and office spaces we recommend installing wall mounted radiant panels around the perimeter. The radiant panels would have 2-tiered heating elements and 14 gauge

stamped sheet metal covers. Each space would be provided with a wall mounted thermostat to control zone temperatures.

The building radiant heating system would be the primary heating when the zones are unoccupied.

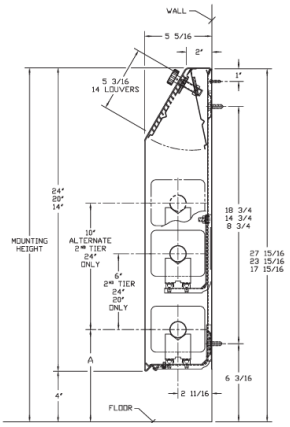

Figure #1: Wall mounted radiation panel section.

Unitary Cabinet Unit Heaters

In the entryways and in corridors cabinet unit heaters will be installed for heating spaces with high outside air infiltration loads. There will be 7 units that will be controlled by a zone sensor to maintain space temperatures. (Electrical 1/15hp, 120volt, 0.45amp)

Classroom Ventilation Systems

For ventilation in the classrooms and the support areas we recommend installing 3 ERU's (Energy Recovery Units). Each unit would serve one level and would be installed in the attic space. The three individual units would be smaller in size and weigh less than a single unit. This would aid in rigging each unit into the building and installing the units more spread out. (Electrical each unit: 208/230volt, 3phase, 9MCA)

New roof hoods would be installed for outside air intake and exhaust for the units. A common air plenum would be installed below the hood for multiple ductwork connections.

Figure #2: Low profile intake hood.

Galvanized low pressure ductwork would be installed from each ERU to the spaces below with branch ductwork to each classroom. Each classroom would have a duct mounted heating coil to provide additional heat for helping to maintain the zone heating setpoint.

In areas where there are no ceilings, such as classrooms, painted spiral ductwork will be installed with sidewall grilles. Spaces with new lay-in ceiling tiles will have concealed ductwork with lay-in type diffusers.

Gym Ventilation System

The Gym has steam heating and a general ventilation system that should be replaced with a roof mounted ERU with dehumidification. The existing steam piping and heating system would be removed and new hydronic piping installed for primary heating and the ERU heating coil. The unit would have exposed painted spiral ductwork with sidewall mounted grilles for air balancing and distribution. (Electrical: 208/230volt, 3phase, 93.6MCA)

Figure #3: Existing roof hoods.

General Exhaust Systems

For the new restrooms and janitorial spaces there would be a roof mounted exhaust fan installed with ductwork distribution to each space. Each space would have either side wall grilles or ceiling mounted grilles with dampers to adjust airflow. (Fan size 3/4hp. 120v)

Elevator installation

Provide code required continuous exhaust for the elevator equipment room. This would include installing an exhaust fan on the roof and providing galvanized ductwork down to the elevator equipment room. (fan size 1/8hp 120v)

Domestic hot water

Provide and install a heat-pump water heater to serve the new domestic hot water loads in the renovated area. (240v208v, 1phase, 4000/3000W) The new system will include a domestic recirculation pump (1/8hp, 120v), expansion tank, and a thermal mixing valve. All new piping will connect to the existing hot water system and will include a new hot water circulation line out to the farthest fixture served.

Plumbing Fixtures

Provide and install new wall hung toilets (3), floor mounted toilets (2), lavatories (6), and a shower based on American standard or equal for new restrooms. Installation includes trim, wall hangers, isolation valves and Elkay faucets. All fixtures shall be ADA as required. All colors and finishes TBD by architect.

The restroom on the first level will require concrete cutting and excavation to reset new sewer piping to new toilet and lavatory locations.

Furnish three floor drains with trap primers in the restrooms. Drains will have 3" round bronze strainers with integrated trap.

All new plumbing DWV shall be sch-40 PVC with fittings. All domestic hot & cold-water piping shall be copper with soldered or mechanical joints. All domestic water piping shall be insulated per 2018 energy code and NH amendments.

Summary

The new heating system plant comprising of new high efficiency condensing boilers will replace all the steam heating systems and provide domestic hot water. New ERU's will provide a better efficient means to ventilate the building and have better integrated controls for energy savings.

The proposed systems will provide better maintenance, better zone comfort, energy efficiency and controllability over the existing systems.

2. Building and Site Information

Systems Summary		
System	Description	Condition*
Structure	Steel, wood framed	P F G
Façade	Brick	P F G
Roof	membrane	P F G
Interiors	Double loaded corridor with classrooms both sides	P F G
Elevators	N/A	P F G
Plumbing	Old bathrooms and do not meet code	P F G
HVAC		P F G
Fire Suppression		P F G
Electrical		P F G
Fire Alarm		P F G
Special Equip		P F G
Pavement		P F G

*P=poor, F=fair, G=good

Site Development	N/A	P F G
Landscaping Topography	N/A	P F G
Utilities		P F G
Site Lighting	N/A	P F G
Ancillary Structures	N/A	P F G
Accessibility	ADA issues noted above	P F G

*P=poor, F=fair, G=good

3. Property Space Use and Observed Areas

Areas Observed
Main 3-story classroom building at the front along the road
Key Spaces Not Observed
Gym and building at the back of the site Overall site at exterior of the building

ESTIMATED COST OF IMPROVEMENTS:

Washington Street School - Project budget outline		
5/2/2025		
Area of building in scope of work= 16,935 square feet		
	Estimated Budgets	
HVAC Upgrades (Steam conversion, Ductwork, Ventilation)	$	2,307,500
Windows Replacements	$	335,000
Door Replacements (ADA-Code)	$	250,000
Bathroom Renovations (ADA-Code)	$	125,000
Ceilings	$	60,000
Flooring	$	150,120
Electrical Upgrade	$	417,000
Fire Alarm	$	137,388
Elevator Upgrade. (Code)	$	600,000
Stair railing upgrades (Code)	$	125,100
Ships lader	$	30,000
Classroom cabinetry	$	200,000
Classroom white boards, & misc	$	65,000
Totals	**$**	**4,802,108**
Contingency	**$**	**576,253**
Design	**$**	**403,377**
Total	**$**	**5,378,361**