

WESTPORT PUBLIC SCHOOLS  
COLEYTOWN ELEMENTARY SCHOOL  
65 Easton Road, Westport, Connecticut

Preliminary Assessment  
January 2023



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## 02. Executive Summary

### Introduction

At the outset of this project, Westport Public Schools requested an initial assessment of Coleytown Elementary to preliminarily evaluate its viability as a *Renovation Status* project as defined by C.S.G. 10-282(18). The goal of the initial assessment was, through a general review of the facility, cite broad aspects that might support or invalidate the school’s application for renovation status prior to engaging a full study.

Members of the Design Team representing Architectural, Site/Civil, Structural, Fire Protection, Plumbing, Mechanical, and Electrical disciplines conducted a site visit in November 2022 to review the facility’s existing conditions. Observations made during the site visit were visual only and did not involve destructive testing or physical sampling. The following report summarizes our collective findings.

### Assessment Basis

In order to preliminarily assess the viability of the project for renovation status, this initial study focused on seven of the twelve prerequisite categories necessary to support a renovation status submission. The seven categories focused on have been highlighted in bold, underlined text under “Renovation Status” below. Though compliance with any of the above prerequisites is not independently a determiner of renovation status compliance, the scope necessary to achieve these categories can form the underlying basis that either supports or inhibits the pursuit of renovation status for an existing school.

### Renovation Status

These prerequisites are summarized by DAS Office of School Construction Grants and Review *Plan Review Checklist FORM SCG-3520 Renovate as New Status (RNV)* and are as follows:

#### Renovation Status Prerequisites

01. Superintendents Request for RNV status Designation
02. Cost Analysis for Proposed Renovation Projects
03. Professional Feasibility Study with Cost Estimates
04. Cost Estimate Demonstration that RNV costs less than New
05. **Certification that RNV facility will meet applicable codes.**
06. **Statement of Proposed Technology for renovated facility.**
07. **Structural Certification the facility will have a useful life span greater than 50 years.**
08. **Detailed Report on Existing Building Systems**

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09. Professional Certification that proposed systems will have a useful life span of 20 years.
10. Professional Certification that replacement windows and glazing will be energy efficient.
11. Professional Certification that applicable sections of High Performance Building Regulations will be met.
12. Superintendent's certification regarding centrality of the renovated school facility.

### Space Standard

*Renovation Status* projects frequently encounter issues with the State's Space Standard used to establish the maximum building area eligible for State grant reimbursement. The Space Standard is statutorily determined based upon the highest projected student enrollment over an eight-year period being in October of the year that a grant application is submitted, for grade levels housed. In 2016, the Office of School Construction Grants and Review adopted Connecticut School Construction Standards and Guidelines FORM SCG-2500 which establishes an alternative method for determining school size. Both methods are typically prepared for a school grant application, but the calculation described by FORM SCG-2500 often results in a lower total project area calculation.

The Facility Master Plan reported a gross building area for Coleytown Elementary of 72,594 square feet and a student population of 378. The statutory computed Space Standard is only 47,376 square feet. Student enrollment current as of December 2022 is 542 students, which yields a Space Standard building area of 67,931 square feet.

An enrollment study is a necessary component of any future school construction grant application. The anecdotal information provided above serves as a means of gaging the student enrollment that clearly describes a post-pandemic enrollment increase experienced by many districts. However, even at its current enrollment, the existing school's building area may exceed the size that can be supported for full reimbursement.

### Environmental

The scope of this study did not include environmental reporting, inspections or testing. A comprehensive environmental analysis that considers the school's existing hazardous materials management plan, a verification of both known and potential hazardous material

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sources and an evaluation of the site's soils pertaining to both its active septic system and its decommissioned underground oil storage tank.

If it is determined that the existing site is redeveloped, whether for the renovation of the existing school, or construction of a full new school, it is recommended that analysis of the existing septic system be evaluated. Given the age of the original facility, this should include soil sampling to confirm the absence of hazardous materials that might have been discharged into the system from the building's plumbing and waste drainage systems.

### Cost Estimation

The State ultimately validates a district's *Renovation Status* application by demonstrating, through cost estimation, that the proposed project cost for renovation of an existing facility is less than that of comparable new construction. Beyond a monetary valuation, however, the district may also consider the quality of renovated educational spaces compared to those of new construction. Changes to educational modalities in recent years have directly impacted the physical characteristics of contemporary school design. Aspects of flexibility and adaptability that are hallmarks of newly constructed instructional spaces may be compromised within a renovated school despite its adherence to the criterion necessary to achieve *Renovation Status*.

### Executive Summary

The adaptation of an existing school to meet the educating body's programmatic goals can be complicated by physical and site characteristics of the facility being modified. Circumstances unique to an existing school can diminish the anticipated benefits for a renovation project. We offer for consideration the following characteristics specific to Coleytown Elementary:

#### Reimbursement Rate

It is important when contemplating *Renovation Status* to prepare a cost analysis that compares a renovation as new project with a comparably sized new construction project. While this exercise is a requisite requirement in the application for renovation status, it also provides the District insight into the funding conditions for a specific project. Often, Districts with low State reimbursement rates find a greater financial benefit for new construction over renovation.

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### Reuse of Existing Structural Components

As reviewed under Section 07 of this assessment, existing schools that can utilize foundations, floor slabs and structural framing assemblies' benefit by offsetting the cost to procure and construct these assemblies. For a school the size of Coleytown Elementary, this could represent hundreds of thousands of project dollars that could be directed toward other programmatic needs. While some level of building modification is anticipated, Coleytown Elementary's inaccessible network of mechanical tunnels that have been compromised by water infiltration suggest that significant improvements to large portions of the school's foundation system will be required. These improvements will erode the benefits otherwise afforded by the retention of the existing structural system.

Similarly, large sections of the original school are spanned by field assembled wood trusses. While not necessarily prohibited for use in schools, the protection of wood framing to meet current fire safety codes, and the limitations to roof mounted mechanical equipment posed by sections of steeply pitched roofs, suggests that ancillary costs could be incurred to accommodate existing conditions under a renovation project, rather than taking advantage of building efficiencies available through new construction.

### Building Envelope and Systems Considerations

It is common when renovating an existing school to anticipate significant improvements to its roof and exterior walls. Though the windows of Coleytown Elementary School appear to be contemporary and of energy efficient design (See Section 10 of this report), renovation status dictates that the design professional certify that building system have a minimum 20-year service life. Depending upon the age of the existing windows, they may need to be replaced in order to certify the service life period. New, energy efficient windows would be required under either project delivery type. In this instance, there is no appreciable value to maintaining the existing windows.

Similarly, we anticipate no specific benefit afforded by renovation status when considering the school's existing systems. Their age, capacity and in some cases configuration, dictate extensive replacement of all primary mechanical, electrical, plumbing, and septic systems currently serving the school. Whether renovated or constructed as a new facility, the school

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will require a full fire sprinkler system to comply with life safety codes for educational uses. The existing pitched roof of the school, if retained under a renovation project, could impose a further cost for the protection or transfer of a new fire sprinkler system through the unconditioned space of the roof's attic.

### Programmatic Design Goals

The Preliminary Assessment touches upon pedagogical goals common to *New Century* educational space design. Though our observations have not been informed by Educational Specifications for Coleytown Elementary, we anticipate that any major construction project will contemplate physical modifications suited for the support and delivery of contemporary educational modalities.

The existing Coleytown Elementary and its subsequent additions distinctly reflect the eras in which each were constructed. Features such as observation rooms, for example, are uncommon in today's educational facility design. Though the existing school does offer protected outdoor spaces for younger students (a feature embraced by schools following the COVID-19 Pandemic) the high walls of the existing outdoor spaces result in blind conditions that pose security concerns in their current configuration.

Further, portions of the existing school have inefficient spatial ratios. Small classrooms served by disproportionately large corridors, as is the case in the 1970's additions, are not directly convertible to contemporary educational spaces. Revisions to these spaces may be complicated by the existing location of structural elements in a renovation project. New construction has the definitive benefit of providing a comprehensive design solution that efficiently meets programmatic design goals and is uncompromised by existing building constraints.

### Conclusion

There are several factors to consider, beyond attaining the twelve prerequisite requirements for Renovation Status, when determining the best path to update an existing school. Though Coleytown Elementary School could pursue Renovation Status, it is our opinion based upon the initial findings of this Preliminary Assessment, and for the reasons cited above, that doing so may not fully realize the financial benefits associated with renovation projects or the District's programmatic goals otherwise afforded by new construction.

**School District**

The following representatives from Westport Public Schools provided input, contributions and oversight related to the development of this Preliminary Assessment:

**Westport Public Schools**

*Theodore Hunyadi, Director of Facilities*

*William S. Gonzalez, Office Coordinator for Facilities*

**Program Manager**

With their expertise in project planning and pre-referendum services, the Westport Public Schools has commissioned this study as a component of a multi-faceted analysis to consider the renovation or new construction for the Coleytown Elementary School. Their team is comprised of the following members:

**Colliers Project Leaders**

135 New Road, Madison, CT 06443, (860) 395-0055 [www.cplusa.com](http://www.cplusa.com)

*Charles Warrington, P.E., Director of Project Management*

*John R. Koplas, RA, Senior Project Manager*

**Assessment Team**

Providing professional services, the Preliminary Assessment Team is composed of the following design and engineering firms and individuals, who have collectively reviewed the existing facility to generate this Study:

**Antinozzi Associates Architecture & Interiors**

271 Fairfield Avenue, Bridgeport, CT 06604, (203) 377-1300 [www.antinozzi.com](http://www.antinozzi.com)

*Michael Losasso, AIA, LEED AP BD+C, Principal-in-Charge*

**Stantec Consulting Services, Inc.**

55 Church Street Suite 601, New Haven, CT 06510, (203) 495-1645 [www.stantec.com](http://www.stantec.com)

*Antonio DiCamillo., P.E., Senior Engineer, Project Manager*

**Michael Horton Associates, Inc.**

151 Meadow Street, Branford, CT 06405, (2-3) 481-8600 [www.mha-eng.com](http://www.mha-eng.com)

*Scott Erricson, P.E., Principal*

**Consulting Engineering Services (CES)**

811 Middle Street, Middletown, CT 06457, (860) 632-1682 [www.cesct.com](http://www.cesct.com)

*Eric Gebrian, P.E., Associate, Project Manager*

## 04. Use and Reliance Restriction

### Statement of Use

Antinozzi Associates PC; Stantec Consulting Services, Inc., Michael Horton Associates, and Consulting Engineering Services (CES), hereinafter referred to as the "Preliminary Assessment Team," have produced the content of this document under agreements between Antinozzi Associates PC and Westport Public Schools. All terms and conditions of that agreement are included within this document by reference. Other than the Town of Westport and Westport Public Schools, the Preliminary Team disclaims any obligations to any other person with respect to any material presented in this document, and no person may rely upon this document without advance and express written consent from Antinozzi Associates, PC and such person's written agreement is to bound by the limitations, qualifications, terms conditions and indemnities to Antinozzi Associates, PC set forth in that agreement.

The Preliminary Assessment Team specifically states that their review of the property in question is subject to monetary and time restraints, as well as scope limitations. Given those restraints and limitations, they have made what is in their opinion a reasonable investigation and analysis. The materials presented in this document shall be considered "to the best of the Preliminary Assessment Team's collective knowledge." This phrase means materials presented reflect the Preliminary Assessment Team's actual knowledge of the subject matter after such inquiry the Preliminary Assessment Team considered reasonable given the constraints and limitations upon the contracted scope of work.

The extent of the physical observation to produce this Preliminary Assessment has been limited to walk-around visual inspections of the property and conversations with Westport Public Schools representatives, and other support personnel. Assumptions regarding the overall condition of the property has been developed based upon observation of representative areas of the subject site and review of previous studies and drawings. As such, the development of conceptual design and improvements, along with associated costs, is based upon the team's prior knowledge of the facility from the extension and alternation of the original school the overview observation and is also limited with respect to completeness.

## Overview

Eligibility for *Renovation Status* requires that a professionally registered design professional certify that the renovated facility will comply with all applicable codes, including handicap accessibility. The scope of the Preliminary Assessment did not exhaustively review code and accessibility requirements for the facility. The assessment instead identifies existing building systems and components that commonly fail to meet current codes.

Depending upon the age of a facility and modifications over the years, costs associated with meeting applicable codes can represent significant portions of the renovation budget.

## Life Safety

### Fire Sprinkler System

The existing school has a limited fire sprinkler system providing protection for storage located beneath the stage in the Gymnasium. The pressure reducer associated with the fire sprinkler system is mounted high above the floor level from which it can be accessed. New schools are statutorily required to be protected throughout by a fire sprinkler system as a condition construction grant funding. The presence of a fully compliant fire sprinkler system also provides increases the available floor area for an educational use building.

The existing school's single-story floor area exceeds the maximum floor area permitted by the current Building Code for education use, even if a full fire sprinkler system were provided. The open perimeter available to the existing school may help to increase the maximum permitted building area, but with only limited fire sprinkler coverage, it is certain that the existing school would not meet this requirement.

A renovation of the existing school, or the construction of a new school, would necessitate the introduction of a full fire sprinkler system. We understand from Westport Public School's Facilities Department that current water utility pressure levels have been adequate following the Town's upgrade of a local pumping station for a portion of the system that serves the school. The availability of adequate water pressure to accommodate a full fire sprinkler system requires a hydrant flow test for confirmation.

05. Code Certification

**Emergency Power**

Given the school's reliance upon a septic system, an emergency generator would be recommended to address the sanitary waste system's current code compliance if the septic system is not entirely gravity based.

Should the available water pressure supplied to the site be inadequate to support a full fire sprinkler system, any pump designed to boost the water pressure would need to be provided with emergency power.

**Food Service**

Current Department of Public Health requirements mandate the need for in-ground grease waste interceptors in new construction. The under-sink grease waste interceptor is permitted under prior code, but should be replaced as part of the renovation of the facility.



*Undercounter grease waste interceptor.*

**Accessibility**

Site Pathways, Building Entrances and Internal Circulation

A barriers free path connects accessible spaces at the existing school's east parking lot the main building entrance. The main entrance, though secured remotely, also appears accessible. The existing school is a single-story with connecting corridors to classrooms, special instruction spaces and common spaces such as the Cafeteria and Media Center.

05. Code Certification

Some secondary building exits are inaccessible due to the presence of a step at the exit's exterior landing.



*An example of a non-accessible building exit.*



*Portable classrooms recently added to Coleytown Elementary to address recent enrollment increases.*



*A view of the accessible ramp leading to the elevated entrance of the portable classrooms.*

#### Toilet Rooms

Though not all toilet room facilities are equipped in a manner to meet barriers free access requirements, updates to the facility's infrastructure have been made to improve toilet rooms accessibility.

#### Specialty Spaces

A common accessibility concern is the provision of barrier free access to elevated stages. Access needs to be "equal and adequate". A path to the stage from an adjacent corridor, for example, does not meet the intent of equal access. A renovation of the school should address access to the stage level for individuals with physical impairments. Because existing facilities rarely have sufficient surplus space to accommodate a compliance accessible ramp, a platform lift is most commonly the form of access provided. Newly constructed schools typically achieve access to the stage without the incorporation of platform lifts which operate slowly and are notorious for being prone to maintenance issues.



*A view of the existing stage located in the Gymnasium.*

A portion of retractable bleacher seating in assembly spaces is also required to be accessible. A renovation of the school would require partial replacement of existing retractable bleachers to accommodate accessible seating.



*Existing retractable seating lacking provisions for accessible seating.*

### Doors and Hardware

A cursory review of the existing facility indicates that doors have been retrofitted with accessible level hardware at some point in the building's history.



*Exterior classroom doors fitted with level handles to facilitate re-entry.*



*An alternative exit door configuration with flush landing transition to a paved exterior walk surface.*

05. Code Certification

Drinking Fountains

The provision of drinking fountains are required by code for a facility based upon the number of building occupants derived from building area and use classifications. Facility Staff report the replacement of existing non-accessible drinking fountains with models that provide bottle fillers. Strick compliance with accessible requirements would dictate a high/low drinking fountain configuration in order that individuals with issues bending, as well as those in wheelchairs, have access to potable water. Bottle fillers are have grown in popularity to address public health concerns and the avoidance of opportunities to transmit communicable diseases.



*An example of a newly installed drinking fountain with bottle filler (left), and a traditional drinking fountain (right).*

## General

Technology is a quickly changing aspect of modern education. Reliance upon technology as an integral tool for instruction continues to increase. The relevance of technology in education was further realized during the 2020 COVID-19 Pandemic as a means of supporting remote learning. Because the shelf life of programs and equipment is short, compared to the school's service life, most districts encounter a perpetual need to update and replace both technology hardware and software.

The scope of the Initial Assessment did not include an interview of the District's administration or staff to establish technology goals. This type of in-depth review will occur as part of the preparation of school construction grant application or a *Renovation Status* application, should the district choose to pursue this path.

## Infrastructure

The flexibility of low voltage network cabling facilitates the installation of technology infrastructure in existing school almost as easily as in new construction. New construction has the benefit of coordinating the technology infrastructure with other building systems that compete for space within walls and plenums, but the introduction, replacement and repair of hardware like laptops and charging charts occurs much more frequently.

Examples of technology observed during the initial assessment include mobile interactive displays in classrooms and the media center; and digital signage in the cafeteria.



*A centrally located interactive display in the Media Center.*



*This interactive display is typical of those observed during the Initial Assessment and offer the ability to adjust the height of the display surface above the floor.*



*Wall mounted digital signage within the cafeteria.*

Contemporary technology systems typically rely upon wireless access points (WAPs) for instructional space connectivity. Wireless connectivity might be further supplemented with one or more data drops to provide direct connection to the school's servers.



*A Ceiling mounted wireless access point observed within a classroom with mobile interactive display.*

Observations made during the Initial Assessment suggests that Westport Schools has a well-developed technology program. The equipment appears to be current and comparable or superior to systems utilized by other Fairfield County school districts. It is assumed that the same standard level for technology would be provided for a newly constructed school or one seeking *Renovation Status*.

## Overview

Though buildings constructed prior to 1990 lack building envelopes suitable for achieving renovation status without significant modification or update, some renovation projects can benefit from the retention of existing structural elements such as foundations, slabs on grade, elevated floor slabs, and structural framing systems. In instances where these assemblies are constructed of non-combustible materials, and are certified by a structural engineer to have a serviceable life span of at least 50-years in accordance with renovation status requirements; repurposing existing structural assemblies can represent significant project cost saving in both first dollar cost and construction time.

## Observations

In general, the structure of the building was observed to be in fair condition and appears to have been well maintained. There are structural issues throughout, including cracks in concrete masonry unit and brick masonry walls, cracked concrete window sills, failing wall finishes, cracked, and failing mortar joints, cracked concrete slabs on grade, and significant cracking observed in the cast-in-place concrete foundation walls. Surface corrosion of exposed steel and lintels, as well as damage to an exterior steel column was also observed. Evidence of water infiltration existed at multiple locations throughout the building's interior. Remedial action should be taken to address any of these issues that are to be retained in the renovation project.



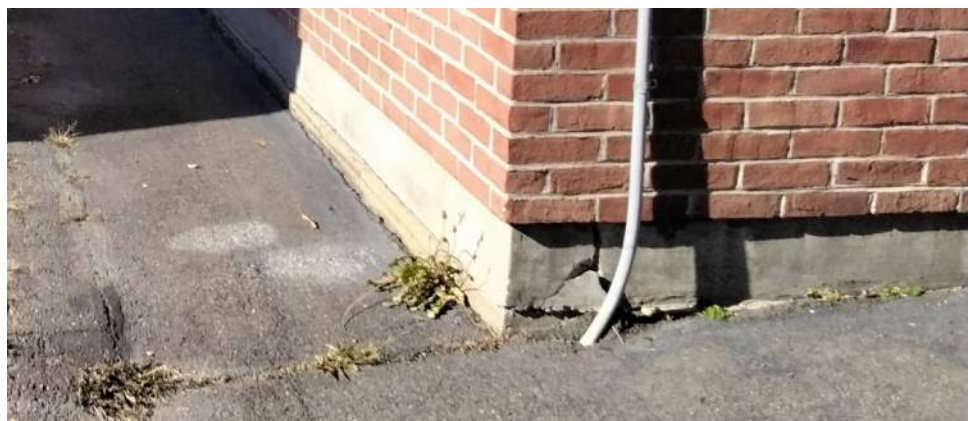
*Typical corroded steel lintel.*

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07 Structural Certification

The existing Coleytown Elementary reflects the accretion of building projects to expand the facility with additions over the years. While some of the later additions were constructed utilizing structural systems that have a good chance of meeting Renovation Status criteria, and therefore could be retained; the original 1953 structure was constructed utilizing field fabricated wood trusses which would require more specific evaluation and analysis to confirm their suitability for the required loading of a renovated public school. Additionally, the configuration of some of the structural elements within mid-century additions are not necessarily conducive to 21-Century classroom design without modification. These aspects reduce the viability associated with reuse of the existing structural systems, and therefore, reduce the project's potential financial benefit for its retention.



*Cracked brick and failed mortar joints.*



*An example of a cracked foundation wall.*



*Cracked cast-in-place concrete foundation typical.*

Structural Recommendations:

A *Renovation Status* application that contemplates the retention the existing structure, in part or in whole, would require selective repairs to certify its serviceability for the next 50-years.

The viability of retaining the existing structure is entirely dependent upon the ability of the design professional to reincorporate this structure as part of a newly configured school. Aspects of the existing structure, such as the presence of field fabricated wood roof trusses, suggest that not all of the existing structure is suitable to be retained for a renovation project.

Like many schools of its era, Coleytown Elementary has a network of utility tunnels designed to convey its original steam heating lines along with other utilities from the central mechanical room throughout the school. Unlike other schools, however, these existing utility tunnels are extremely shallow precluding access for maintenance of the existing steam system by Facilities Department personnel. The size of these tunnels would require further evaluation to determine whether they could be adapted to support new mechanical and plumbing systems with sufficient access for maintenance. Due to the sites high water table, the existing tunnels are also vulnerable to ground water infiltration.

## Overview

A submission for *Renovation Status* must include a detailed report of the existing systems, equipment, and assemblies. This ensures that the district has performed its due diligence necessary to anticipate the scope of work associated with the renovation of a given school. This report also serves as the basis for cost estimation necessary to demonstrate that renovation of an existing facility is less expensive than new construction of a comparable facility.

A *Renovation Status* submission must also include certification by the design professionals that systems included as part of the renovation will offer a service life of at least 20-years which the State has deemed as the minimum service life for systems included with new construction. This certification typically results in the need to replace systems in existing facilities seeking *Renovation Status*.

The Preliminary Assessment has identified portions of the existing that are traditionally considered as part of a more thorough building systems evaluation. Additional research is necessary to verify aspects of the existing facility, such as whether State grant funding has been utilized to improve portions of the school within 20 years, and if so, whether those projects have been fully closed out. This contributing information aids in providing a complete understanding of a project's net reimbursement eligibility.

## Roof System

The existing roofs of Coleytown Elementary comprise both low-sloped membrane roof systems and pitched roofs finished in asphalt shingles. Based exclusively upon visual observations, the roofs appear to vary in age judging from the staining and the apparent telegraphing of roof structure for some portions of the pitched roofs.

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*Staining of roof shingles and evidence of roof truss locations telegraphing through the roof finish.*

The perimeter sloped roof edges utilize continuous gutters at the roof eave to collect and transfer stormwater to leaders that connect to a below grade storm drainage system. There are also scuppers which may provide roof overflow drains. The exposed drainage assemblies and roof facias appear to be fabricated from a zinc coated steel or other similar corrosion resistant material. These assemblies appear to be in good condition. No roof leads were reported by the Facilities staff and no evidence of roof leaks were observed during our tour of the facility.



*A gutter and leader connected to a below grade storm system.*

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*A field fashioned roof scupper in the metal fascia.*



*A typical roof eave at the perimeter of a low-slope roof system.*

Unless a roof has been recently replaced, or has an extended warranty period, it is common to anticipate the full roof replacement when applying for *Renovation Status*. Roof replacements are common non-priority list State grant funded projects. Determining whether any open State funded roof replacement projects will aid the district in forecasting a prorated funding penalty that might exist under a *Renovation Status* roof replacement.

### Interior Finishes

The quality of maintenance that the facility obviously receives has aided in the longevity of interior building finishes, even in the older sections of the existing school.

Interior corridor and classroom floors are predominantly finished in resilient tiles with a 4-inch resilient cove base. The media center has a broadloom carpet finish and the food prep floor surface is finished in quarry tile. Utility spaces such as in the Boiler Room retain exposed concrete surfaces.



*A central corridor within the original school with resilient floor finish and base. A painted wood wainscot has been installed in this portion of the school to protect the wall surfaces.*

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*An example of the quarry tile floor finish within the Food Prep area.*



*An example of the broadloom carpet within the Media Center.*

Interior wall surfaces, whether gypsum board or masonry, have been painted. Upper portions of the gymnasium-auditorium utilize buff brick like that of portions of the building exterior as an interior finish.

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There are a variety of ceiling finishes observed at Coleytown Elementary School. Suspended ceilings are typically 2 by 4 feet acoustical panels supported by a 15/16-inch metal grid. Some of the acoustical panels exhibit evidence of minor bowing, but are generally in good condition.



*A typical suspended corridor ceiling demonstrating a slight deflection of the 2 feet by 4 feet ceiling panel.*

In some classrooms, vaulted ceilings appear to have received 12-inch square acoustical ceiling tiles attached or adhere to the underside of ceiling structure.

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*Direct applied 12-inch square acoustic ceiling tiles over a vaulted classroom ceiling.*

Most of the cafeteria ceiling is comprised of the same 12-inch square acoustic tiles, but employs a sloping painted wood plank ceiling (or exposed roof deck) supported over glue laminated wood structure is present along its exterior wall. The existing media center has a vaulted gypsum board ceiling and soffits with acoustical panel ceiling installed above spaces flanking the central vaulted space.



*A view of the cafeteria with 12-inch square acoustic tiles in the foreground and exposed plank wood deck beyond.*



*A view of the plank wood deck supported above laminated wood timbers at the east exterior wall of the cafeteria.*



*The vaulted gypsum board ceiling above the Media Center.*

A renovation project would necessitate an extensive update to the school's existing mechanical systems. This in turn frequently necessitates the possible modification; or more likely, full replacement of existing suspended ceiling systems.

## Septic System

A septic system treats wastewater from the existing Coleytown Elementary and the adjacent Coleytown Middle School sites. These are separate septic systems. There are currently no long-range plans to extend Town maintained sanitary sewers to the Coleytown Elementary site. From discussions with the Town, it was reported that the CT DEEP considers both school systems as being on the same site and therefore cumulatively are above the 7500 gallons per day (gpd) design threshold. This requires the systems to be designed and constructed in conformance with DEEP regulations. These regulations are more rigorous than those required by the CT Public Health Department for systems less than 7500 gpd.

The existing septic system's leaching fields extend to the north and west of the facility toward established western sports fields. The septic leaching fields are not currently a maintenance concern, nor has the Facilities Department reported any instances of breakout. The age of the system, constructed in the 1960s indicate that they could be near the end of their useful life.

### Septic System Recommendations:

If it is determined that the existing site is to be redeveloped, whether for the renovation of the existing school, or construction of a full new school, the DEEP will require that the existing system be evaluated. This evaluation will likely include test pits to uncover the system and additional soil testing to confirm that the system is functioning as designed and will continue to do so in the future.

The presence and location of the existing leaching fields, as well as additional site underground utilities, limits building expansion, and also impacts the ability to build a school on the site while the existing school is still occupied. This dictates that the improvement of the school must be executed while students are off site and the facility is vacant.

## Fire Protection

The building is served by a dedicated 4" fire service that the increases to 6" piping after the double check backflow preventer.



The fire service serves only limited portions of the building, such as under the stage, the boiler room, and janitor's storage room. The balance of the building is not sprinklered. The incoming 4" fire service pipe is not large enough to accommodate a fully sprinklered building. A new service would need to be brought into the building, like 8" in size, for the building to be fully sprinklered.

The temporary classrooms are also not protected by an automatic sprinkler system.

### Fire Protection Recommendations:

To comply with current codes and modern expectations for life safety, a new or renovated school will need to be fully sprinklered. This would require a new water service from the street and all new fire protection system inside the building.

## Plumbing

### Domestic Water

There is a water service entrance and meter below the pot sink in the kitchen that appears to be the main domestic water entrance for the building.



### Sanitary and Storm

The building is served by a central storm and sanitary sewer system. The central exit point could not be located as it is buried below the existing slab, however, it is likely exiting the rear of the building to head out to the on-site septic system. There is also a small sump pump within a depressed slab area of the mechanical room that pumps ground water out of the low point of the building.



### Natural Gas

The gas main for this property enters the building just outside the main mechanical room and has two meters. The main meter has a flows capacity of 3,000 CFH and the smaller secondary meter has a flow capacity of 250 CFH. The gas piping appears to be in good condition.



### Domestic Hot Water Systems

Domestic hot water is provided by a A.O. Smith “BTR-120 118” gas-fired storage tank water heater with a capacity of 120,000 BTU/h input. This unit was installed roughly 5 years ago and is in good condition.



#### Plumbing Fixtures

Plumbing fixtures within the building all appear to be in good condition, however generally have manual flush valves and faucets that are likely not low flow.

All plumbing fixtures should be replaced as part of any major renovation to newer more efficient units with water saving features.

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#### Plumbing System Recommendations:

As with many aspects of this building, the plumbing systems and fixtures have been well cared for and major equipment has been replaced as needed to remain operational. However, as part of any major renovation work or as part of the design of a new building, we recommend installing low flow plumbing fixtures with automatic controls for their water saving features to help comply with CT High Performance Building standards. Additionally, electric water heaters should be considered for hot water production to reduce the use of fossil fuels. This could be a standard electric resistance hot water tank heater or a more efficient heat pump water heater.

#### HVAC System

##### Heat Generation

The original portion of the building is steam heated. The 1994 addition and the South 1970's addition is heat by hot water, fed from the steam system via two pairs of steam-to-water heat exchangers (one for each wing). The steam boilers are gas-fired, 4,517,000 BTU/h input each. They

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were once dual-fuel gas/oil, but the oil system is no longer utilized. The boilers were installed approximately 12 years ago and are in good condition.



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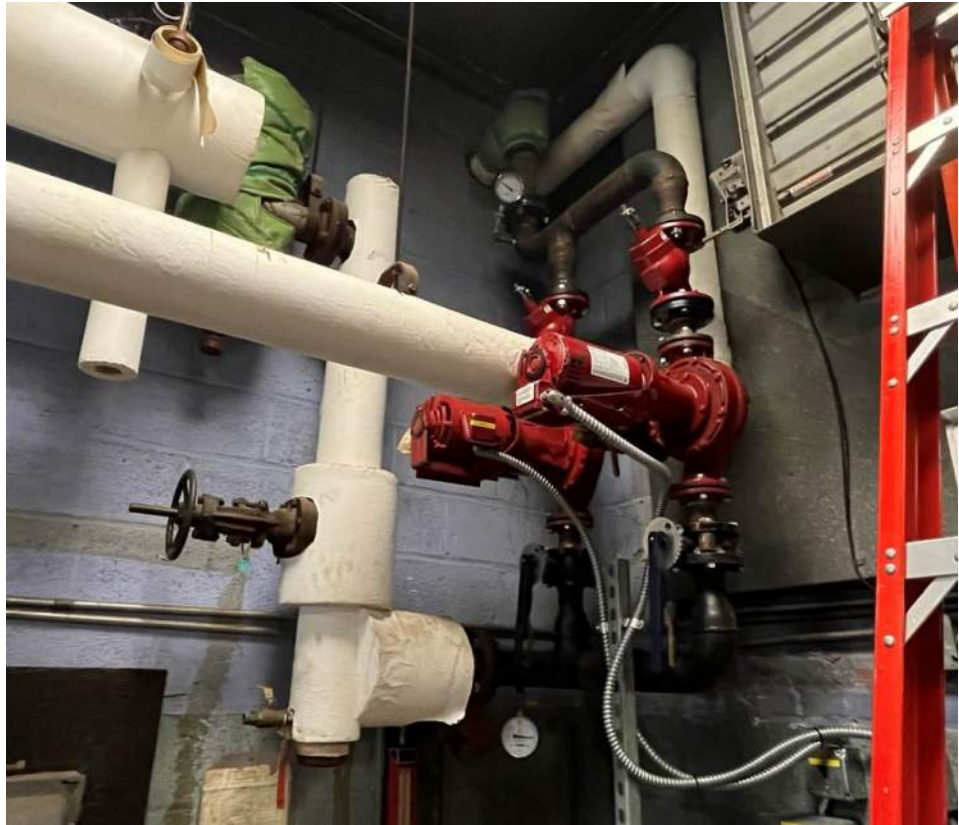
The North 1970's wing is fed from a dedicated oil-fired hot water boiler within that wing of the building, in a small mechanical room. The boiler has a gross output capacity of 300,000 BTU/h.



Steam boilers replaced ~12 years ago, gas fired. Previously were dual-fuel, but oil is no longer used.

The condensate pump set and motor serving the main steam system are new.

Hot water pumps feeding the hot water portion of the building have either been replaced recently or re-built. They are all in good condition.



Steam and condensate feeds the original portion of the building via underground tunnels with multiple entrances. Work in these tunnels is considered confined space, so maintenance and repair work is cumbersome.

#### Space Conditioning and Ventilation

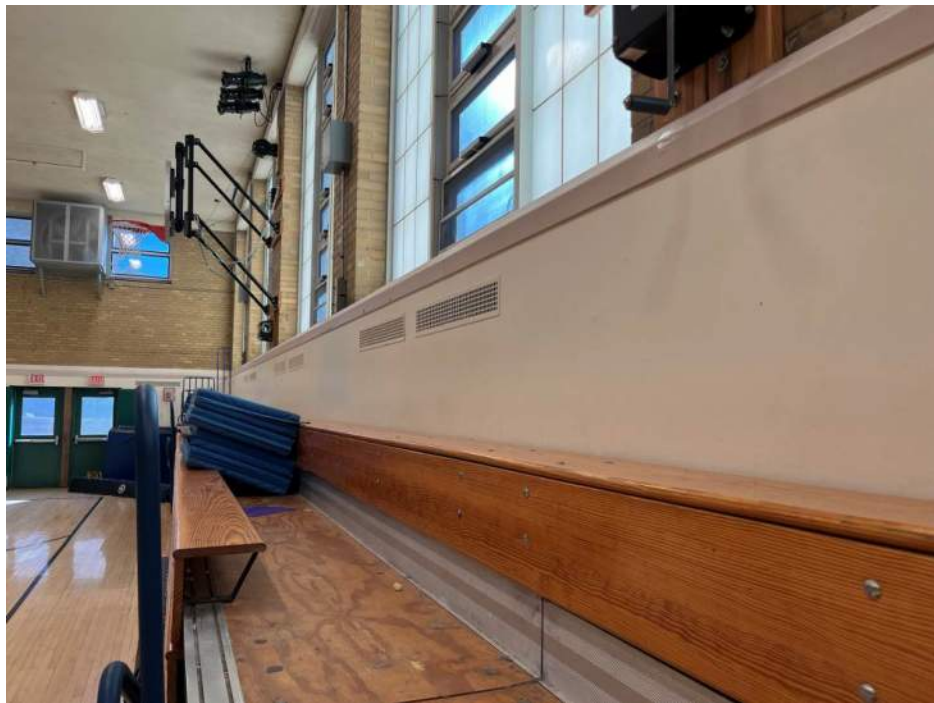
The air handling unit (AHU) serving the gym was installed in 2000. This unit is by Haakon and is located in the main mechanical room. It has a steam heating coil and provides heated ventilation air to the gym via perimeter heating vents. The original exhaust fans are present at the gym however they are no longer used. The gym is also air-conditioned from a separate packaged rooftop unit with overhead ductwork. Both heating and air conditioning systems for the gym are in good condition.

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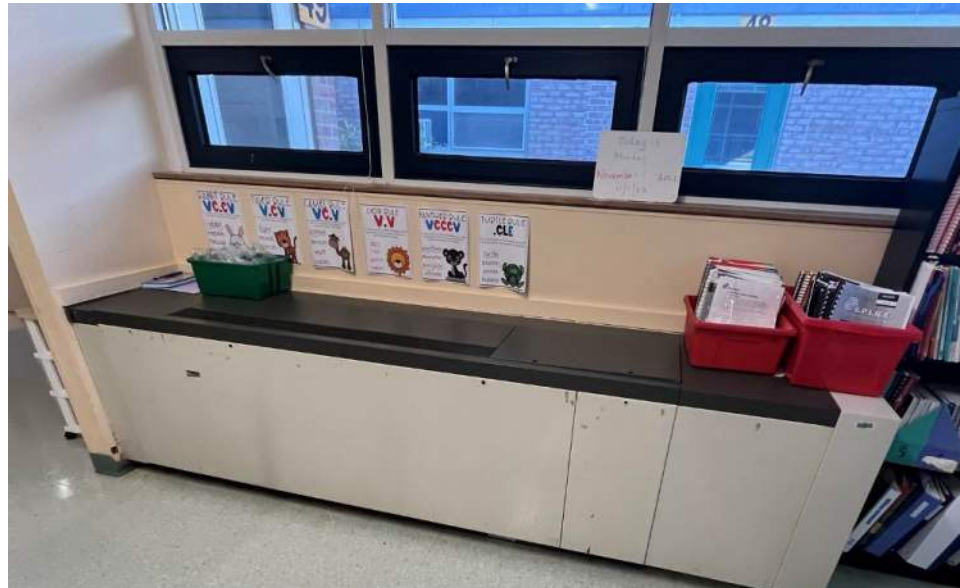


The classrooms throughout the building are heated and ventilated by local unit ventilators. The age of unit ventilators is mixed, but units have been

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repaired or replaced over the years to maintain functionality. All units are said to be in good working order.



Corridors, entrances and other miscellaneous areas are heated by perimeter radiation and cabinet unit heaters. These units all appear to be original to the building, or similar and are at or near the end of their useful life.

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Controls

Control systems throughout the school are mixed, with much of it being outdated.

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HVAC System Recommendations:

As with other systems throughout the building, the HVAC systems and equipment have been well cared for and maintained and replaced over the years. However, as part of any major renovation or a new building, modern and highly efficient HVAC systems should be installed both for energy efficiency and to comply with the State requirement for systems to be certified to have at least a 20 year life. Additionally, a new more efficient HVAC system will be required to comply with CT High Performance Building standards. The existing steam boilers are in good condition having been recently been replaced, however steam is now an antiquated and inefficient method to heat buildings. The current infrastructure of the existing building is not well suited to serve modern systems and equipment so would have to be removed. As well, the tunnel systems serving the steam and condensate piping are not fit to be reused as part of a newer HVAC system. We recommend considering all electric or mostly electric systems for any major renovation or new school such as Variable Refrigerant Flow. Additionally, we recommend considering highly efficient ventilation and exhaust systems that will properly filter, condition, and dehumidify ventilation air, such as Dedicated Outdoor Air Systems (DOAS).

Electrical

Electrical Service

The Main Service Switchgear is rated at 1,600A, 208/120V, 3-phase, 4-wire and is manufactured by General Electric. It appears to be in good condition and still has at least 10 years of useful life left.

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### Power Generation

There is a solar photovoltaic (PV) system on the roof that generates power heback to the main switchgear. There is a disconnect and dedicated meter for the third party entity, Greenskies, that owns and maintains this system. It is not owned and maintained by the owner.



### Electrical Distribution

The main switchgear feeds branch panels located throughout the building. Feeders are in conduit/EMT. Branch circuits are in EMT/armored cable, where these could be observed.

Most of the electrical equipment (branch panelboards, disconnect switches, motor starters, etc.) appears to be in good condition but will be at their end of their useful life in 10-20 years.

Branch panelboards are manufactured by General Electric and are of the molded case circuit breaker type. Disconnect switches, motor starters, etc. are mainly by General Electric.



Receptacles in the building were mostly observed to be the 3-prong type. GFCI receptacles were observed near sinks and in other areas as required.

There is no emergency/optional standby power present. Life safety power for lighting and fire alarm is provided by local batteries.

#### Lighting

Interior lighting throughout the building has been recently upgraded to LED. The existing lighting controls do not appear to have been upgraded as part of this work, however.

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Emergency lighting is achieved through dedicated “bug-eye” lights with local battery packs. Most of these units appear to be at or past their useful life.



Exit Signage

The use of exit signage in all areas of the building appears to be in compliance with current codes. Exit signs are LED with battery back-up. All signage appears to be in fair condition, but should be replaced with any major renovation.

Fire Alarm Systems

The building is equipped with a Notifier addressable fire alarm system. Pull stations and horn strobes throughout appear newer, however the quantity and placement may not be adequate per current code. Full replacement of this system is recommended as part of any major renovation.



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The building is not fully sprinklered, so current code would require smoke detection throughout the building. This does not appear to be the case, however, so any major renovation or a new building would need to address this.

Fire Alarm System Recommendations:

The electrical infrastructure appears to be in overall good condition, with the exception of lighting controls and emergency lighting fixtures. As part of any major renovation, we would recommend full replacement of the existing lighting controls and emergency lights. Classrooms should have new low voltage wall dimmer switches and ceiling mounted occupancy/vacancy sensors and using daylight sensing for fixtures that are closest to windows. This practice follows current energy code guidelines and CT High Performance Building standards, and will increase energy savings over the long term while providing better light quality. While the main switchgear and distribution appears to be in good condition, it is not adequately sized to support air conditioning and proper outdoor air dehumidification and conditioning that is recommended as part of any major renovation or new building. As such, a new electrical service and distribution would need to be installed as part of a renovation or new building.

## 10. Windows and Glazing

### Overview

In addition to the certification of the service life of other building systems, a Renovation Status application independently requires the design professional to certify that energy efficient windows and glazing have been utilized in the project. This complements the detailed report of building systems and contributes to energy performance requirements of High Performance Building.

It is evident upon field observation that the existing exterior windows have been replaced with contemporary, aluminum-framed storefront assemblies that incorporate insulated glazing units (IGUs) throughout the facility. Both fixed and operable units have been installed within classrooms, office spaces and corridors. The operable units are typically inward swinging hopper units that have been outfitted with exterior mounted insect screens. Fixed storefront window assemblies have been combined with translucent fiberglass wall panels in the gymnasium-auditorium.



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It is presumed that operable units are required to partially address occupant thermal comfort based on the type and age of mechanical systems that serve the school. Under circumstances where an existing school is not fully protected by a fire sprinkler system, emergency egress windows may be required to meet life safety requirements.

Though there is no specific prohibition to utilizing operable window units within CT public schools, we have typically recommend avoiding operable

## 10. Windows and Glazing

windows when fully modernized and energy efficient mechanical systems are provided. In addition to facilitating more precise control and effective performance of the mechanical system, the elimination of operable units improves a school's perimeter security. Operable window units also tend to be more expensive, both in terms of initial cost to procure the window, and with respect to long term maintenance requirements.

**Energy Performance** Although the windows at Coleytown Elementary have been updated and appear to comply with the criteria for energy efficient insulated glazing units, it is likely that the existing wall construction lacks insulation sufficient to meet current energy performance requirements.

The Energy Conservation Code does offer a path for compliance that utilizes energy modeling that comprehensively considers all components of a building envelope when evaluating compliance with current energy performance. Under this compliance method, it is possible that the existing building envelope could achieve minimum energy performance thresholds.

New construction provides the district the opportunity to construct envelopes that fully comply with thermal performance requirements without supplementation. Even wall assemblies constructed in the early 2000's struggle to meet performance standards that are dictated by current codes. While an existing building envelope that is analyzed holistically can meet statutorily required High Performance Building and Energy Code thresholds, the individual components of a renovated envelope may still perform below that of a new building. The benefit of constructing the project as a new building ensures the optimum performance of all building envelope components for the serviceable life of the structure. This aids in the reduction of operating costs and the consumption of energy to maintain indoor climate.

## 11. High Performance Building

### Overview

A certification by the design professional indicating that a renovation will achieve the statutory requirement for the State's sustainable design initiative for public buildings must accompany a Renovation Status application. There are 16 mandatory points of compliance and an additional minimum 28 optional compliance points that must be achieved in order to meet High Performance Building for Schools. There is no reduction to the minimum points required for a renovation project.

High Performance Building has been described as a program equivalent to that of the US Green Building Council's (USGBC) LEED Silver program. Many of the High Performance Building requirements mirror information or compliance standards that also appear in LEED.

High Performance Building was adopted at a time when the Energy Code's performance levels were not as stringent as they are today. Available points for achieving mechanical equipment energy performance that exceeds ASHRAE standards by more than 24 percent can no longer be achieved. Consequently, the State Building Official has indicated that meeting the current Energy Code is considered equivalent to the previously available energy point.

As referenced under 05 Structural and 10 Windows and Glazing section of this Assessment, an existing school's building envelope usually presents challenges in meeting energy performance. Roof replacement affords an opportunity to increase roof insulation which dramatically improves the overall school's thermal performance. Similarly, the required introduction of thermally efficient windows and glazing supports the thermal control of the overall exterior wall.

The Preliminary Assessment includes recommendations under 08 Existing Systems Report for the replacement of existing mechanical systems. This replacement ensures not only that the equipment will function for at least 20-years, but also permits the district to take advantage of technological advancements in mechanical systems that grow more efficient to reduce energy demands.

The Preliminary Assessment also recommends the replacement of existing plumbing fixtures with models that consume less water. This update

## 11. High Performance Building

directly supports one mandatory and at least one optional High Performance Building point.

Achieving High Performance Building minimum requirements is of course significantly easier when constructing a new building. But High Performance Building can also be achieved for *Renovation Status* projects. Though not a necessary component of the application for Renovation Status, the district might consider engaging a design professional to prepare an initial review of the mandatory and optional review points for High Performance Building as part of preparations for a *New Construction* grant application or a *Renovation Status* submission.