WESTPORT PUBLIC SCHOOLS

COLEYTOWN MIDDLE SCHOOL

BUILDING ENVELOPE & HVAC SYSTEMS EVALUATION and RECOMMENDATIONS

December 12, 2018

KG+D Architects, P.C.
OLA Consulting Engineers
Watsky Associates

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PROJECT UNDERSTANDING + APPROACH

KG+D led a collaborative team consisting of architects, engineers and roofing/exterior enclosure experts to investigate and understand the causes of the issues that have led to the temporary closure of the Coleytown Middle School. We set out to develop a set of 'good, better, and best' options for Westport Public Schools to address both the short-term and long-term issues associated with the Coleytown Middle School building, so that the School District and Town of Westport leaders could make sound decisions based on factual information. The professional team visited the building to evaluate the condition of the roof, exterior walls, mechanical systems, and adjacent site. We met with District officials to understand the ongoing history of conditions, review the construction documents/existing blueprints and previously prepared reports provided by the District, and observed the apparent conditions.

We set out to understand where and how water and moisture is entering the building, to determine the scope of remedial work necessary to prevent further water entry, and to determine what mechanical system work is needed for good air quality and comfort.

The project team learned that the building was built in three major phases. The original building was constructed in 1963 and the additions in the 1990's. The available construction documents provided limited information regarding the wall and roof construction as well as the precise divisions between the construction phases. There are some variations on the floor plans between the drawings and the constructed additions. The building sections and construction details correspond to assemblies observed in place. There were no records to review of shop drawings or product submittals which would have be informative about the construction process and changes that may have occurred during that time.

Our initial observations prompted further investigation of building conditions that were achieved by selectively opening walls and roof locations to determine the construction and understand the failure of various components of the building. This process of physically removing existing building materials to observe conditions behind/below the surface finishes is often referred to as 'destructive testing or probing'. This process was conducted by retaining both a roofing and masonry contractor to perform the cutting and patching work under the direction of the consulting design team. The results of these tests were very informative and provided the school facilities personnel and the design team with the visual data needed to understand the existing conditions and why the building was experiencing the humidity level readings that were being measured. These observations were ultimately the basis for the findings within this report.

As the consulting team was asked to provide both the reasons for the water and moisture challenges as well as potential costs for the possible remediation options, we incorporated a section within the report for budget estimating. 'Budget estimating' is provided for comparison purposes using order of magnitude pricing based on regional historical cost data for similar commercial/municipal public bid projects. More refined cost estimating would occur at the end of a schematic design process with the design professional team once a direction has been selected and the school building committee and consulting team have developed a solid program and more detailed plan.

PROFESSIONAL TEAM

The diverse and skilled team that developed this report is comprised of architects, mechanical engineers, and roofing/exterior envelope consultants. These individuals are highly trained, uniquely qualified and exceptionally knowledgeable. Having all professionals immersed in educational facility design for more than two decades, our team utilized the technical skills required to LISTEN, INSPECT, ANALYZE, and REPORT on the conditions of Coleytown Middle School. Detailed below is further information about the team's qualifications:

- **Erik A. Kaeyer, AIA, LEED AP, Principal/Vice President KG+D Architects, PC**

  Erik has been the project executive and primary contact for the Westport Public Schools. As such, Erik directed the study and report from start to finish. He attended all planning sessions, committee meetings and public presentations associated with the school infrastructure study and was responsible for project management and coordination of documents and activities.

  - Erik joined KG+D as an Associate in 1998 and was named Principal/Vice President in 2000.
  - Erik led capital improvement and infrastructure projects for many area public and private schools including several Fairfield County school districts (Darien, Weston, and Wilton Public Schools). He has also captained both new construction and renovation projects for many New York school districts and regional private day and boarding schools.
  - Erik's leadership also includes developing a comprehensive master plan for the Darien Public Schools and was part of the Greenwich Public Schools Master Plan team that has created both infrastructure and educational focused planned improvements throughout the school district.

- **Joe Reilly – Building Envelope and Construction Specialist KG+D Architects, PC**

  Joe's specialized focus is on the investigation, documentation and construction oversight of projects. His construction and building envelope detailing has been instrumental in developing a process for the study of Coleytown MS and ultimately and comprehensive report to aid Westport Public Schools in the necessary decision-making process for the future of the middle school population in town.

  - Joe has been involved with most of KG+D projects from a detailing, constructability, quality control, and construction oversight point of view. His almost 40 years of involvement in design and construction has given Joe the opportunity to observe + solve construction related issues.
  - Joe possesses strong leadership skills during construction and an outstanding ability to interface and communicate with consultants and contractors allowing him to deliver successful projects to our clients.
  - Joe has an excellent understanding of the construction market (both pricing and quality construction companies) through recent construction cost data received on public bid regional projects. This information resource has contributed to KG+D's ability to prepare budget estimating during early phases of design which is achievable/awardable at bid time.

- **Jill Walsh, PE, Principal/Mechanical – OLA Consulting Engineers/MEP Engineering**

  OLA surveyed and provide professional services regarding the mechanical/HVAC system at Coleytown MS. The engineering team looked holistically at the existing mechanical and electrical components to determine where the system is failing to provide adequate control of the building's humidity.

  - Jill has extensive experience in mechanical design and investigative remediation of mechanical systems. Throughout her career, she has focused on commercial systems for educational and municipal clients.
  - OLA is a leader in its field, regularly earning State-level awards for engineering and energy-efficient design. They practice has focused on sustainable design and they regularly look to find 'greener' solutions for everyday challenges.
  - KG+D and OLA have completed many projects together over two generations of firm leadership making our collaboration seamless. One of the projects that we are most proud of is the Media Arts Lab at Jacob Burns Film Center, Westchester County's first LEED Gold certified building. Our teams are currently collaborating on several projects.

- **Tom Olam, President – Watsky Associates/Roofing & Exterior Enclosure Consultants**

  Watsky Associates have rightfully developed a reputation as the premier roofing and exterior envelope specialists in the lower New York/western Connecticut regional. Many architects and engineers relay on the Watsky team to provide the design and detailing expertise (as well as construction oversight) to best ensure that each project successfully executes a watertight building enclosure.

  - Tom Olam led the roof and exterior enclosure consulting services for Coleytown MS. Upon review of the limited existing documentation and inability to see within the wall and roof cavities, he recommended adding destructive testing probes to the initial study scope of services to ensure that the professional team had the information necessary to provide the school district with analysis with clear and understandable supporting data and images.
  - KG+D has worked with Watsky for many years, In the past three years the two companies have worked together to study and complete approximately 30 public roofing projects.
  - Tom has an excellent understanding of the construction market (both pricing and quality roofing companies), which has favorably contributed to an outstanding record for meeting budgets, quality, and schedules on all of the firm's roofing projects.

- **Westport Public School Administrators**

  The study was closely administered and supported by the Westport Public Schools administration and Facilities Department staff including: Superintendent of Schools, Dr. Coleen Palmer; Mr. Elio Longo, Chief Financial Officer; Ted Hunyadi, Director of Facilities; and Joseph DiPalma, Head Custodian at Coleytown Middle School. The WPS administration team and Facilities Department were integral at providing insight, historical background, and existing documentation that helped the consulting professionals determine to best approach to performing the tasks necessary to providing a meaningful and comprehensive report.

OBSERVATIONS

Site Elements

Many of the observable areas of direct water infiltration are associated with site elements as they meet the building. This observation is true of both areas with hardscape elements such as walkways paved right to the base of the building walls and unpaved grass or landscaped areas.

There are many locations where concrete sidewalks are directly adjacent to the building and are at the same elevation as the interior floor to which they abut. Significantly, many of these hard surface conditions are level and do not slope away from the building. The consulting team even observed some locations where the concrete surfaces sloped toward the building. The conditions contribute to water infiltration into the building.

Sidewalks aligning with interior floor levels are an even greater problem where the bottom of the louver penetrations for the unit ventilators (UVs) are also at floor level. Water is able to flow, or be wind driven, into the building via these openings. In several locations school staff has installed localized drainage to alleviate this condition. This condition can be viewed in the image below.

There are other areas where the sidewalk has been sawcut to create a permeable area between the hardscape and the building. This type of solution is an appropriate response to alleviate moisture issues as long as there is a way for water to be captured and moved away from the building.

In addition to the areas where the water is allowed to flow toward the building, there are areas where the grade is against the building's concrete block face above the foundation sill without adequate flashings or weeps. This condition can trap water in the wall and lead to infiltration to the interior of the building.

Wall Construction

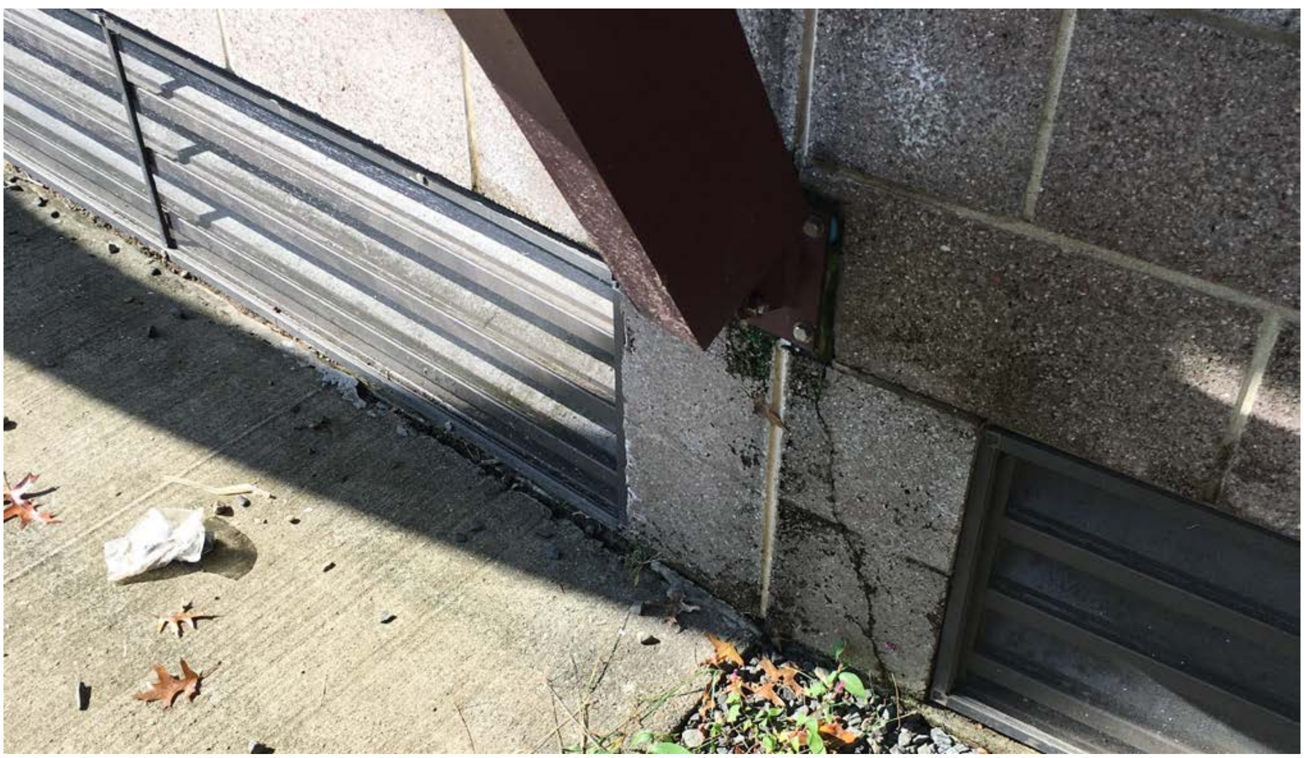
The grouping of areas or building wings that make up Coleytown Middle School have multiple types of wall construction. Upon opening the exterior in twenty five locations as part of the destructive test probes recommended by the study team, problems associated with each generation of construction were uncovered. Some moisture issues are endemic to the construction type, while others were the result of poor detailing or execution. Many observed conditions uncovered significant water damage, deteriorated wall components, and in some cases, mold growth and animal/insect infestation within the wall assembly.

The oldest portion of the building is built with a construction of laminated layers of concrete masonry units (CMU), rigid polystyrene insulation board, and gypsum wall board (GWB) without space or cavity. This was a widely used wall type at the time the building was built in the early 1960s. It has no air, water or vapor barrier in the assembly. Water that penetrates the CMU is free to infiltrate the building or migrate back out of the wall. The GWB has organic material facing in the form of paper, which when it is wet, is suitable for mold growth in certain conditions. Where we opened this type of wall, mold was observed on the GWB.

Most other areas of the building have versions of an industry standard masonry faced cavity wall system. This system is typically composed (from the exterior to the interior surface) of a masonry veneer face block, an air cavity, a rigid insulation layer, an air and moisture barrier, and an interior wall construction of either concrete block or metal studs with gypsum sheathing and wall board. At Coleytown Middle School, the masonry facing is ground faced concrete block. There are two types of interior wall components, CMU with a bituminous air and moisture barrier, and steel framing with gypsum sheathing, fiberglass insulation, and GWB.

These cavity wall systems prevent the infiltration of water into the building by blocking most of it from penetrating the wall and controlling the movement of moisture that enters the cavity. The impermeable layer of the wall is the exterior face of the interior wall. This barrier should be continuous with elements that accommodate changes in plane and material. Water that enters the cavity, as liquid or vapor, is collected and taken out of the wall. Flashings protect the horizontal openings or terminations of the wall and direct water to weeps where the water exits. At the flashing levels, water should exit the wall and fall way, rather than run down the surface.

The destructive probes performed during the investigations revealed extensive failures of the cavity wall systems. Excessive penetration of water is allowed by failed joints and connections. The photo below shows cracked face block, badly sealed connection of a sunscreen strut, and a soft expansion joint – prone to failure.



The placement and configuration of flashings is incorrect or incomplete and problematic in many locations. At all places where the wall was opened at the foundation sill or floor slab level, the base flashing was not adhered to the substrate and did not extend past the face of the wall. Thus, water is able to travel under the flashing and into the wall, and in some cases, fully through the wall.

Flashings at horizontal openings have no end dams to help direct water to the appropriate weeps. And, as shown below, no drip edge flashing to convey water off of the surface below.

There are locations when the required flashing was not present. The photo below shows one such location. In this instance, the problem has persisted for so long that the exterior sheathing of the steel framed wall has deteriorated and fallen away. The exposed yellow fiberglass insulation and the steel studs should not be visible and materials are absorbing moisture and rusting respectively. Another issue seen on the right side of the photo is the lack of a continuous air and moisture barrier around the column to protect it from rusting.

Finally, the above photo shows the top right corner of a louver penetration for unit ventilator that is at grade level. The screen covering the louver was added by building staff to mitigate the entrance of mice and other vermin. As noted earlier in this report, there are water penetration issues at the base of these louvers due to finished grade conditions and directional flow of surface water.

Another issue that is pervasive in the cavity wall construction is the blockage of the mortar net placed in the cavity to prevent fallen mortar from clogging the wall weeps. The green mesh in the photo below is the mortar net. The broken pieces of block and mortar are the result of making the hole in the wall. The continuous layer of mortar atop the mortar net has been in the wall since its construction. As seen below, the excessive droppings of mortar during laying up has created an effective dam, trapping water in the wall.

Sunscreen Attachment

There are large, exterior mounted sunscreens on much of the South and West sides of Coleytown Middle School. The attachment of the brackets that support these sunscreens is inconsistent from location to location, and they are an observed source of water infiltration. In multiple locations the fastening plates straddle expansion joints in the wall construction. Beneath many of the sunscreen connections were very damp blocks with visible moss and blackened spots from long standing moisture conditions.

In many locations fastening plates are cut into the CMU construction with no flashings or adequate sealant.

Window Assemblies

The total area of the facade is approximately 60,600sf; 22,000sf of facade is clad w/aluminum curtain window wall; 38,600sf is clad with ground face concrete blocks. Many of the insulated glass windows have failed and moisture is visible between numerous individual panes (as seen by clouded glass). The window system also has inadequate or missing sill and transition flashings allowing water infiltration. Some of the glazing gaskets have failed, which permits water penetration into the assembly, and ultimately, the building.

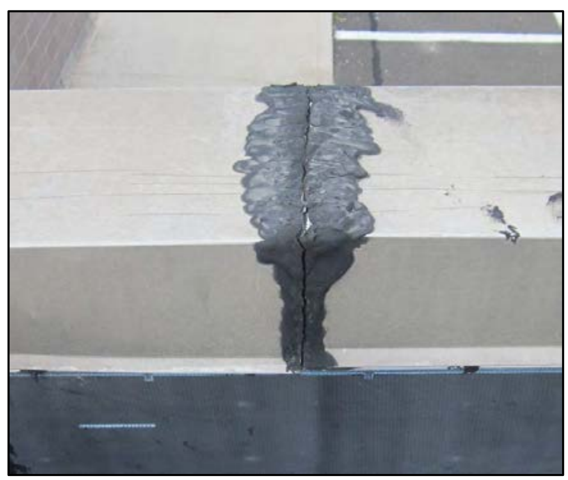
The clerestory windows within the roof triangles of the 1960's building is a potential source of leaking. As water or snow builds up on the roof, there should be at least a 12" roof return up the wall to reduce the opportunity of water to migrate into the building from the roof edge.

Roof Observations

The roof is divided into twenty-five different areas for a total of approximately 105,840 square feet. There is about 65,670sf of flat roof area covered in black EPDM rubber or about 60% of the total roof area. The flat roof is over 18 years old. The balance of the roof (or the 40,170sf of pitched roof areas) is covered in white Hypalon roofing. It has aged out and the District has extended its life by applying coatings to keep it watertight.

All roof areas are: 1) under-insulated' by current standards, 2) have wide-spread deficiencies, and 3) incorporate inadequate drainage provisions.

Among the observed deficiencies were: 1) organic growth on the roof, inadequate flashing, 3) failed seams, and 4) failed adhesion to adjacent surfaces. Here are some additional images:

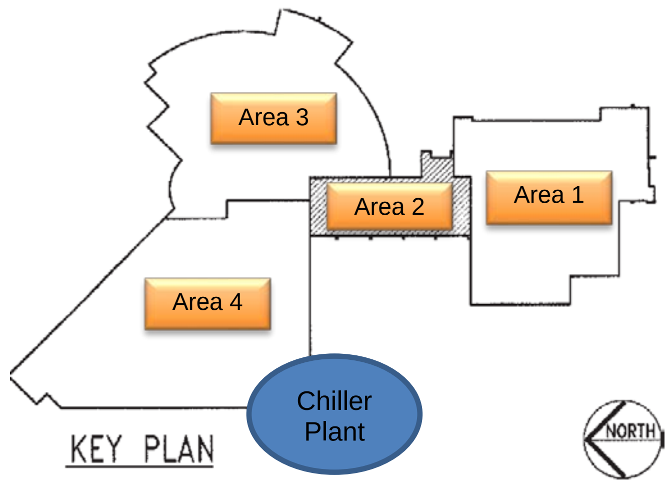


Thirty probes were made in the roof to determine the typical configuration and condition of the roof insulation. In 29 of the 30 probes, the roof insulation was found to be dry. The roofs consisted of several different structural systems including conventional metal, structural wood fiber plank, plywood, oriented strand board, tongue and groove wood, and concrete roof decking. The structural base systems are generally in good condition.

Mechanical Observations

Heating, Ventilating and Air Conditioning System

- The building has two duel fuel hot water boilers that provide hot water to heat the entire building.
- In addition, the building has a 300 Ton McQuay screw chiller and a Marley cooling tower. The chiller was added in the late 1990s as part of a three-phase project. The project included both an addition and renovation. During the second phase of the project, the chiller plant was added. The chiller is located in the Boiler Room and utilized much of the hot water piping. Some pumps were revised for the new system. New piping was added to connect the various wings.
- There are rooftop air handlers, unit ventilators and air handling units that provide the heating, ventilation



  and air conditioning. For purposes of this analysis, we have divided the school into four separate areas noted in Figure 1 above.

Figure 1: Four Areas of Coleytown Middle School

- Area 1 is a two-story structure containing mostly classrooms and two gymnasiums. Part of this Area was added during the 1996 project. All classrooms have unit ventilators that were installed during 1996 (some have been replaced more recently). Common areas such as the two gyms and locker rooms have indoor air handling units, exhaust fans.
- Area 2 is a two-story structure that contains mostly classrooms. All classrooms have unit ventilators that were installed during 1996 (some have been replaced more recently).
- Area 3 is a two-story structure that contains mostly classrooms, but also has the Administrative Offices and the Library. All classrooms have unit ventilators that were installed during 1996 (some have bene replaced more recently). Common areas such as the Administrative Office have rooftop air handling units. It is unclear when the rooftop units were installed.
- Area 4 is a two-story structure that contains the cafeteria, auditorium and classrooms. All classrooms have unit ventilators that were installed during 1996 (some have been replaced more recently). Common areas such as the cafeteria and corridors have rooftop air handling units. It is unclear when the rooftop units were installed. Area 4 also houses the Chiller and Boiler plant in the lower level of the southwest corner of the area.

Unit Ventilators (UV)

We have found two issues with the existing unit ventilators serving the classrooms.

- The first issue is the location of the intake louver. The unit ventilators in each classroom are connected to an exterior louver to provide outdoor air to the space. Typically, the louver would be installed a minimum of 12”-18” above grade to allow for snow build up on the adjacent grade and to avoid water infiltration from any adjacent ponding water. We found louvers for the majority of the grade level classroom unit ventilators to be at grade. Refer to Figure 2. This creates problems with excessive moisture and allows water infiltration into the UV. The cooling coil in the UV is not designed to dehumidify this excessive amount of moisture. Any excess moisture within the UV will settle on the drain pan and within the UV cavity.

Figure 2: Location of Intake Louvers

- Another area of concern is a recent change to some of the unit ventilator’s controls sequence. It was reported that the Energy Grade Audit recommended a change to the controls scheme to set back the cooling discharge temperature based on CO2 readings. This control scheme does not utilize the wet bulb temperature. This can cause the cooling and associated dehumidification cycle to turn off. This controls scheme would further exacerbate the excessive moisture conditions within the classrooms.

Condensate Removal

The design and installation of the condensate drainage is also a major contributor to the excessive moisture conditions.

- Building code requires that the condensate that forms in air conditioning units be drained away from the HVAC unit and connected to the sanitary system via an air gap. In several locations, it appears that the condensate drain is piped below grade to the adjacent soil. As indicated in Figure 3, the contractor extended the drain from the unit vent by 3' to 5', below grade. In some locations a dry well was noted, but in many locations the drain discharges directly below grade. This installation does not meet code requirements and will lead to the condensate not being able to be discharged. In addition, the open-ended pipe below grade is a conduit for ground water, insects, etc to enter into the building.

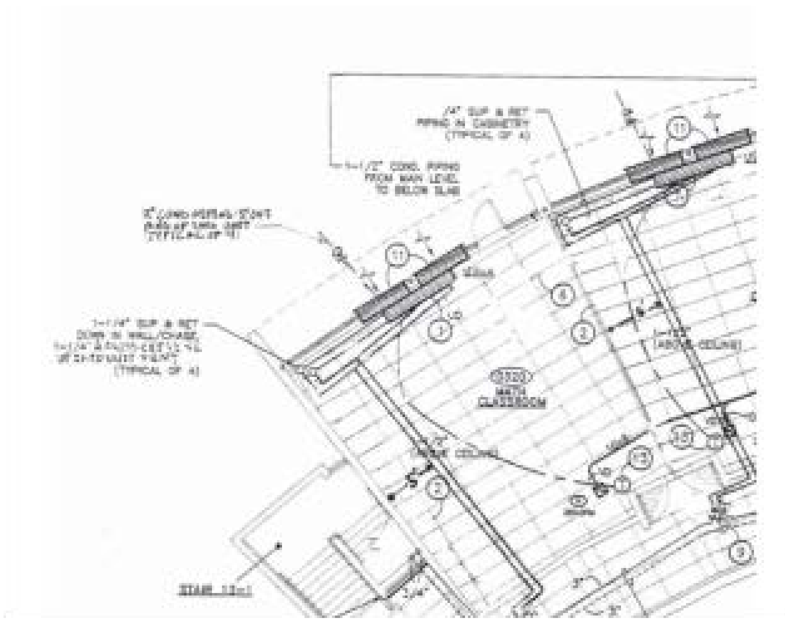


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Figure 3: Condensate Removal Issues

Chilled Water System and Piping

Portions of the chilled water piping were originally installed for the hot water system.

- When the chiller was added in approximately 1996, much of the hot water piping that was installed in 1964 was repurposed for chilled water. There were some areas that received new piping.
- A single 300 Ton chiller is utilized to provide cooling for the entire school. There are zone pumps that serve the different wings of the school, several of which have variable speed drives. This results in an average of about 420 Square Foot per Ton, which should be sufficient, but not generous, to meet the cooling needs of the school.
- The age of the rooftop units are unknown, but expected to be over 25 years old. Building personnel have noted the equipment operates well. The larger common areas require a large amount of outdoor air to meet code. The larger common spaces are in Areas 1, 3 and 4. Currently, the rooftop units react to dry bulb temperature only and do not appear to have a dehumidification cycle. On a cool humid day in which there is not a large cooling load, the water temperature would reset higher and the variable speed pumps would slow down. This would further exacerbate the high levels of relative humidity within those spaces. In addition, the long piping runs from the chiller plant to Area 1 will affect the temperature of the water if not balanced and insulated properly.

CONCLUSIONS & RECOMMENDATIONS

Site / Building Perimeter

In many locations around the building, the exterior grade creates water/dampness issues. Conditions include:

- Concrete walkways that are flat or pitch towards the building.
- Mechanical unit ventilator (UV) louver bases align with exterior grade.
- Grass areas against building without positive pitch or water outlets have created 'ponding' at the edge.
- Some exterior grades are built up against porous block exterior.
- Canopies and roof downspouts dump water at the building base.

In general, the majority of the perimeter finished grading requires modification.

- Where concrete sidewalk/hard surface meets building, surfaces should be lowered to minimum 6" below finished floor/foundation wall w/positive pitch.
- Where the grass lawn meets building base, the finished grade should be lowered w/an increased positive pitch and storm water collection.
- Where the existing adjacent grade is higher than the interior spaces, proper waterproofing and insulating of the wall is required.
- All stormwater drainage from roofs needs to be connected to a piping system and led away from building perimeter.

Façade/ Walls

Twenty-five holes were cut into the exterior walls to investigate the existing conditions. The locations were selected by the professional team to represent the various construction types and potentially problematic existing conditions. The results were as follows:

- Eight wall probes were wet; most showed signs of moisture infiltration, i.e. water stains, deteriorated gypsum board, and rusted metal studs.
- Rodent droppings were present in two wall probes.
- Mold on wall components was present at two wall probes.
- Corroded structural steel column was present at multiple wall probes.
- Multiple locations had strong dank odors emanated from the wall cavity representing long periods of moisture. Areas where this odor was observed included classrooms and corridor of the 2-story wing.

Issues with the facade are wide-spread and pervasive, localized repairs will not prevent future water entry and resultant issues.

- All of the ground face masonry walls should be removed and replaced. The report ultimately recommends removal of the entire exterior wall assembly and full replacement including interior finish.
- All of the windows and curtainwalls should be replaced as part of an exterior wall replacement project.
- The sun shades should be removed and an alternative assembly or method to control sunlight should be studied and installed.

Roof

Due to age and 20-year standard warranty, a new roof should be installed throughout.

- The 18+ year old flat EPDM sections are approaching the end of their service life.
- The white, sloped Hypalon sections have failed and have been treated in the past to extend the usage.
- There is limited existing roof insulation. It most likely met building code requirements at the time of installation, but increased energy code requirements have changed the criteria for roof insulation since its original construction.
- Existing clerestory windows and other roof elements do not have at least a 12” curb to protect the interior finishes from water infiltration.

The entire roof should be replaced to be properly integrated with the wall and window systems and to provide proper slope for drainage and upgraded insulation to comply with the current building and energy codes. This approach will reduce heat gain/loss through the roof and improve occupant comfort. An analysis of different roofing systems should be prepared during the design phase of a replacement project.

Mechanical Systems

Modifications to the mechanical system are recommended as part of this report. The findings of the report include the following:

- The poor construction/detailing of the Exterior Envelope has had major detrimental effect on the performance of the HVAC equipment. The system is overloaded due to excessive water infiltration.
- There are improperly installed or non-functioning air handling units.
- The existing cooling tower is in poor shape and should be replaced.
- There are four major issues with the Unit Ventilators (UV):
    1. The location of the bottom of the intake louver at finished grade - not industry standard minimum of 12" above grade allows excessive moisture/water into the UV equipment.
    2. Portions of piping designed for heating are undersized for cooling requirements.
    3. UV control Sequence – The system was recently modified in an attempt to correct the humidity issue. The modification possibly turned off the unit's cooling/dehumidification ability during the summer months when it is needed to be 'on'.
    4. Condensate piping has been added, but it is drained to soil (not to sanitary piping).

There are two options for addressing and upgrading the existing classroom mechanical systems. The first is to improve the in-classroom unit ventilator design and the second is to provide a ducted, more-centralized system. Here is an outline of the two systems in concept:

IF CURRENT UNIT VENTILATOR SYSTEM IS TO BE UPGRADED (OPTION 1A):

- Unit Ventilators –Shift the UV mechanical units 'inboard' by 8" to 12" to create an insulated space/plenum so that the exterior louver can be raised to 16" above finished grade.
- Condensate drain piping from each unit should be added.
- Retro-Commissioning of systems – complete air and water balancing; ensure all systems are operational.
- Supplemental cooling and dehumidification systems should be added to treat the large common spaces.

IF HVAC DISTRIBUTION SYSTEM IS REPLACED (OPTION 1B)

- Recommend utilizing a ducted system with new rooftop air handling units that utilize energy recovery and ductwork distribution.
- Classrooms would have variable air volume (VAV) with some individual control.
- Reuse of existing chiller and boiler plant.
- Commissioning of systems – complete air and water balancing; ensure all systems are operational.

OPTIONS & BUDGET ESTIMATES

Creating a good, sound, energy efficient, and healthy environment is possible at Coleytown MS, but it will be at a significant expense (albeit at a lower price point than a complete replacement project). It should be stated that the expectation of the professional team entering the study was that there would be an infrastructure renovation project that would correct the water/moisture issue at Coleytown Middle School at a modest price point. Buildings constructed in the 1960's are often 'thin walled' or modest in their energy efficient qualities as they were constructed prior to the energy crisis in the early 1970's. However, CMS not only is 'thin walled', but has several other failing issues, as addressed previously within this report, which have caused the professional team to broaden the scope of the proposed remediation. This decision was also supported by the destructive test probes that were authorized to 'dig deeper' as multiple past attempts to fix the issue with more modest solutions did not solve the moisture issues.

The building envelope deficiencies must be corrected in any option. This work includes:

- Replacement of the entire roof assembly.
- Removal and reconstruction of all of exterior wall systems from exterior veneer to interior wall finish.
- Regrading of the site around the building including replacement of hardscape elements.
- Renovation of interior finishes affected by the wall reconstruction and proposed HVAC work. This includes the replacement of flooring, ceilings, and casework. The extent of the interior renovation increases with Option to entirely replace the HVAC distribution system.

Option 1A Budget Estimate

This Option includes all the envelope improvements (roof and exterior wall) and adjacent site work. The HVAC work upgrades the cooling and dehumidification infrastructure and replaces the Unit Ventilators in-kind with modified louver configurations.

Roofing	EPDM	65,670	$30	$1,970,100
	Sloped	40,170	$30	$1,205,100
Façade	CMU wall system	38,600	$80	$3,088,000
	Glazed wall system	22,000	$180	$3,960,000
HVAC	UV's & supplemental cooling	1	$989,300	$989,300
Interior	Interior Renovations	125,000	$40	$5,000,000
Site	Allowance	1	$1,000,000	$1,000,000
	Sub-Total			**$17,212,500**
	Contractor O%P	15%		$2,581,875
	Contingency	10%		$1,979,438
	Sub-Total			$21,773,813
	Project Costs	15%		$3,266,072
	Project Total			**$25,039,884**

Option 1B Budget Estimate

This Option includes all the envelope improvements and adjacent site work. The HVAC work eliminates Unit Ventilators and provides a ducted distribution of conditioned fresh air and VAV distribution of heat and cooling.

Roofing	EPDM	65,670	$30	$1,970,100
	Sloped	40,170	$30	$1,205,100
Façade	CMU wall system	38,600	$80	$3,088,000
	Glazed wall system	22,000	$180	$3,960,000
HVAC	VAVs, Rooftop ERUs	1	$4,000,000	$4,000,000
Interior	Int Revovations	125,000	$75	$9,375,000
Site	Allowance	1	$1,000,000	$1,000,000
	Sub-Total			**$24,598,200**
	Contractor O%P	15%		$3,689,730
	Contingency	10%		$2,828,793
	Sub-Total			$31,116,723
	Project Costs	15%		$4,667,508
	Project Total			**$35,784,231**

Option 2 Budget Estimate

Since renovating the existing building as listed within both Options 1A and 1B comes at a large expense and will take significant time to prepare the design, obtain the required approvals and construct the planned alterations, consideration for a replacement option was also presented to Westport Public Schools and the Town of Westport Board of Trustees. This Option provides a budget range for the cost of replacing Coleytown Middle School with a building of similar size. Although the cost is greater than either renovation option, there are a couple advantages to new construction that should be weighed against the added costs. These potential advantages include: the ability to reconceive the building layout to better meet the educational goals of a 21st Century school and the ability to provide a completely new building with energy efficient systems and environmental, sustainable materials and finishes where a renovation would not address all building systems.

Description	Area (SF)	Cost/SF	Cost	Cost/SF	Cost
Building Demolition & Recycling	125000	$20	$2,500,000	$25	$3,125,000
Sitework for new building			$2,000,000		$2,000,000
New Building Construction	125000	$425	$53,125,000	$475	$59,375,000
Sub-Total			$57,625,000		$64,500,000
Escalation - 2 years		8%	$4,610,000	8%	$5,160,000
TOTAL			$62,235,000		$69,660,000

TIMELINES

OPTIONS 1A & 1B: REMEDIATE/RENOVATE COLEYTOWN MIDDLE SCHOOL:

New roof, replace exterior wall system, replace windows and doors, replace/modify mechanical system. These two options also require some interior finish replacement including casework, carpet, acoustic ceilings and lighting, and other soft materials.

CONCEPTUAL SCHEDULE

- 11/5/18 – 12/15/18: Engage Design Team
- 12/15/18 – 8/15/19: Complete Design & Contract Documents for Permit & Bidding
- 8/15/19 – 11/1/19: Bid & Award Construction contracts
- 12/1/19 – 7/15/21: Complete Construction Project to Rehabilitate Coleytown MS
- 9/1/21: Re-Open Coleytown Middle School

OPTION 2: DEMOLISH COLEYTOWN AND BUILD A NEW SCHOOL ON CMS CAMPUS.

- Engage a Design Team to evaluate existing infrastructure condition and capacity.
- Establish a long term Educational Plan for the District.
- Complete a District-wide facilities use plan including programming for a new school building.
- Design and build a new school building on the CMS Campus

CONCEPTUAL SCHEDULE

- 11/5/18 – 12/15/18: Engage Design Team for Facilities & Capacity Study
- 1/1/19 – 7/1/19: Complete Facilities & Capacity Study
- 7/15/19 – 10/15/19: Establish Program for New Building
- 10/15/19 – 11/15/19: Engage Design Team for New Building
- 12/1/20 – 9/1/21: Complete Design & Contract Documents for Permit & Bidding
- 9/1/21 – 11/15/21: Bid & Award Construction contracts
- 12/1/21 – 8/1/23: Complete Construction Project – Open School