EXISTING CONDITIONS ASSESSMENT

EXISTING SITE & BUILDING DATA

General Site Description

Mitchell Elementary School is one of eight public schools in the town of Needham, Massachusetts and one of five schools serving grades K through 5. The school is located at 187 Brookline Street, near the center of town. The property is bound on the south side by Brookline Street, on the north and east sides by single family residential homes and on the west side by Mitchell Woods, a town-owned recreational property. The main entrance is from Brookline Street, where there is a drop off loop and separate parking area. Access to the rear of the school (north side) is provided from an extension of Tower Avenue. A bus and van loop is provided on the north side as well as additional parking spaces. There are wetlands on the east side of the building and an open ball field and playgrounds on the west side.

Topography

The site topography is generally flat around the building and to the west. There is some grade from the parking lot on the south side to the building and field elevation and considerable grade change east of the building where an open stream and wetlands are located. An open field, playground equipment and hard surface play space are located on the west side of the building. A 1968 property survey plan (included in the appendix for this section) indicates an area of wetlands on the east side of the building, the topography of the site, parking areas, and the multiple additions to the main building that were present at that time. The existing conditions site survey completed in December 2013 locates the jurisdictional line between the school property and Mitchell Woods. Additional site plans indicate the location of independent modular classroom buildings that were added in 2014 and 2018. The tax card

Image 1 - MA GIS aerial image of Mitchell Elementary School

for this site indicates the property is 17.05 acres, which is consistent with the survey plan dated 12-20-2013.

Parking

The site includes a striped parking lot for 48 cars located off Brookline Street and an additional striped parking lot for 33 cars located at the rear entrance to the school and accessed from Tower Avenue. Eight visitor parking spaces are also available at the front of the building in the drop-off loop. Parking in this area is limited to non drop-off / pick up times. Parking in the residential area is discouraged.

A parking space at the front of the building and near the main entrance is reserved for accessible parking. However the slope of the pavement exceeds the allowable slope for accessibility therefore this space is non-conforming. Additionally, due to the change in elevation between the lobby and main office, once in the front door a wheelchair bound patron would need to travel 360 degrees around the building to get to the main office that is adjacent to the lobby and entrance. Additional accessible parking spaces are located on the north (rear) side of the building for access to the ballfield and near the rear building entrance.

The emergency access drive is connected to the north parking area and provides access to the west side of the school building. There is no access for larger vehicles to the east side of the building however, smaller vehicles can use the walkway to access a portion of this building area.

Zoning & Land Use

The 2019 property tax card (see appendix FX.1) indicates that the facility sits on 17.05 acres of land with a land value of $551,800.

The Mitchell Elementary School is located in zoning district 'Single Residence B (SRB)'. Public Schools are permitted in this zone. The existing school, including the modular classrooms, is "existing non-conforming". Special Permits and Waivers were requested and granted in 2014 and 2018 as part of the modular classroom building projects. Special Permit requests were for (1) the continued use of the existing non-conforming parking area, (2) acceptance of the non-conforming landscape setback, (3) acceptance of the existing non-conforming transition area, (4) request to waive the strict adherence to the requirements of the Zoning By-Law regarding off street parking, parking lot illumination, handicapped parking, driveway openings, parking space size, width of maneuvering aisles, landscape area, and trees.

Information from the 'Table of Use Regulations' from the September 13, 2018 submission to the planning board for the second modular project with updated zoning information, and the 'Table of Special Permits (SP) and Waivers (W) from the January 11, 2013 Planning Board submission, which were re-approved in 2018, are provided in the charts on the following page. Any major project on this site will need to address the existing non-conforming conditions as measured against the current Zoning By-laws and apply for additional Special Permits or Waivers as needed.

The topographical site plan (image 2) below is from 1968 (see appendix FX-2) and shows the steep grades and wetlands on the east side of the property. Image 3 indicates the location of the 2014

modular classroom addition (appendix FX-2) and the addition of the basket ball court and accessible parking located on the north side of the building. Image 4 shows a partial site plan of the east side of the site the location of the 2018 modular classrooms.

TABLE OF USE REGULATIONS / ZONING DIMENSION TABLE—MITCHELL ELEMN. SCHOOL			
	SCHOOL - UPDATED 10/2017 SRB REQ.	EXISTING CONDITIONS*	
MIN. AREA	10,000 S.F.	742,698 S.F.	complies
MIN. FRONTAGE	80'	625.6 '	complies
MIN YARD - FRONT	25'	104.16'	complies
MIN YARD - SIDE	25'	93.93'	complies
MIN YARD - REAR	25'(d)	111.4 '	complies
MAX F.A.R.	0.3	0.086	complies
MAX % LOT COVER-AGE	15%	7.91%	complies
MAX STORIES (schools)	3	1.5	complies
MAX HEIGHT (schools)	45'	35'	complies

Existing conditions dimensions are noted from the 2018 site survey and include the existing modular class-rooms

TABLE OF SPECIAL PERMITS & WAIVERS		
BY-LAW SECTION	SP / W	DESCRIPTION
7.5.2	SP	Continued use of the existing non-conforming parking area
4.2.1(b)	SP	Acceptance of the existing non-conforming parking landscape setback
5.1.3(a)	W	Parking illumination
5.1.3(f))	W	Parking space size—dimensions
5.1.3(i)	W	Width of maneuvering aisles
5.1.3(j)	W	Parking setbacks
5.1.3(k)	W	Landscape area
5.1.3(l)	W	Required number of trees within parking areas

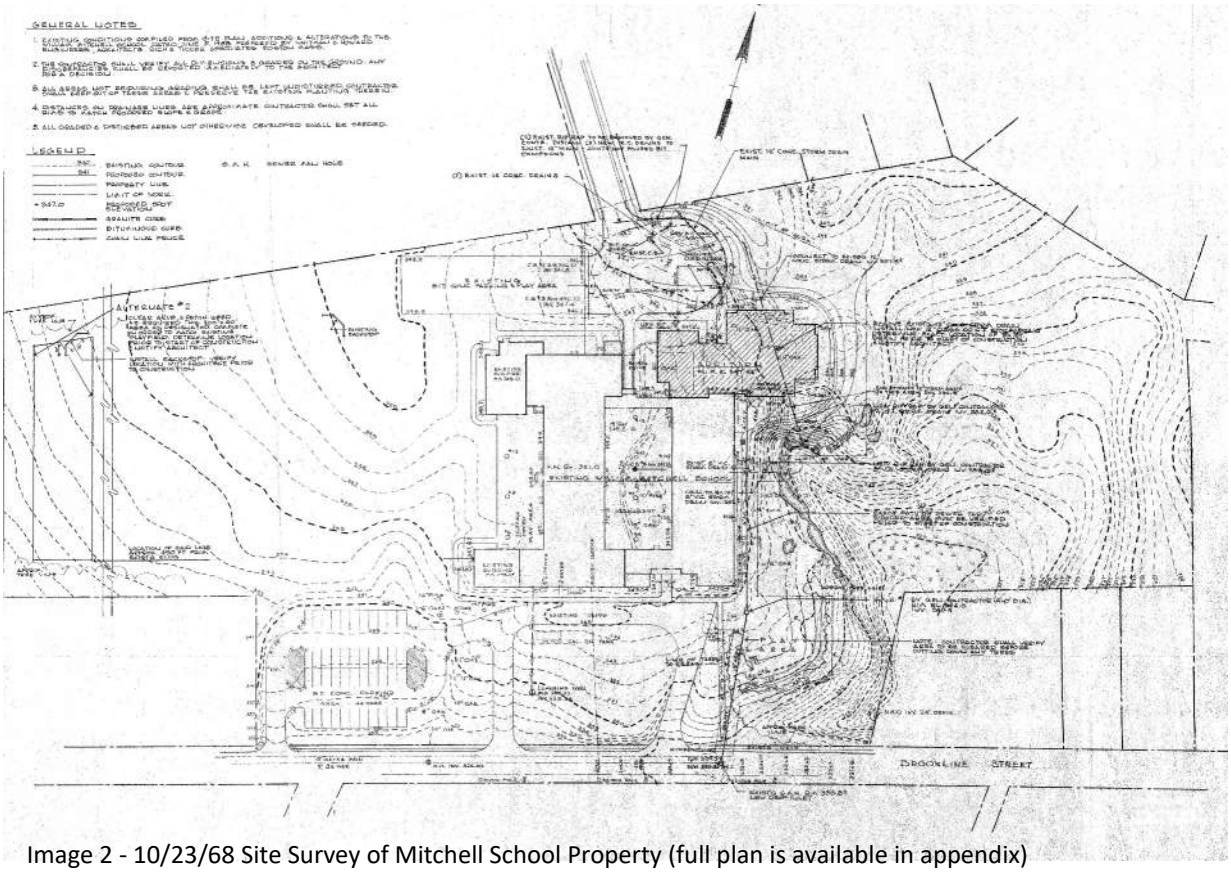

Image 2 - 10/23/68 Site Survey of Mitchell School Property (full plan is available in appendix)

Image 3 - 09/30/2014 As Built Site Survey of Mitchell School Property (full plan is available in appendix)

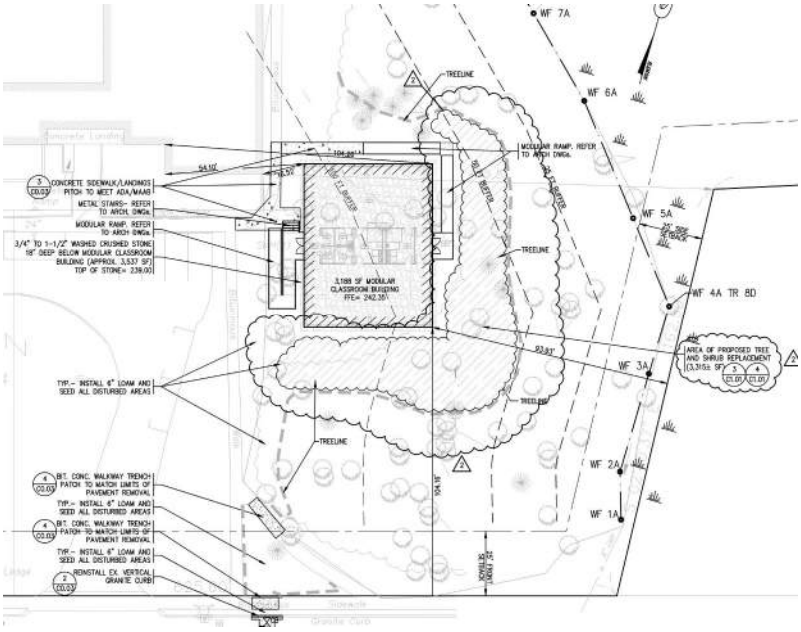

Image 4 - 09/13/2018 Site Layout Plan for Second Group of Modular Classrooms (east side of existing building) (full plan is available in appendix)

Image 5 - Aerial View of Mitchell School Site (includes 2014 and 2018 modular classroom buildings)

Image 6 - View of School from Brookline Street

Image 7—Entrance Drive and Front Lawn

Image 8 - View of Playfields on West Side of School

Image 9 - 2014 Basketball Court Addition –North West of Building

Image 10—Accessible Parking Near Playgrounds and Fields—North West of Building)

Image 11– Hardscape and Play Structure (Prior to Installation of 2014 Modular Classrooms

Image 12—Tower Street Access to North Parking Area

Image 13—Drop-off Loop on North Side of Building

Image 14—Slope and Wooded Area on East Side of Building

Image 15—Walkway Along East Side of Entrance Drive

General Building Description

The original single story wing was constructed in 1948 and included offices , one kindergarten classroom, seven general classrooms and a cafetorium. Ten years later in 1958 a single story classroom wing with an additional 9 classrooms was added to the east side of the existing building creating a center courtyard. The 1958 addition also included an additional kindergarten classroom, west of the existing kindergarten classroom, and a gymnasium on the west side of the cafetorium. In 1968 six additional classrooms and a library media center were added to the building on the north side. With a growing population and need for expansion four modular classrooms were added to the site in 2014. This building was constructed as an independent building structure to avoid triggering extensive code upgrades to the existing building. In 2018 a second modular classroom building with two classrooms was added to the east side of the site.

The 2019 property tax card indicates that the 53,785 square foot facility has a building value of $8,215,200. The 6,900 sq.ft. 2015 modular classrooms and the 3,000 sq.ft modular classroom buildings are not included in this assessment. The school currently serves 484 students in grades K-5.

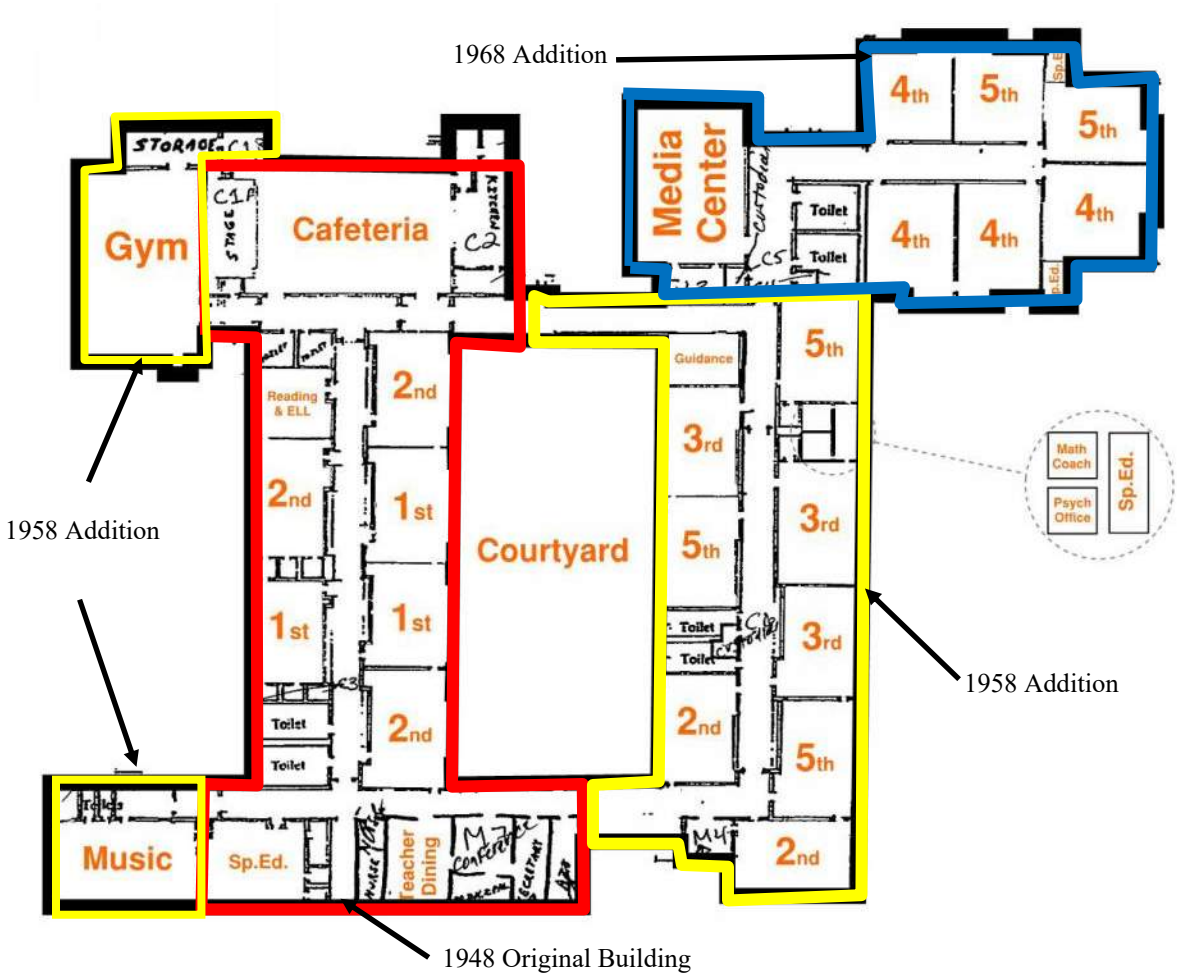

Image 16—Main Building

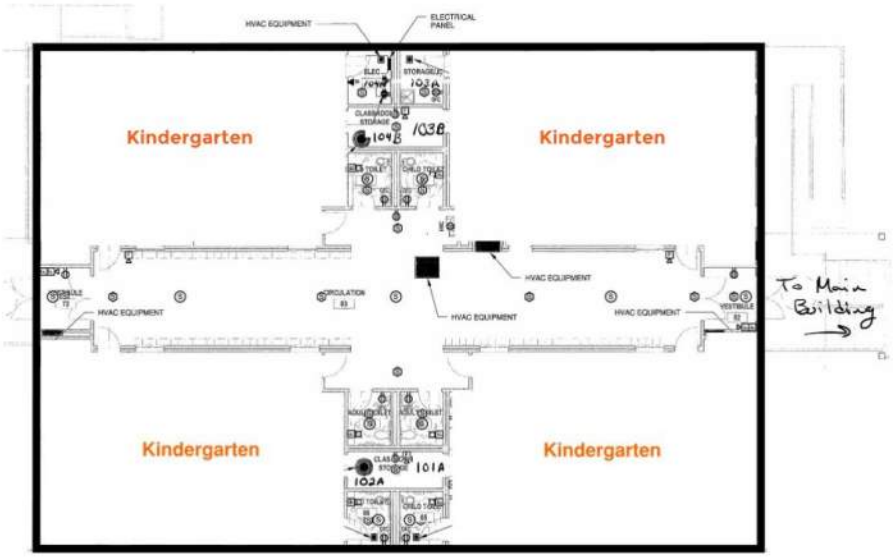

Image 17—2014 Modular Classroom Building

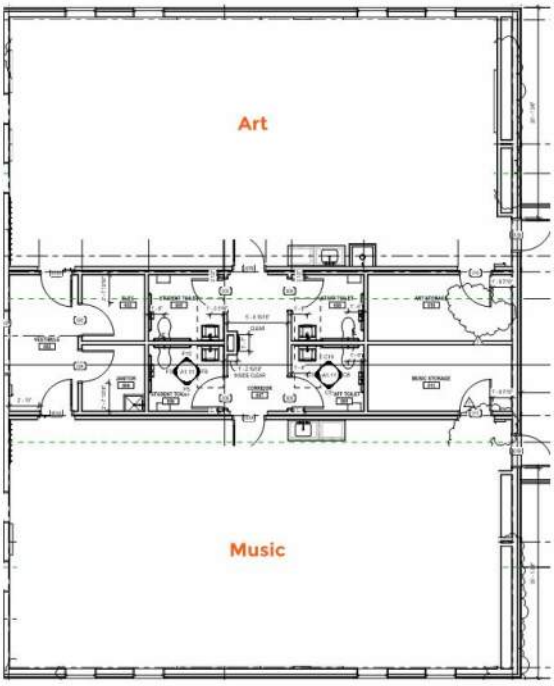

Image 18—2018 Modular Classroom Building

Image 1 - South Façade Main Entry

Image 2 - South Façade 1948 Main Entry

Image 3 - North Façade Entry 1968 Addition

Image 4 - North Façade 1968 Media Center Addition

Image 5—View of 1948 Building from Courtyard

Image 6 - View of 1958 Addition from Courtyard

Image 7—2014 Modular Classrooms -East & North Elevations

Image 8 - 2014 Modular Classrooms—North & West Elevations

image 9 - 2018 Modular Building Under Construction

Image 10 - 2018 Modular Classrooms—North Elevation

Image 11 - 2018 Modular Building –West Elevation

Image 12 - 2018 Modular Building –South Elevation

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REGULATORY ASSESSMENT

INTRODUCTION

This Regulatory Assessment will seek to convey to what degree the Mitchell Elementary School, in its current condition, complies with current building codes and regulations. The Assessment does not attempt to define a scope of work, but rather highlight specific non-complying conditions and identify which conditions would require correction if a repair, alteration, addition, or change of use were to be proposed for the facility.

It is important to note that a building or a portion of a building does not require correction simply because it does not comply with current codes; any building that is legally occupied and adequately maintained can remain so without bringing the building into full compliance with codes and regulations. This *principal of non-conforming rights* (that a newly adopted regulation cannot impose the undue burden of compliance on legally existing occupancies) is reflected in how the codes identify to what degree existing buildings must be brought into compliance when a scope of work is proposed. The greater the scope of work, the greater the burden of compliance with a given code or regulation will be required.

For some regulations, such as 521 CMR Accessibility Rules or the Massachusetts special sprinkler provisions of MGL c.148 s.26G, these compliance thresholds are “hard lines” comprised of specific dollar value thresholds. When determining the dollar value thresholds for compliance, the cash value of the building is used as the basis for the determining the requirements for compliance. The full and fair cash value of the *building*, as determined from the Town Assessor's online database, is calculated as follows:

Property Value	**$ 8,767,000**
Land Value	**($ 551,800)**
Full and Fair Cash Value	**$ 8,215,200**

This value will be used later in this Assessment to calculate the applicable compliance thresholds. The Existing Building Code uses the type of work and the affected area to determine when increasing levels of compliance are required. When considering a proposed scope of work for the building, a careful consideration of the various degrees of compliance will need to be considered. Refer to the Regulatory Overview section of this report for a more detailed description of the various compliance paths outlined in the Existing Building Code.

THE INTERNATIONAL EXISTING BUILDING CODE (IEBC)

The Performance Compliance path provides a simple yet comprehensive overview of the general life safety aspects of a building. Although designed as a building code compliance path, it can also be used as an assessment tool. This assessment utilized the value and scoring based method of the Performance Compliance path to assign a score to the building as it is currently configured and maintained. Similar to previous comments, a failing score in any category as part of an assessment does not compel any corrective action: it simply indicates how the building would be viewed under current codes. It is intended to illustrated the relative general and life safety performance of the existing building.

The majority of the main school building is constructed with non-combustible steel framing or masonry load bearing walls, and concrete floors. However, the original school roof incorporates combustible wood decking and combustible wood interior partition framing was observed throughout the building. Because of these combustible roof and wall elements and the lack of separation from other portions of the building, the contiguous school facility would be classified as Type III-B construction. The two modular classroom satellite structures incorporate unprotected wood framing and are classified as Type V-B construction. Because they are separate from the main building structure, they have been evaluated as separate buildings. The Performance Compliance path was used to evaluate each structure, and then an area-weighted average score was calculated to present an overall score for the entire facility. This aggregate score should only be used to consider the relative life-safety performance of the facility as a whole. The individual scores convey the building code performance for each structure.

Because the main school is not segregated with fire walls or compartmentalized, the entire building must be considered as a single fire area. The entire area is considerably larger than permitted for the construction type without a sprinkler system. This large fire area coupled with a lack of sprinkler system are the most significant life-safety liabilities of the main building. The principal advantage of the school is a primarily one-story configuration, which eliminates excessive travel distance and concerns of fire propagation between floors.

The two detached “satellite” classroom buildings were constructed very recently (in 2017 and 2019) and under the two most recent editions of the building codes. When evaluated under the performance compliance method, these two modular structures with very small fire areas and short travel distances far exceed the minimum scores for compliance.

Table 1401.7 Summary Sheet - IEBC PERFORMANCE GRADE - 1949 ORIGINAL CONSTRUCTION

Existing Occupancy	Educational	Proposed Occupancy	Educational		
Year building was constructed	1949	Number of Stories	1	Height in feet	12
Type of construction	III-B	Area per floor	49,027		
Percentage of open perimeter increase	100%				
Completely Supressed	No	Corridor wall rating	o hr		
		Type			
Compartmentation		Required door closers	Yes		
Fire resistance rating of vertical opening enclosures	o hr				
Type of HVAC system	fin tube / Steam	serving number of floors	1		
Automatic fire detection	Yes	Type and location	smoke / pull station. Loc varies		
Fire alarm system	Yes	Type	Horn/Strobe, no voice evacuation		
Smoke control	No	Type	N/A		
Adequate exit routes	Yes	Dead ends	No	Length in feet	
Maximum exit access travel distance	198'	Elevator controls	No		
Means of egress lighting	Yes	Mixed Occupancies	No		
Standpipes	No	Patient abilty for self preservation			
Incidental use	No	patient concentration			
Smoke compartment less than 22,500 sq. ft.	No	Attendant-to-patient ratio			

Safety Parameters	Fire Safety (FS)	Means of Egress (ME)	General Safety (GS)
1401.6.1 Building Height	3	3	3
1401.6.2 Building Area	-21	-21	-21
1401.6.3 Compartmentation	0	0	0
1401.6.4 Tenant and Dwelling Unit Separations	0	0	0
1401.6.5 Corridor Walls	-5	-5	-5
1401.6.6 Vertical Openings	0	0	0
1401.6.7 HVAC Systems	5	5	5
1401.6.8 Automatic Fire Detection	8	8	8
1401.6.9 Fire Alarm System	-5	-5	-5
1401.6.10 Smoke Control	****	0	0
1401.6.11 Means of Egress	****	0	0
1401.6.12 Dead Ends	****	0	0
1401.6.13 Maximum Exit Access Travel Distance	****	0	0
1401.6.14 Elevator Control	0	0	0
1401.6.15 Means of Egress Emergency Lighting	****	****	0
1401.6.16 Mixed Occupancies	0	0	0
1401.6.17 Automatic Sprinklers	-12	-6	-12
1401.6.18 Standpipes	0	0	0
1401.6.19 Incidental Use	0	0	0
1401.6.20 Smoke Compartmentation	0	0	0
1401.6.21.1 Patient Ability for Self-preservation	****	0	0
1401.6.21.2 Patient Concentration	****	0	0
1401.6.21.3 Attendant-to-patient Ratio	****	0	0
Building Score - total value	-26	-20	-26

Table 1401.7 Summary Sheet - IEBC PERFORMANCE GRADE - 2015 ADDITION

Existing Occupancy	Educational	Proposed Occupancy	Educational		
Year building was constructed	2015	Number of Stories	1	Height in feet	12
Type of construction	II-B	Area per floor	5851		
Percentage of open perimeter increase	100%				
Completely Supressed	No	Corridor wall rating	1 hr		
		Type			
Compartmentation	Yes	Required door closers	Yes		
Fire resistance rating of vertical opening enclosures	N/A				
Type of HVAC system		serving number of floors	1		
Automatic fire detection	Yes	Type and location	Horn/Strobe		
Fire alarm system	Yes	Type	Automatic fire - voice evacuation		
Smoke control	No	Type	N/A		
Adequate exit routes	Yes	Dead ends	No	Length in feet	
Maximum exit access travel distance	122'	Elevatory controls	No		
Means of egress lighting	Yes	Mixed Occupancies	No		
Standpipes	No	Patient abilty for self preservation			
Incidental use	No	patient concentration			
Smoke compartment less than 22,500 sq. ft.	Yes	Attendant-to-patient ratio			

Safety Parameters	Fire Safety (FS)	Means of Egress (ME)	General Safety (GS)
1401.6.1 Building Height	3	3	3
1401.6.2 Building Area	39	39	39
1401.6.3 Compartmentation	10	10	10
1401.6.4 Tenant and Dwelling Unit Separations	0	0	0
1401.6.5 Corridor Walls	0	0	0
1401.6.6 Vertical Openings	0	0	0
1401.6.7 HVAC Systems	5	5	5
1401.6.8 Automatic Fire Detection	8	8	8
1401.6.9 Fire Alarm System	0	0	0
1401.6.10 Smoke Control	****	0	0
1401.6.11 Means of Egress	****	0	0
1401.6.12 Dead Ends	****	0	0
1401.6.13 Maximum Exit Access Travel Distance	****	7	7
1401.6.14 Elevator Control	0	0	0
1401.6.15 Means of Egress Emergency Lighting	****	****	0
1401.6.16 Mixed Occupancies	0	0	0
1401.6.17 Automatic Sprinklers	0	0	0
1401.6.18 Standpipes	0	0	0
1401.6.19 Incidental Use	0	0	0
1401.6.20 Smoke Compartmentation	0	0	0
1401.6.21.1 Patient Ability for Self-preservation	****	0	0
1401.6.21.2 Patient Concentration	****	0	0
1401.6.21.3 Attendant-to-patient Ratio	****	0	0
Building Score - total value	66	73	73

Table 1401.7 Summary Sheet - IEBC PERFORMANCE GRADE - 2019 ADDITION

Existing Occupancy	Educational	Proposed Occupancy	Educational		
Year building was constructed	2019	Number of Stories	1	Height in feet	12
Type of construction	II-B	Area per floor	3163		
Percentage of open perimeter increase	100%				
Completely Supressed	No	Corridor wall rating	1 hr		
		Type			
Compartmentation		Required door closers	Yes		
Fire resistance rating of vertical opening enclosures	N/A				
Type of HVAC system		serving number of floors	1		
Automatic fire detection	Yes	Type and location	Horn/Strobe		
Fire alarm system	Yes	Type	Automatic fire - voice evacuation		
Smoke control	No	Type			
Adequate exit routes	Yes	Dead ends	No	Length in feet	
Maximum exit access travel distance	75'	Elevatory controls	No		
Means of egress lighting	Yes	Mixed Occupancies	No		
Standpipes	No	Patient abilty for self preservation			
Incidental use	No	patient concentration			
Smoke compartment less than 22,500 sq. ft.	Yes	Attendant-to-patient ratio			

Safety Parameters	Fire Safety (FS)	Means of Egress (ME)	General Safety (GS)
1401.6.1 Building Height	3	3	3
1401.6.2 Building Area	41	41	41
1401.6.3 Compartmentation	15	15	15
1401.6.4 Tenant and Dwelling Unit Separations	0	0	0
1401.6.5 Corridor Walls	0	0	0
1401.6.6 Vertical Openings	0	0	0
1401.6.7 HVAC Systems	5	5	5
1401.6.8 Automatic Fire Detection	8	8	8
1401.6.9 Fire Alarm System	0	0	0
1401.6.10 Smoke Control	****	0	0
1401.6.11 Means of Egress	****	0	0
1401.6.12 Dead Ends	****	0	0
1401.6.13 Maximum Exit Access Travel Distance	****	12	12
1401.6.14 Elevator Control	0	0	0
1401.6.15 Means of Egress Emergency Lighting	****	****	0
1401.6.16 Mixed Occupancies	0	0	0
1401.6.17 Automatic Sprinklers	0	0	0
1401.6.18 Standpipes	0	0	0
1401.6.19 Incidental Use	0	0	0
1401.6.20 Smoke Compartmentation	0	0	0
1401.6.21.1 Patient Ability for Self-preservation	****	0	0
1401.6.21.2 Patient Concentration	****	0	0
1401.6.21.3 Attendant-to-patient Ratio	****	0	0
Building Score - total value	73	85	85

Table 1401.9 Evaluation Formula

1954 Original Construction Evaluation:				Score	Pass	Fail
-26	(FS) -	*29*	(FS)=	-55		X
-20	(ME) -	*40*	(ME)=	-60		X
-26	(GS) -	*40*	(GS)=	-66		X

2015 Modular Evaluation:				Score	Pass	Fail
66	(FS) -	*29*	(FS)=	37	X	
73	(ME) -	*40*	(ME)=	33	X	
73	(GS) -	*40*	(GS)=	33	X	

2019 Modular Evaluation:				Score	Pass	Fail
73	(FS) -	*29*	(FS)=	44	X	
85	(ME) -	*40*	(ME)=	45	X	
85	(GS) -	*40*	(GS)=	45	X	

Area Weighted Average Evaluation:				Score	Pass	Fail
-12	(FS) -	*29*	(FS)=	-41		X
-5	(ME) -	*40*	(ME)=	-45		X
-10	(GS) -	*40*	(GS)=	-50		X

(FS)= Fire Safety (ME)= Means of Egress (GS) = General Safety

Sprinkler Protection Requirements

The main school building is not equipped with a sprinkler system which is not in compliance with M.G.L. c.148 s.26G. Because the building is larger than 7500 Gross Square Feet (GSF), any scope of work meeting the criteria of a "major alteration" would require a sprinkler system to be installed throughout the facility. In Massachusetts, a building's *fire area* includes all portions of the building enclosed by the exterior walls regardless of interior sub-division with fire walls or fire barriers. This is important to understand because the sub-division of a building into separate fire areas (with fire walls and fire barriers, for example) would not be considered a compliance strategy in Massachusetts.

To be considered a "major alteration" the scope of work would have to meet both the "nature of work" and "scope of work" criteria. For the scope of work criterion, the Division of Fire Services provides two separate thresholds - if the project exceeds one of these thresholds, then the project is considered "major" in scope. For the Mitchell Elementary School, if the work area exceeds 16,197 square feet (33% of the total building area of 49,027 square feet) ***OR*** if the cost of work exceeds $2,711,016 (33% of the value of the building, calculated above), the project *scope* would be considered "major". Any addition to the building, even if separated from the existing building with a fire wall, would compel the installation of a sprinkler system for the entire school facility.

The "nature of work" criterion is less specific, but essentially if any work is being done that would not make the installation of sprinklers substantially more difficult, it would be considered “major” in nature. Examples include the demolition of ceilings, walls, or floor decking exposing the structural framing.

The two modular classroom buildings are below the 7500 GSF scoping requirements of MGL c.148 s.26G as well as the minimum area requiring a sprinkler system in the Building Code. As such, no sprinkler system is required for these buildings. If additions were made to either building that would increase the area to over 7500 GSF, a sprinkler system would be required to be added as described above.

Accessibility

Any proposed work will be required to comply with the accessibility requirements of 521 CMR (The Massachusetts Architectural Access Board, or MAAB Rules).

If the cost of the proposed work exceeds $100,000, an accessible entrance, toilet room, drinking fountain, and telephone (if drinking fountains and telephones are provided) will be required in addition to the compliance requirements of the proposed work.

When the cost of work exceeds 30% of the full and fair cash value (calculated above), then the entire facility will be required to comply with the MAAB Rules. For the Mitchell Elementary School, this 30% threshold dollar value would be $2,464,560.

Because the building is a public school, owned and operated by the local municipality, it is considered a Title II facility under the Americans with Disabilities Act (ADA). As such, any proposed work to the facility would be required to comply to the maximum extent feasible with the ADA Architectural Guidelines (the ADAAG) except where it would be structurally impractical. The ADA does not have a threshold for requiring full facility compliance, but does require that when there are alterations to an area of "primary function" (including classrooms, gymnasium, cafeteria, and administration areas),

then the path of travel as well as the restrooms, telephones, and drinking fountains serving the areas of primary function are also accessible.

Specific deficiencies or non-compliant conditions were noted at the Mitchell Elementary School. If a major alteration exceeding the 30% threshold were undertaken, all of these items would require correction.

ENTRANCES AND SITE ACCESS

- The north and south entries are accessed by a gently sloped paved areas. While there appear to be adequate accessible parking spaces for the total parking count, the spaces use an alternative symbol of accessibility that has not been accepted by the U.S. Access Board.
- The main north and south entries incorporate gentle ramps toward the doors. However, handrails in each location are not compliant and therefore the main entries are not accessible.
- Several exterior doors terminate at a step to the door threshold, a concrete landing with a step down to a path, or no pathway at all. At certain exterior doorways with short ramps, a single handrail is provided rather than a handrail on each side of the ramp. Various efforts have been implemented to improve accessibility at doorways around the facility. However, none of the doorways were observed to be in compliance with accessibility guidelines.
- An exterior classroom is provided with wood-chip surfacing and does not incorporate an accessible path to the instruction area.
- The wood-chip surface of the playground does not provide for an accessible path to playground equipment.

DOORS

- Doorways to classrooms in the original school are located in alcoves and do not include the required pull-side clearance.
- Door hardware throughout the original school building consisted primarily of door knob operations. The knobs require grasping and turning rather than lever operation, which is not accessible.
- Doors at some gang toilet rooms do not have the required pull-side clearances.
- Doors at several single-user toilet rooms do not provide the minimum 32 inch clear opening width.
- In locations of double-leaf egress doors along corridors, neither leaf provides a minimum 32 inch clearance.
- Double-leaf doors at the media center do not provide the minimum 32 inch clearance.
- The north vestibule toward Tower Ave. does not provide a minimum 48 inch clearance between the edge of the open inner door leaf and the exterior face of door

- In numerous locations, materials or furniture were located within accessible push and pull side clear floor areas.
- Classroom doors were observed to incorporate floor bolt “barricade” hardware, presumably for lock-down procedures. These types of hardware do not permit free and accessible egress from classrooms, contradicting both accessibility and life-safety codes.
- Many exterior egress doors where narrow double-leaf doors were originally provided have been replaced with a single compliant door leaf and a fixed panel. However, the main entry from Brookline St. still has the original narrow double-leaf configuration, which does not comply with the minimum 32 inch accessibility clearance.
- Doors to the gymnasium included glass lights with the lowest edge of vision glass higher than the 43 inch maximum permitted by ADAAG.

ACCESSIBLE ROUTE

- The main school building is a split-level facility with the main east and west classroom portions separated by an approximately four step elevation change. A single accessible route via ramp at the northern end of the building connects the two elevations, but use of this route requires travelling around the entire facility to access the main offices and public spaces near the main public entry. This route does not coincide with the route for the general public.
- The ramp connecting upper and lower main levels of the facility does not include compliant handrails.
- The stairways within the original school include handrails that do not provide the required extensions at the top and bottom of each flight.
- No elevator is required for the facility.
- The performance platform or “stage” in the cafeteria does not include an accessible path that coincides with the path for the general public.
- Some educational spaces are on a different elevation and accessible only by stairs.

TOILET ROOMS & FIXTURES

- Some gang toilet rooms do not provide compliant accessible compartments with a clear floor area that can accommodate a wheelchair.
- In gang toilet rooms with a larger toilet compartment, presumably to provide an accessible compartment, the spaces are not compliant. Noted deficiencies include missing grab bars and toilet paper dispensers outside of reach ranges.
- Several gang toilet rooms do not include an accessible lavatory.
- In locations where accessible lavatories have been installed, piping was not provided with knee-space protection, mirrors are mounted higher than permitted, and hand drying devices (paper towel dispensers) are mounted outside of the reach range.

- Some single user toilet rooms are being used for storage. It is unclear to what degree these are considered part of the facilities accessibility features or minimum toilet fixture count.
- Numerous single user toilet rooms did not include grab bars, accessible lavatories, accessible mirrors, or accessible hand drying equipment.
- No fully compliant accessible toilet room available to either staff or students was observed.
- Drinking fountains within the school are not compliant; they are not mounted at the appropriate heights, do not provide adequate knee space clearance, do not provide adequate approach clearances, project more than 4 inches into accessible paths, and in many locations are not even approachable due to other obstructions.
- Classroom sinks, where provided, do not include the required knee space clearance below the sink and include faucets that require tight grasping and turning. Most sinks appear to be mounted at an accessible height.
- The staff room sink does not include the required knee space below the sink and was not mounted at an accessible height.

Controls & Miscellaneous

- Wall mounted telephones are mounted above the reach range.
- Fire extinguisher cabinets are mounted with their door access above the allowable reach range.
- The fire alarm pull station outside the main entry has plantings in front of it and is not accessible.
- Accessible room identification signage was not provided throughout the school.
- The Library check out desk does not provide an accessible transaction counter.

Standards for the Treatment of Historic Structures

The building and property is not listed on, nor is it eligible for listing on the National Register of Historic Buildings. See section 3.1.4 A for Historical Regulations.

CIVIL ASSESSMENT

General Building Information

Nitsch Engineering has performed research of the existing site conditions for the Mitchell School at 187 Brookline Street in Needham, Massachusetts. Nitsch Engineering also conducted a site visit on December 13, 2019 to observe the overall site, take pictures and provide a preliminary outline of short and long term needs for the school. Nitsch Engineering included anticipated site permitting requirements for the Mitchell School for any proposed site work.

Nitsch Engineering's research included an initial site visit/walk through the school and review of existing conditions plans compiled by Dore and Whittier. Nitsch Engineering's observations and findings are summarized on the following pages.

The Mitchell School is in a residential neighborhood located at the top of a hill off Brookline Avenue. The entry to the school is a U-shaped driveway off Brookline Street. The entry width allows for a double lane configuration that allows student drop off via bus and private vehicles along the front of the school. A stream and wetland area is located at the bottom of the slope, east of the school.

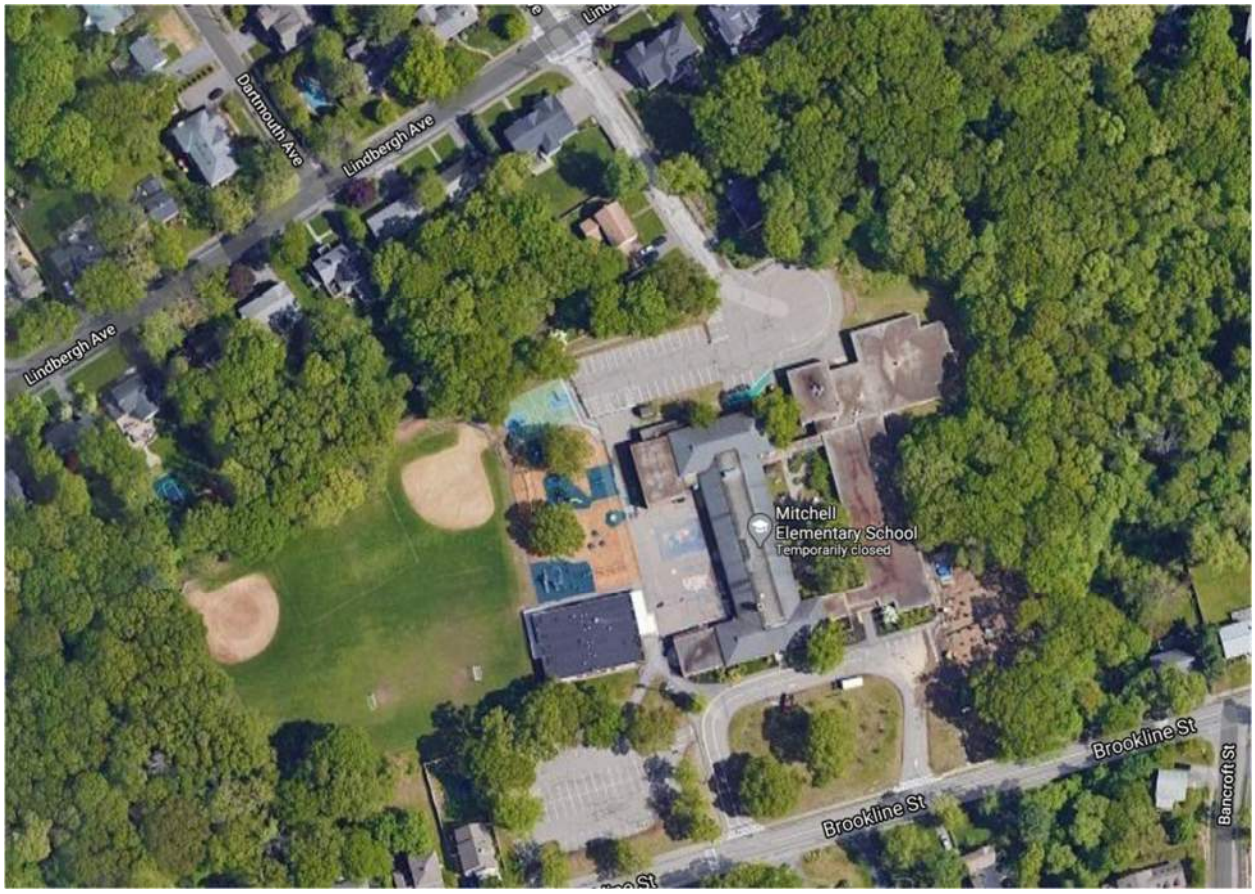

Image 1: Arial photo of site

Parking and Access

The main entrance to the Mitchell School is accessed from a one-way U-shaped drive from Brookline Street. This loop is used for parent pick up and drop off at the beginning and end of the day. Seven guest parking spaces, including one handicap space, are available in the loop during school hours (between 8:30 am and 1:00 pm). The queue line during afternoon pick up extends east of the entrance drive on Brookline Street creating traffic and safety issues (Image 2)

Bus drop off for students takes place on Brookline Street and at the rear of the school which is accessed from Tower Ave. Drop off with handicapped accessibility is available both at the front and rear of the school. However, the rear of the building provides more convenient access to most classrooms, learning spaces and the administration office.

A parking area with 48 striped parking spaces is located west of the front drop-off loop and has a separate entrance / exit from Brookline Street. There are no accessible parking spaces located in this lot. Additional parking is provided at the rear (north side) of the school and accessed from Tower Ave. This area provides 32 striped parking spaces and 3 marked accessible spaces including one designated for vans. These spaces are not located near the rear entrance door but provide parking near the playground and playfields. Pavement in the entrance drive and parking areas is in fair condition.

Sidewalks are available along Brookline Street and in the adjacent neighborhood to Tower Ave. Many students walk and ride their bicycle to school. Numerous bicycle racks are located around the site. Sidewalks around the building are in good to fair condition.

Emergency access is provided to the north and west sides of the school from the Tower Ave parking area, and to the front of the school from the main entrance drive. Access to a portion of the east side of the building is possible with a small vehicle from the entrance drive; however, portions of this side of the building are not accessible by emergency vehicles.

Specific Issues	*Recommendations*
Pavement in drop-off loop and parking areas is cracking and in need of repair	Mill and overlay pavement where cracking has occurred
Review the location of the accessible parking at the front of the building—the slope of the drive appears to exceed the allowable slope for accessibility	Determine locations other than the current location that are better suited for accessible parking
Accessible parking on the north side of the building is not located near the entrance	Review the paved area near the north side of the building for appropriate accessible parking
Site safety and parking capacity	Review site circulation and parking needs to look for ways to optimize on site queuing for pick up and drop off and increased parking

Image 2: Front entrance drop-off loop

Image 3: Front entrance drop-off loop

Image 4: Front entrance drop-off loop

Image 5: Cars queued along Brookline Street

Image 6: Entrance to parking area on Brookline Street—west of entrance loop

UTILITIES

Water

The Mitchell School is serviced by municipal sewer and water service. The water main in Brookline Street is an 8-inch service with a tap and sleeve that reduces to a four inch cast iron service which then enters the school at the west side of the school. A 2" exits the rear north side of the original kindergarten wing and travels west to service the 2014 modular classroom building. Service to the 2018 modular classroom is directly from Brookline Street via a 2" copper line.

There are two fire hydrants along Brookline Street: one hydrant is near the school driveway entrance and the other hydrant is close to 215 Brookline Street. A fire hydrant is also located at the intersection of Tower Ave and Lindbergh Ave. A flow test would be required to verify pressure of an automatic fire suppression system if sprinklers are required in the building

GAS

An 8" gas line services the Mitchell School from Brookline Street. Additionally the "as built" plan dated 9/30/2014 (the first modular classroom project) indicates a 10,000 gallon underground oil tank in the green area of the front of the building.

SEWER

The existing 6" cement sewer exits on the west side of the school and connects to the vitrified clay sewer main in Brookline Street. A 6" asbestos cement sewer line was added during the school expansion in 1969. This line exits the building on the east side of the building and connects directly to the sewer manhole at station 15+00, in front of house number 176 in Brookline Street. A 4" PVC line connects the 2014 modular building to the existing on site sewer line at the front of the school. The 2018 modular classroom connects to the sewer line on the east side of the entrance drive and runs directly to Brookline Street.

DRAINAGE

Drainage for the Mitchell School consists of two catch basins at the start of the cul-de-sac on Tower Ave. It appears that some of the roof is captured and directed to the drainage system around the east side of the school building and into the Tower Ave. drain system. There is an area drain in the landscaped area in the entry drive and a catch basin in the front parking lot to the west of the entry drive. In general, the drainage for the Mitchell School consists of sheet flow from the parking lots, sidewalks and asphalt play areas into the surrounding area.

It appears that the drainage system is adequate for moving stormwater off the site. However, the existing drainage system does not meet current Massachusetts Department of Environmental Protection (MADEP) Stormwater Standards.

ELECTRIC & TEL / DATA

Electric service comes from Brookline Street, runs overhead to a an on-site pole located along the west side of the entrance drive. Tel / Data and power then go underground into the main building. Electric and Tel / Data run from the main building underground (through the hardscape play area) to the 2014 modular classroom building. Power and Tel / Data to the 2018 class room building runs overhead

Image 7: Tower Ave. entrance to site

Image 8: North drop-off loop and parking

Image 9: North parking lot with HC parking

Image 10: Drainage in front parking lot

Image 11: Drainage in north parking area

Image 12: Drainage at green space in front of build-

from Brookline Street to an on-site pole on the east side of the entrance drive, then underground to the modular classroom building.

Specific Issues	*Recommendations*
Hydrant flow test needed	A hydrant flow test is needed to verify water pressure is sufficient to provide fire protection to the school building
Main Sewer and Water line connections are more than 50 years old	Provide new sewer and water line connections
The existing drainage system does not meet current Massachusetts Department of Environmental Protection (MADEP) Stormwater Standards.	Provide new drainage structures and pipe including water quality structures, review overall drainage system for the site
Underground oil storage tank	Provide tightness test for tank and remove

WETLANDS

There is an area of wetlands located on the east side of the site . Any future building project will need to consider this area and the required buffer. Discussion with the Conservation Agent is recommended to determine jurisdictional control and required Conservation Approval.

PERMITTING

Any site work at the Mitchell School would require Planning Board Approvals, compliance with MADEP stormwater management, however the possibility of ledge may preclude underground infiltration systems. Conservation Commission Approval may also be required if working within the jurisdictional buffer zone.

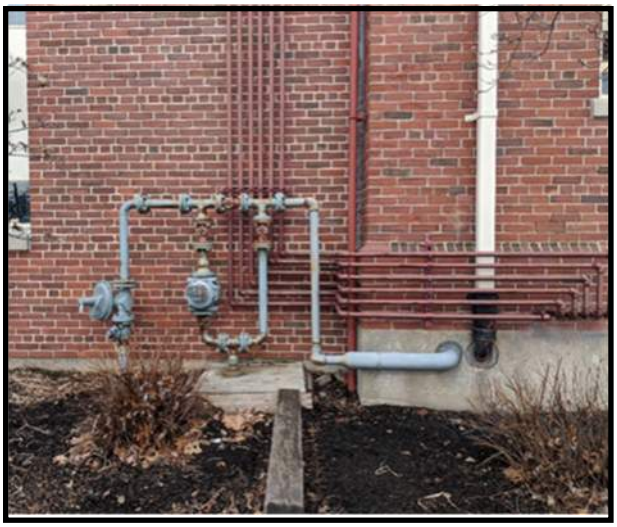

Image 13: Utility entrance to main building

STRUCTURAL ASSESSMENT

Basis of the Report & General Information

The purpose of this report is to assess the structure of the existing building, comment on the existing structure and comment on the structural integrity of the building.

This report is a follow-up to the assessment that was conducted by our firm in April of 2011. This report is based on the report issued during the 2011 assessment, observations made during our visit on December 12, 2019, and a review of the available drawings of the original construction prepared by William G. Upham Architect and Gilbert Small Engineers, Inc. dated October 1949; Additions and Alterations prepared by Rich Tucker Associates, Inc. Architects and Cleverdon Varney & Pike Engineers dated June 1958; Additions and Renovations prepared by Rich Phinney Laing & Cote, Inc. Architects and Albee, Harold & Hirth, Inc. Engineers dated October, 1968 and Interior Masonry Wall Stabilization prepared by Gale Associates , Inc. dated April 2000.

During our visit we did not remove any finishes or conduct any structural investigations; so, our understanding of the structure is limited to visual observations only.

Existing Conditions

The Mitchell Elementary School is located on Brookline Street in Needham, Massachusetts. The original school was constructed as a single story structure in 1949. In 1958, a single story classroom wing and connector was added to the original school. In 1968, a single story classroom wing was added to the school.

Original 1949 Building

The single story building has a crawl space and a lower level at boiler room and storage areas (image 1 & 2). Foundations are traditional, cast-in-place concrete with interior pilasters on footings and concrete walls at the exterior. The first floor level is cast-in-place flat concrete slab construction supported on the pilasters and on steel concrete encased beams above the occupied lower areas. 8" interior wide flange columns and exterior masonry walls support steel framing at the attic level consisting of wide flange beams and bottom chord of steel trusses. Roof framing has the trusses with 8" and 10" steel purlins. The roof substrate has 1 ½" wood plank spiked to purlins and trusses (image 3). There is a slab at the ceiling level (fan room) which has cast-in-place concrete supported on steel beams. Exterior walls appear to be solid brick with steel lintels supporting veneer. There is interior masonry steel stud with plaster.

1958 Addition

This consisted of a single story classroom and connectors to the existing. Foundations are traditional cast-in-place concrete while the first floor has 4" concrete slab-on-grade. The roof framing is supported on steel columns both on the corridor and exterior. 12" girders and 10" deep steel spandrel beams support 14" deep open web steel joists at 2'-6" on center with 2 ½" perlite on steeltex.

The expansion at the playroom / gymnasium has open web 24" long span joists at 6'-0" on center supporting 3" precast concrete roof slabs at the roof level (image 4 & 5). The exterior walls have curtain

wall with masonry to sill level consisting of varying materials, solid brick and concrete breeze block. Cavities vary from 1" to 2".

1968 Additions

These include a single story classroom and instructional Media Center. Foundations are traditional cast-in-place and the first floor is a 4' concrete slab-on-grade. Steel columns and beams support open web steel joists spaced at 4'-0" on center with a 1 ½" deep steel deck. The roof at the Media Center is higher and has 24" deep open web steel joists at 4'-0" on center with a 1 ½" steel deck. Columns are typically 5" wide flange or 4x4 tube sections. Exterior walls are typically CMU backup cavity and veneer brick. Recessed windows at the materials center are framed from vertical precast concrete elements.

Findings

The original building and additions are in sound structural condition; there is no evidence of any distress or settlement at the foundations. The exterior walls, other than some localized conditions where brick is spalling and mortar is decaying at joints on the wall at the north end of the original building are in reasonable condition.

Recommendations

The existing conditions have not changed much from our last visit in 2011. The structure is in good repair and performing well. There are no major concerns for any immediate repairs.

Image 1: Exterior wall and structure at boiler room

Image 2: Access to crawl space

Image 3: Wood plank roof structure with steel purlins

Image 4: Gymnasium

Image 5: Gymnasium

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ARCHITECTURAL ASSESSMENT

General Building Information

The William Mitchell Elementary School is a single story 49,385 sq. ft. (approximately) masonry building. The original construction occurred in 1948 with major additions constructed in 1958 and 1968. Few upgrades have occurred to the main building since 1968. An independent 7,140 (+/-) sq. ft. modular classroom structure (5 classrooms) was placed on the west side of the building in 2015, and a second 3,200 (+/-) sq. ft. modular classroom structure (2 classrooms) was added in 2019 east of the main building. The larger modular structure currently serves the kindergarten population while the smaller building houses art and music classrooms.

The school is located on 17.05 acres in a single residence (SRB) zoned neighborhood. The main entrance to the school is on Brookline Street with a secondary entrance on the north side of the building from Tower Avenue. The Tower Ave. entrance provides additional parking as well as bus and van pick- up and drop-off. Only two buses arrive and depart from the school each day; all other students walk, ride their bicycles (as is evidenced by the full bike racks) or arrive via carpool. Undeveloped land boarders the school on the east side of the building. This area is wooded and has areas that are under the jurisdiction of the Conservation Commission. Playgrounds, open playfields and woodlands, Mitchell Woods, are located on the west side of the school. The school serves approximately 484 students in grades K- 5 with an average class size of 20 students.

List of documented improvements to the school are as follows:

- 1948-49 Original Construction
- 1958 Significant Addition—classroom wing, and gymnasium
- 1968 Significant Addition—classroom wing and media center
- 2015 Modular classroom building
- 2019 Modular classroom building Air Balancing, HVAC / Electrical System Improvements

The Mitchell School was included in the 2011 D+W comprehensive facilities assessment of three school facilities. This report was followed by a second study in 2012 that focused only on the Mitchell and Hillside Schools. These studies led to the MSBA project for the Hillside School and the 2015 modular classrooms addition to the Mitchell School. The Mitchell School was also included in the 2014 HKT Facilities Master Plan of the Town's public buildings. This report also noted the upgrades necessary to meet current ADA / MAAB requirements, many of these recommendations have not been addressed. The main building is not fully compliant. The modular classrooms are fully accessible.

Overall the building structure is in good condition, building systems (hvac, plumbing, electrical) in fair to poor condition. The facility is not well suited for 20th century learning and lacks appropriate spaces for special education and administration. Many spaces, such as the gymnasium and cafeteria, are undersized for the population. The art and music rooms are located in the modular building which requires students to exit the main building to attend these classes. The kindergarten classrooms are also independent of the main building. These younger students must leave their classroom building and cross the hardscape play area or walk the length of the main building outside to attend specials such as gym, library, art or music as well as any special education classes.

The following information addresses specific architectural issues observed during our recent site visit.

EXTERIOR

Foundation Walls

The original cast in place concrete foundation is in fair condition. Interior access to the foundation area is limited as the wall varies in height and accessibility from the basement storage area, crawl space, and mechanical room. Some spalling of the concrete has occurred on the west side of the building where asphalt pavement has been poured up to the concrete wall and aggregate is visible along much of the foundation wall. More significantly the entire assembly is uninsulated. In many areas the wall remains damp due to poor drainage. In some areas there is moss growing on the foundation wall.

In the 1958 addition the foundation wall is not exposed. The brick as well as the flashing between the brick wall and the concrete foundation (depicted in the construction documents) are below grade or pavement in almost all areas. This condition can trap water and moisture within the wall cavity creating mold, efflorescence, and cracking of the brick wall in the freeze / thaw cycle. In the kindergarten area (1958 addition), as noted in the 2011 study, the foundation wall remains exposed, showing continued signs of stress with spalling, horizontal cracking and deterioration of the foundation.

The foundation of the 1968 addition is in poor condition in many areas with horizontal cracking at the base of the brick wall and at window and door locations. The two modular additions bear on concrete piers that are in very good condition.

Specific Issues	*Recommendations*
The entire foundation system is uninsulated and appears to not be dampproofed / waterproofed (Image 1).	Install of minimum R-10 rigid insulation with above grade insulation protection, and appropriate flashing / trim components over a complete waterproofing system as part of a significant facility envelope upgrade / renovation project.
Foundation window or vent that was filled in with plywood and has asphalt poured up to face of building (Image 2) creating space for water infiltration.	Remove asphalt in this area. Remove plywood panels. Fill openings with masonry. Patch and repair asphalt.
Spalling concrete foundation wall (Images 3).	Remove loose / damaged materials, prep for patching, and install mortar pointing, masonry materials, grout, etc… as required for associated repairs.
The asphalt does not appear to be sloped for drainage. Water and debris enters the space between the foundation and the asphalt (Image 4). The freeze / thaw cycle can cause damage that goes undetected.	Remove asphalt that is placed against building foundation. Install drainage system or landscaping.
Missing grout at window and door sills in 1968 addition (Image 5).	Review sills for missing grout and damage due to freeze / thaw cycles. Repair grout and / or replace damaged sills.

Image 1: Exposed foundation wall (original –1948—portion of the building)

Image 2: Former window or vent filled with plywood

Image 3: Spalling of foundation wall

Image 4: Debris & water collects at edge of asphalt

Image 5: Missing grout at door sills

Modular Classroom Foundation

The modular classrooms are set on poured in place concrete piers. Foundations are in very good condition (images 6 & 7)

Specific Issues	*Recommendations*
N/A	

Exterior Walls

The exterior walls of the main building are primarily constructed of brick veneer with masonry back-up walls. The 1968 addition includes a pre-cast concrete band below the roof edge and window fins for daylight control (Image 8). In general, the brick is in good to fair condition throughout. The oldest portion of the building has bricks that are in fair condition. There are areas where the bricks have cracked, or have damage that appears to be from an impact load (Image 9). The 1948 portion of the building has a brick water table (Image 10). Many of these bricks, as well as the vertical wall in several areas, have loss or damage to the harder exterior surface (face) of the brick. The damage to this surface can expose the softer internal brick and lead to water absorption. Effloresces, mold and movement of brick, a result of water or moisture infiltration, can be seen in many areas around the building (Image 11).

Re-grouting and repointing is needed throughout the building exterior. The expansion joint between the 1958 kindergarten addition and the original building is in need of repair with the appropriate expansion joint materials (Image 12).

The exterior wall assemblies of the modular classroom buildings are fiber cement siding, and are in very good condition.

Specific Issues	*Recommendations*
Damage, cracked and broken bricks allow water and moisture to infiltrate the brick and wall cavity causing further damage, mold, and efflorescence.	Remove damaged bricks and replace with new bricks and mortar.
The two original portions of the facility are built with uninsulated exterior wall systems of brick and pre-cast concrete providing no thermal break or insulation.	Install continuous wall insulation systems throughout as part of a comprehensive facility envelope upgrade / renovation project.
Damaged flashings, missing sealant, missing expansion joint	Remove damaged material, clean and prep areas for repair or replacement.
Grout in poor / very poor condition	Repoint and grout all exterior walls

Image 6: Foundation piers for 2015 modular building

Image 7: Foundation pier of 2019 modular building

Image 8: Pre-cast concrete fins at 1968 addition

Image 9: Damaged bricks

Image 10: Brick watertable

Image 11: Brick wall in poor condition

Doors

Door types include hollow metal, wood, storefront, steel framed glazed units and some recent replacements appear to be insulated hollow metal with and without vision lites. Many of the original exterior doors have been replaced with new doors and hardware. Most of these doors are in good to fair condition. Doors that were not replaced (Image 15) are in poor condition and do not have ADA / MAAB hardware. The replacement doors were set into the existing frames which are in poor to very poor condition. The replacement doors do not fit properly in the old frames leaving gaps. Most of the metal door frames are rusting (Image 16) and the wood frames show signs of rot at the base. Many doors do not have the proper weather stripping, leaving large gaps for air flow around the doors. Several doors do not latch properly making them unable to be secured properly. This condition will also cause the doors to warp over time. Access control monitoring in the main building is located at the front entrance only. Security access control is located in both of the modular buildings. In most locations there are no vestibules or airlocks, creating significant energy losses. Many classrooms have direct access to the exterior (Image 17).

Specific Issues	*Recommendations*
Missing, damaged, misaligned weather seals at exterior doors.	Review all doors and repair, replace, or install missing, damaged, or misaligned threshold and weather sealants.
Rusted and rotted doors and frames.	Clean & prep corroded doors and frames apply filler where rust has gone through the frame and paint with proper corrosion resistant paint system. OR replace all door frames
ADA / MAAB hardware	Replace all non-compliant hardware
Doors are in fair condition	Replace all doors

Image 12: Building expansion joint

Image 13: Aluminum storefront with spandrel glass

Image 14: Replaced original front door (1948)

Image 15: 1958 door and hardware

Image 16: Replacement door in original frame

Image 17: Original 1968 door in classroom

Exterior Windows & Vents

Windows located in the 1948 building are wood double hung or have hopper style bottom vents (Image 18). In the 1958 portion of the building the windows are steel sash / hopper style venting (Image 19)and the 1968 addition has steel frame windows with hopper style venting at the bottom (Image 21) or fixed panes. Window frames in general are in fair condition. Several windows are located close to grade, these wood window frames show signs of rot while the metal ones are rusting. There is a row of new residential quality casement style hopper windows at the end of the gymnasium (image22). A staff member reported that one of these windows fell out last year.

Window wells on the west side of the building have been filled in with asphalt or concrete with the screen and glazed window left in place (Image 23). This is an improper method of filling the window well and can lead to additional issues as water and snow seep between the window screen and window frame causing rust and rotting of the existing window frame.

Nearly all the window systems are suffering from multiple problems: whether failing sealants, rotted / rusting frames and subframes, cracked or broken pre-cast window sills, missing mortar between sill, precast window opening assemblies, and adjacent brick. With the exception of tempered glass, most windows have single pane non-insulated glazing which is not energy efficient.

Most of the exterior vents are in good to fair condition. Some corrosion is noted on several and sealants are missing or damaged on others. There is clear evidence that animals have found their way into some vented areas.

Image 22: Replacement casement window in gym

Image 23: Sealed basement window and mech vent

Image 18: Windows in 1948 wing (courtyard side)

Image 19: Windows in 1958 wing (courtyard side)

Image 20: Wood window frame

Image 21: Windows placed closed to grade

Specific Issues	*Recommendations*
Aluminum window systems appear to not be thermally broken; exacerbating the thermal bridging / heat loss condition.	As part of a comprehensive facility envelope upgrade / renovation project, the entire exterior façade including the window systems should be redesigned to modulate thermal performance, daylighting, and interior comfort.
Several wood window frames have water or moisture damage	As part of a building envelope upgrade replace all window frames
Glazing is single pane throughout the facility	As part of a building envelope upgrade replace all window units with min double pane glazing
Improper sealing of basement windows	Remove concrete and bituminous fill, remove existing window, fill opening with cmu block or brick, provide proper drainage in existing window well
Some mechanical vents have broken sealants and corroded metal; others have nesting insects, or birds	Clean and re-seal all vents, replace severely damaged vents

Roof

The roof of the 1948 building (outlined in white in Image 26) is mainly a pitched steel frame structure with tongue and groove wood sub structure (Image 27). Architectural shingle roofing material is used on the sloped sections with asphalt built-up roofing in the flat center portion (shown in red in image 26). There is some ponding or standing water at the edges of the flat roof area, and areas where the roofing material is showing signs of age and cracking (Image 29).

The 1958 (shown in blue in Image 26) and 1968 (shown in green) buildings have flat built-up roofs with internal drains. Ponding was not visible on these roofs at the time of our visit.

An area of concern is on the west side of the building near the entrance / exit to the playground. The sloped roof drains, via gutter and downspout, to the lower roof over the entrance. The gutters often fill with leaves (Image 28 & 30) and it was reported that water in this area falls onto the exterior landing and seeps back into the building causing pooling and flooding inside the building hallway. The smaller roof overhang at the gymnasium door also had standing water at the time of our visit.

One of the more significant issues at the Mitchell School is the lack of insulation in the attic space of the 1949 building (Image 27). There was approximately 2” to 3” of fiberglass batt insulation observed directly on top of the plaster ceiling. This insulation was inconsistent in many areas due to ductwork, piping and electrical conduit penetrating through the ceiling. It was evident that some of the insulation had been moved, most likely by various workers over the years accessing the space to maintain, repair and upgrade the building systems. The insulation system was inadequate as originally installed and is a difficult system to maintain continuity. Modular classroom building roofs are in very good condition.

Image 24: Vent with debris

Image 25: Damaged and missing caulk and sealant

Image 26: Roof plan

Image 27: 1948 roof structure

Image 28: Gutter with debris

Specific Issues	*Recommendations*
Ballasted built-up roofing is beyond serviceable life in many areas.	Replace flat roof systems as part of a roof—or an entire facility envelope renovation project.
Roof flashing and sealants missing or damaged.	Remove damaged, worn, and loose flashing materials and reset, replace, and / or re-seal as needed throughout.
Patched and re-patched areas of flat and low-slope membrane roofs in poor condition.	Replace flat roof systems as part of a roof—or an entire facility envelope renovation project.
Inadequate insulation in sloped roof areas	Shift the location of the thermal envelope to the roof level to provide a continuous thermal envelope and insulate the transition from the wall to the roof.
Gutters and downspouts are filled with debris	Clean and maintain gutters to avoid water overflow and ice damming

Image 35: 1948 Roof—building vent roof

Image 36: 1948 Roof—building vent

Image 29: Ponding at corner

Image 30: Sloped roofs draining to lower flat roof

Image 31: 1948 Roof—looking west

Image 32: 1948 Roof—looking north

Image 33: 1948 Roof—looking to courtyard west

Image 34: 1948 Roof—looking to courtyard east

Ramps, Stairs, Railings & Guardrails

The main entrance (Image 37) has a ramp that allows for accessibility to enter the building. This ramp is in good condition and has minimal slope; however, the handrails do not meet the current code requirements for handrail extensions.

A ramp is provided at the north entrance (Tower Ave) and a handrail with return is located on one side. The ramp is greater than a 1:12 slope and therefore requires a handrail on each side of the ramp. The concrete surface is deteriorating and would impede the use of crutches or walkers.

A non-conforming ramp is also provided on the west side of the building (Image 38) and provides access to the playground from the main level of the main building. This ramp provides the only direct access to the playground. Handrails are required on both sides of a ramp and extensions of 12" beyond the landing is also required.

The modular buildings provide ramps to both the front and rear of the buildings. These ramps and handrails are in good condition and meet current accessibility requirements.

Specific Issues	*Recommendations*
Main entrance ramp handrails are not compliant	Provide extensions to handrails to meet code
Rear (north entrance) ramp and handrails are not compliant	Correct uneven surface, provide extension on existing handrail and provide second handrail to meet accessibility requirements
Non-compliant handrail at ramp on west side of building	Provide extensions at the bottom of the existing handrail to meet compliance, provide additional handrail on wall side of ramp to meet accessibility requirements.

Image 37: Main entrance ramp

Image 38: Ramp to playground

Image 39: Ramp (in 2014) to first modular building

Image 40: Ramp to rear of 2014 modular building

Image 41: Ramp to 2019 modular building

INTERIOR

FLOORS

In the 1948 wing of the building the original flooring remains in the corridor, restrooms, and storage rooms. In select areas the flooring was replaced with VCT. These areas include the administration offices, classrooms, nurses office and an area of the stair landing. It is possible that the original flooring remains below the VCT flooring. In general the VCT flooring throughout this area is old, worn and is cracking at transition points such as thresholds. The original 2x2 ceramic tile floor remains in the corridor of this wing of the building (Image 1 and 2). The flooring is in good condition however; the tiles and grout are stained. The floor appears to become very slippery when wet. The girls' restroom in this wing has the original 2x2 ceramic floor while the boys' restrooms floor has been replaced with a quarry tile floor that is in fair condition. There is limited cracking but tiles and grout are stained and some holes exist where partitions were relocated.

The main entrance lobby flooring and the adjacent corridor and classrooms of the 1958 addition have VCT and VAT flooring that is in good to fair condition. It is likely that the VCT was placed over the original flooring which, per the construction documents, was an asphalt tile. The VCT flooring varies throughout this area in color. It appears that some tiles have been replaced overtime. In general there is discoloration along the edge, cracking at transition areas ,and an overall dirty look to the flooring. The boy's restrooms in this wing has the original mosaic ceramic tile which is in good condition. In the girls restroom the original mosaic tile has been replaced with a textured 12 x 12 ceramic tile with light colored grout. This tile and grout, although in good condition, appear dirty and difficult to maintain.

Both the gymnasium and the cafeteria have the original wood floors and are in fair condition. The kitchen area has a quarry tile floor. The tiles are in fair condition but the grout appears dirty and aged. There is a sloped floor connecting the 1958 addition to the original 1948 building that has VCT tile flooring in fair condition with cracking occurring at the transition between the flat and sloped floors.

The corridor of the 1968 addition has a VCT floor which is in good condition. The library flooring is a more recently replaced carpet which is in very good condition.

Stairs treads and landings are VCT with painted yellow nosing. Treads and nosing are in fair condition.

Specific Issues	*Recommendations*
Patching, mis-matched, and damaged VCT flooring	Replace all damaged tiles. For esthetic purposes the patches should be replaced with matching VCT tiles, if the existing tiles can not be matched a pattern can be established to weave in the new tiles.
Quarry tile floors appear aged and dirty	Clean tor replace tile and grout
Gym flooring is in fair condition	Replace gym floor

Image 1: 1948 Corridor with 2 x 2 tiles

Image 2: Restroom floor in 1948 wing

Image 3: Gymnasium

Image 4: Cafeteria

Image 5: 1958 Corridor

Image 6: Carpet in Library / Media Center

WALLS

Wall finishes in the school are a mix of ceramic tile, glazed CMU, painted CMU, brick, and drywall or plaster. Overall the walls and finishes are in good condition. The corridor walls of the 1948 portion of the building have a ceramic tile wainscot and plaster wall finish above (Image 13), while the 1958 addition has glazed CMU walls in the corridors (Image 14). The 1968 addition has painted CMU walls in the classroom corridor and a painted and exposed brick in the north lobby entrance area. In general the corridor walls are in good condition. The glazed CMU walls in the 1958 addition appear dirty or stained at the base in some areas as a result of floor cleaning.

Classroom demising walls of the 1948 structure have a plaster finish. In the 1958 and 68 additions the classroom demising walls are mostly painted CMU. The 1968 classrooms have some folding partition walls that are no longer in use. The CMU walls are in good condition with a few areas that have cracking, pealing paint.

In the 1958 stairwell to the gym the plaster wall adjacent to the stairs is damaged and in need of repair and repainting (Image 17).

The wall finishes in the modular classroom area are in very good to excellent condition.

Specific Issues	*Recommendations*
Glazed CMU appears dirty at the base in many areas	Clean block and grout, consider applying a darker finish to the base block to avoid discoloration
Damage to wall adjacent to stairway	Repair base. Patch and paint wall, consider more durable finish such as tile or laminate
Folding partition walls do not provide sound absorption	Replace folding partition with permeant walls that reduce sound transmission

CEILINGS

Ceiling finishes include 2x2 and 2x4 acoustical dropped ceilings, 12”x12” perforated acoustical tiles glued to structure above, painted plaster board, and exposed structure with acoustical panels. The ceilings are in generally fair condition (with the exception of newer ceiling areas such as the library / media center). Humidity, and staining from previous leaks or HVAC units is evident in several locations.

The 1948 and 1958 corridor and several classrooms have a 2x4 tectum acoustical ceiling. These tiles help to absorb noise in the corridor but also tend to gather dust and dirt.

The 1968 addition corridors has 2x2 acoustical lay-in ceiling tiles in a black grid and the classrooms have 2x4 acoustical ceiling lay-in ceiling tiles in a black grid. (Image 21 & 22). The grid in some of the

Image 7: VCT in 1958 connecting corridor

Image 8: Cracking of tiles at transition points

Image 9: Connection of 1958 and 68 corridors

Image 10: VCT flooring –1968 North Entrance

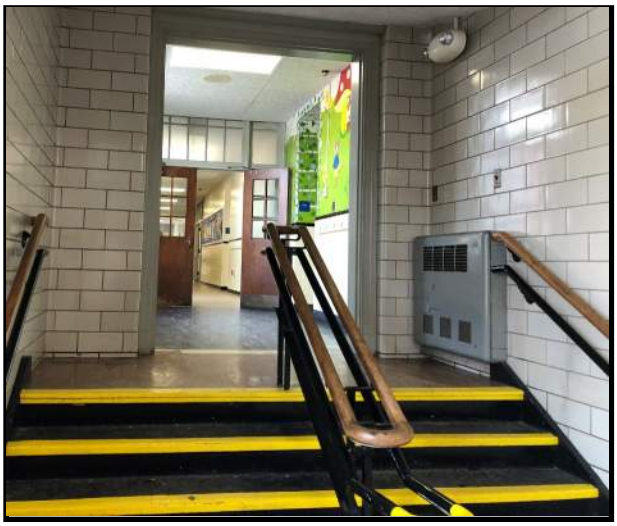

Image 11: Stairs at 1958 Kindergarten Addition

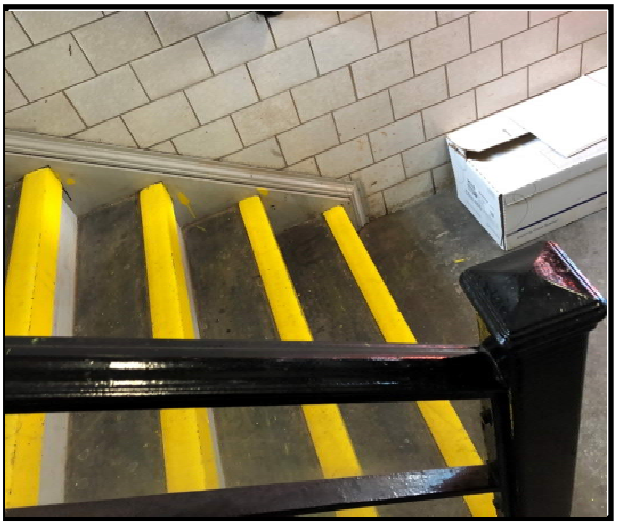

Image 12: Stairs to 1948 Entrance

classrooms is in need of repair. The library media center has an updated 2x2 acoustical lay in ceiling in good condition.

Perforated ceiling tiles remain in a few areas, some of these are badly damaged, broken, or sagging. A similar tile (non perforated) exists in the kitchen area. These tiles are non-scrubable and not compliant with current codes for kitchens.

Specific Issues	*Recommendations*
Stained, sagging or damaged ceiling tiles	Remove damaged tiles and locate the source of the staining (equipment, pipes, roof, humidity) repair source of damage and replace ceiling tiles
Missing or broken ceiling grids	Replace missing and broken ceiling support grids
Non scrubalbe 12x12 ceiling tiles in kitchen area	Remove exiting tiles and glue (test for asbestos). Install drop in ceiling grid support and install ceiling tiles that meet requirements for kitchens
Dirty and dinge tectum ceiling panels	Replace tectum ceiling panels with acoustical ceiling tiles that do not collect dirt. Add acoustical wall panels if additional sound absorption is required

Image 21: 1968 Corridor Ceiling


Image 22: 1968 Corridor Ceiling

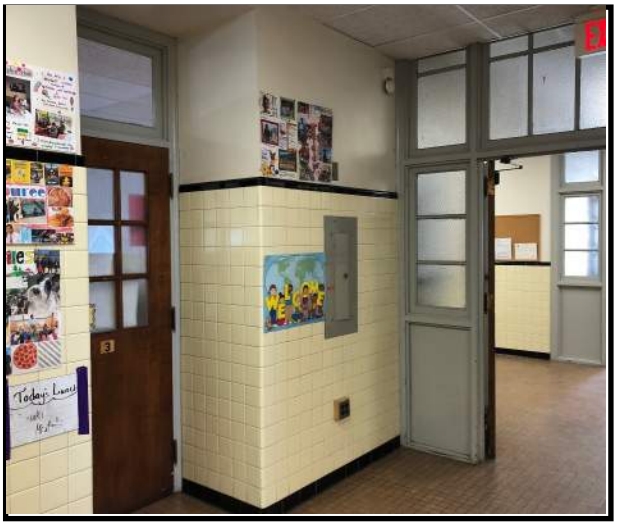

Image 15: 1948 Corridor Walls

Image 16: 1958 Corridor

Image 17: Wall at stair way to gym

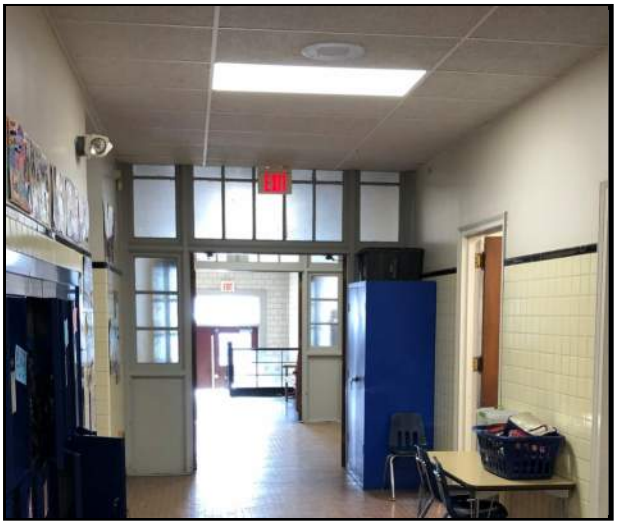

Image 18: 1948 Corridor -

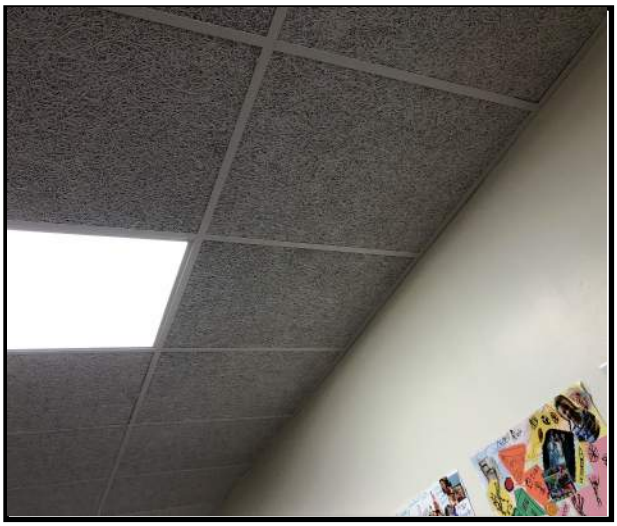

Image 19: 1948 Corridor

Image 20: Tectum wall panels in cafeteria

Doors, Frames & Hardware

Interior doors in the 1948 wing are primarily solid wood with nine glazed panes in wood frames. This is typical for classrooms, corridors and multi-person use restrooms (Image25). Most of these doors still have original hardware which is not ADA / MAAB compliant. Doors in the corridor are flanked by side-lights (Image 26) and transoms that have wire glass which was originally used to meet fire codes and is no longer compliant. These older doors are in fair to poor condition. Many need to refinished and most require new hardware.

Doors in the 1958 section of the building are solid wood in hollow metal frames. Classroom doors have vision panels (Image 27) with wire glass. Non-classroom doors are solid or have vents in the bottom portion of the doors (Image 28). The corridor doors, side lights and transoms have wire glass as well (Image 28). Most of the hollow metal door frames are rusted at the base of the door.

The 1968 wing has hollow metal doors in metal frames in the corridor and solid wood doors with vision panels in metal frames in the classroom wing. In general these doors are in fair condition. The corridor doors have vision panels, sidelights and transoms with wire glass that is no longer compliant.

Only a few doors throughout the facility have ADA / MAAB compliant hardware. Doors in the 1948 section of the building are recessed from the hallway and do not have the pull clearance to meet accessibility requirements.

As an additional note the main entrance doors do not have an airlock vestibule. The addition of a vestibule in these locations would improve both an energy efficiency and security.

From the center of the courtyard there is an issue with the path of egress. The doors to the courtyard lock, presenting the opportunity to be locked within the courtyard.

Specific Issues	*Recommendations*
Wood doors show staining and age	Clean, sand, and re-stain wood doors
Non accessible hardware	Replace hardware on all doors that meet accessibility requirements
Push / Pull clearance at doors	Where possible remove adjacent walls to create clearance to meet accessibility needs. Alternative solutions, such as automatic door openers can be explored
Rusting hollow metal door frames, most likely due to cleaning around the doors	Sand and scrape rust from frames , repaint using a rust prohibitive paint
Wire glass at transoms and sidelights	Replace all wire glazing with tempered glass

Image 23: Non-perforated 12 x 12 ceiling tiles

Image 24: Perforated 12 x 12 ceiling tiles

Image 25: 1948 Classroom & Restroom Doors

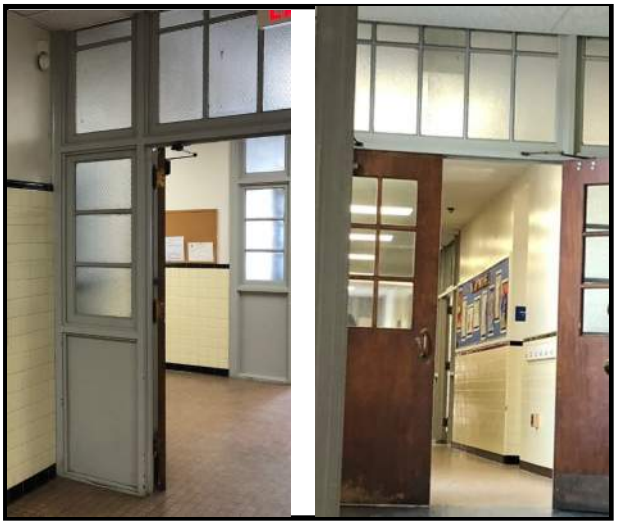

Image 26: 1948 Corridors with sidelights and transom

Image 27: 1958 doors

Image 28: 1958 doors

Built-In furnishings & Equipment

Most of the lockers in corridors are in good condition (Image 31). Library furnishings and shelving are in very good (Image 32). Most classrooms have water bubblers and / or sinks which are typically in fair to poor condition.

The cafeteria and kitchen are part of the original 1948 construction. A former chair storage area now has a walk in freezer and a small office and receiving area was added in 1958. The kitchen equipment appears to be in fair condition but the lack of adequate storage, meal prep, and server space is evident. The cafeteria tables are in good condition.

Specific Issues	*Recommendations*
Kitchen area lacks appropriate space for storage and prep	Expand kitchen area—consider using a portion of the existing cafeteria for expanded kitchen space

Security

The main entrance and other doors are locked throughout the day. Visitors are directed to the front entrance where they can communicate with the main office via AI Phone –Camera and an electronic door opener controls access to the building. The front desk can see visitors via the camera but does not have a view of the front door from the office. There is no vestibule that allows for credentials to be verified prior to entering the building. Several classrooms have exterior doors which can be propped open and left unattended reducing the security of the building.

Current security practices for school environments include a mix of technology and architectural barriers which limit the number of access points, provide visual observation of entrances and grounds, and the inclusion of delayed entry glazing such as School Guard Glass or bullet resistant glass and construction. These additions should be considered during a building renovation project.

Specific Issues	*Recommendations*
Lack of entrance vestibule for security and delayed entrance	Install an entrance vestibule and method for checking credentials prior to accessing the building.

Functional Use of Space

The corridors are used as makeshift expanded learning areas (images 32) with moveable partitions.

Specific Issues	*Recommendations*
Inappropriate teaching spaces	Review current space uses to determine where additional spaces can be created for teaching zones

Image 29: 1958 corridor doors

Image 30: 1968 corridor doors

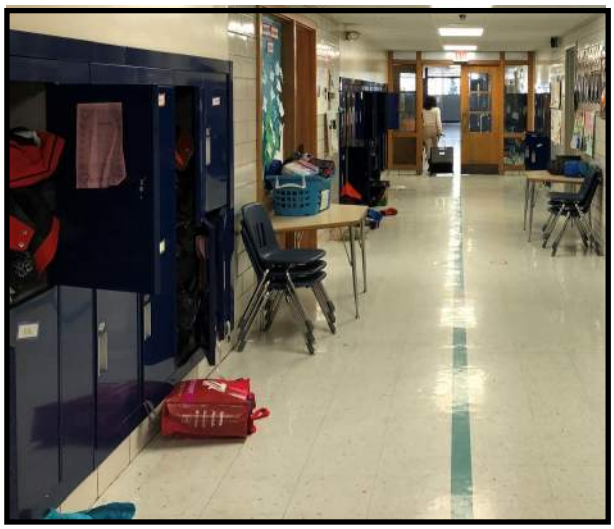

Image 31: Student lockers & corridor teaching areas

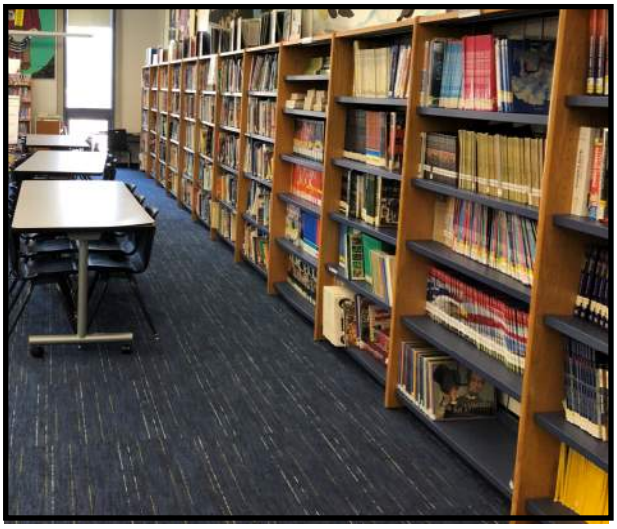

Image 31: Metal doors on hold openers

Image 32: Corridor teaching area

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MECHANICAL ASSESSMENT

General Building Information

In general the mechanical systems at the Mitchell Elementary School are in fair to poor condition. Many parts of the system are at or reaching the end of their serviceable life and will become more difficult and costly to repair over time. Overall the building and its systems are not energy efficient due to the building envelope and the age of the equipment.

Heating System

The building heating plant consists of two (2) dual fuel-fired "Smith" model 28A-12 steam boilers with Powerflame modulating burners (Image 1). The burners were both installed approximately 4 years ago in used condition from the Pollard School heating plant. The boilers each have a maximum Natural Gas Input of 3844 MBH and reportedly are capable of heating the building each on their own; this was apparent at the time of the visit while there was snow on the ground outside and Boiler #2 was disabled by on-going repairs. Boiler # 1 was installed around 1997 and Boiler #2 appeared to be about 10 years older than that.

Natural gas is currently the primary fuel source for the boiler plant; there is an existing underground oil tank outside of the building footprint that is approximately 30 years old. Three (3) fuel oil pumps are installed below the fuel oil tank gauge and monitoring system (Image 2).

A duplex condensate receiver consisting of two (2) 3/4 HP pumps is located on the ground between the two boilers (Image 3). A larger condensate receiver consisting of three (3) 3/4 HP pumps is also located on the floor behind the boilers. A third condensate receiver with dual pumps is installed adjacent to the media center in a janitorial closet; this was likely added as part of a building addition to help re-direct condensate back to the boiler room (Image 4). Steam condensate is gravity-fed to these condensate receivers for pumping back to the boiler plant. A tube & shell steam to hot water heat exchanger complete with two (2) 2 HP inline pumps, an expansion tank, air separator, and all hydronic specialties are also located in the boiler room to provide hot water to terminal heating units throughout the two (2) building additions; the original building is still provided with steam terminal heating units (Image 5).

A combined Stainless steel vent system transfers the boiler flue gasses up through the roof via a masonry chimney. Combustion air is delivered to the boiler room via two (2) high-wall louvers (Image 6). A third combustion air inlet was sealed off and re-purposed as a relief vent for excess steam ducted from the condensate receiver with an inline fan (Image 7).

Building terminal heating units consist of hot water and steam convectors at corridors and entryways (Image 8). High-wall perimeter hot water finned tube radiators extend the length of the gymnasium below the windows and also in the kitchen office (Image 9). Baseboard perimeter finned tube radiators are provided for each of the toilet rooms throughout the building as well as the 1968 addition class-rooms (Image 10). The majority of hot water piping insulation is in poor condition with missing insulation on many of the fittings and elbows (Image 11). The majority of steam and condensate piping is routed through tunnels beneath the building and appears to include asbestos-containing insulation material.

Image 1: Steam boilers

Image 2: Oil pumps

Image 3: Duplex condensate receiver

Image 4: Third condensate receiver

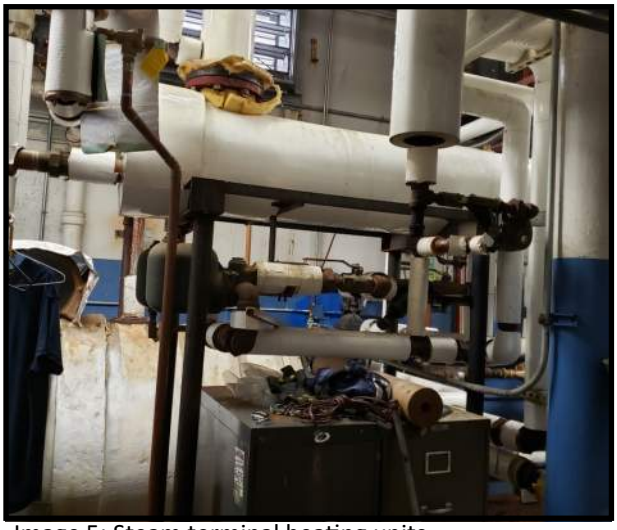

Image 5: Steam terminal heating units

Image 6: Combustion air louvers

Specific Issues	*Recommendations*
Boiler #2 was not operating at the time of the survey; this boiler has surpassed its expected service life and is demonstrating failures.	Boiler #1 is approaching its expected service life of 25 years; the entire heating plant should be replaced with new high-efficiency hot water plant for increased efficiency, reliability, and controllability. This would require the replacement of all steam terminal units and piping throughout the building.
Steam was pouring out of the drip valve associated with the main condensate receiver; this indicates that steam traps somewhere in the building are not operating properly and require maintenance.	Service all existing steam traps and ensure proper working order; replace as-necessary.
There is not currently a low-space combustion air inlet, which is required by current codes in addition to the high-space combustion air inlets.	Direct vent a new hot water heating plant to eliminate the combustion air louvers, or add low-wall combustion air inlets sized appropriately to support the max plant firing rate.
The underground oil tank has surpassed its expected service life and is a pollution risk to the surrounding ground water.	The tank should be removed.
Fuel oil controls were observed to be old and antiquated.	The entire fuel oil system requires replacement. If fuel is to be used in the future
Steam and hot water piping insulation alike is damaged and/ or missing in many places.	Replace all existing piping and equipment insulation with new insulation products complying with current code requirements.
All 1948 and 1968 terminal heating equipment has far-surpassed its expected service life.	Replace all existing 1948 and 1968 terminal heating equipment with new equipment of similar use and capacity.

VENTILATION SYSTEM

Ventilation for the building spaces is provided by steam and hot water unit ventilators communicating with exterior wall louvers. Attic-mounted exhaust fans provide code-required exhaust and general building pressure relief and communicate with a common exhaust outlet at a masonry penthouse above the roof consisting of multiple louvers; the attic is un-heated and un-insulated (Image 12).

A high-space mounted unit ventilator provides heating and ventilation to the Gymnasium space; space pressurization is maintained by an attic-mounted exhaust fan in the adjacent storage room. Classrooms and exterior spaces alike are generally provided with vertical steam and hot water unit ventilators mounted on an exterior wall and communicating with an exterior wall louver; these units

Image 7: Relief vent

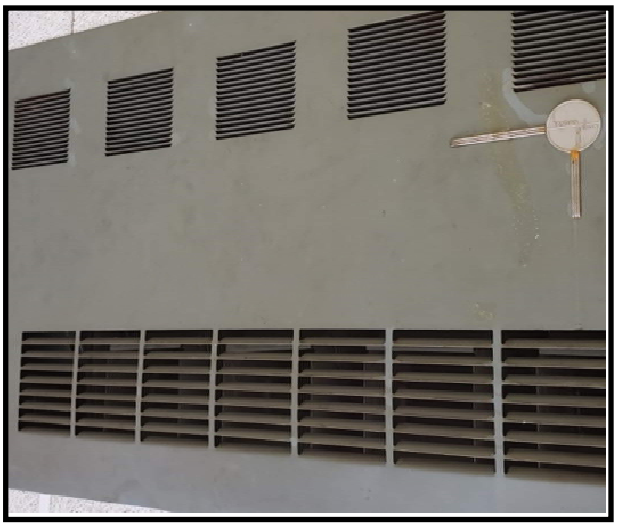

Image 8: Terminal heating unit

Image 9: Finn tube radiator

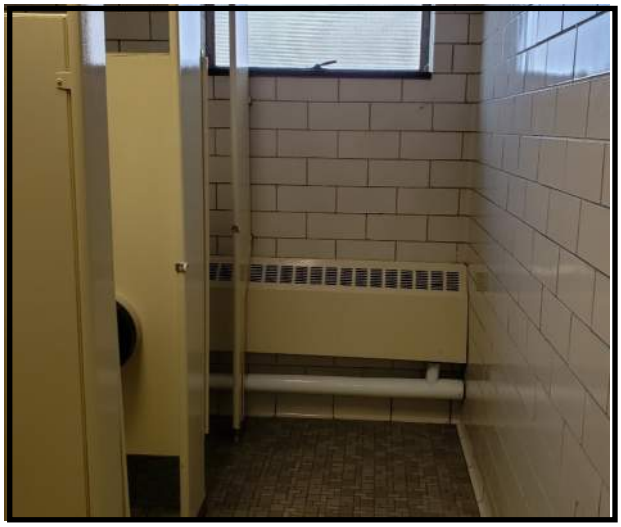

Image 10: Baseboard finned tube radiator

Image 11: Missing insulation

Image 12: Attic exhaust fan

provide heat and ventilation to the spaces served (Image 13).

Toilet rooms are provided with general exhaust grilles connected to attic and roof-mounted exhaust fans and door-mounted transfer grilles communicating with adjacent corridors for make-up air.

The Kitchen is provided with a range hood including cleanable grease filters and a roof exhaust fan (Image 14). Make-up air for the range exhaust hood is pulled through the servery from the cafeteria when the hood is in-use. The cafeteria is provided with an above-ceiling unit ventilator ducted to exterior wall louvers for ventilation and ceiling grilles to deliver heat and ventilation to the space.

No air distribution was present for the stage within the cafeteria. A large ceiling-hung de-stratification fan is installed in the cafeteria to alleviate the stratification of hot air at the ceiling level and provide increased comfort levels for the space occupants (Image 15). An original fresh air supply and exhaust air system was not operating at the time of the visit.

The media center includes dual above-ceiling air handling units with split DX coils and associated roof-mounted condensers. The media center air handlers communicate to a common ducted gooseneck above the roof level for ventilation purposes (Image 16). These media center air handling units provide heating, ventilation, and air conditioning to the space.

It was noted that janitorial closets including mop sinks have exhaust vents tied with the adjacent bathroom but may be undersized. Administration offices and nursing areas utilize operable windows to provide natural ventilation to the occupants.

Specific Issues	*Recommendations*
Attic exhaust systems appear to be original to the 1949 building and have far-surpassed their expected service lives.	Replace existing attic-mounted exhaust systems in kind with new systems of similar type and capacity
All ventilation equipment appears to be original to the associated buildings and has far surpassed its expected service life of 20 years.	Verify size and replace (or enlarge where required) entire building ventilation system
Janitorial closets including chemicals and mop sinks do not have full code-required exhaust.	Verify dedicated exhaust systems for spaces used for the storage of chemicals and noxious materials. Enlarge or replace as required
The installed ventilation equipment for large spaces does not appear to be sized appropriately for the potential occupant load based on available floor area and potential seating arrangements.	Provide ventilation requirements to meet anticipated maximum occupant load in cafeteria and gym
Although it is code-compliant, natural ventilation through operable windows is not a reliable or effective source of ventilation for occupants.	Provide a means of mechanical ventilation for all spaces currently utilizing operable windows for natural ventilation.

Image 13: Classroom unit ventilator

Image 14: Kitchen range hood

Image 15: Cafeteria fans

Image 16: Media Center air handler

Image 17: Kitchen steam unit ventilator

Image 18: Window AC unit

COOLING SYSTEM

The building is not provided with a central cooling system. The media center air handling units include split DX cooling sections with roof-mounted condensers. Many classroom and office areas include through-window type air-conditioning units (Image 18).

Specific Issues	*Recommendations*
Window Air conditioners are undersized for classroom applications and are very inefficient in comparison with current technologies.	Remove the window A/C's and replace with current cooling technologies sized appropriately for the application.
Non-air-conditioned learning spaces generally have poor air quality and lead to lacking attendance and poor learning environments.	Provide a means of air-conditioning for all learning spaces.

CONTROLS

The majority of the building's HVAC systems are monitored and controlled by a direct digital central building control system manufactured by "Barber Coleman Company". The main automatic temperature control (ATC) panel is located in the old incinerator room adjacent to the boiler room (Image 19).

Blank-plate temperature sensors are located in each space; these do not offer adjustment by the space occupants other than temporary occupancy over-ride, but adjustments of set points may be made through the central control system at a front end workstation. A Pneumatic control system remains in operation including an air compressor system in the boiler room, building timeclocks, a number of common-area thermostats, and steam valves (Image 20). All DDC control components and systems appear to be in good working order while the pneumatic control system is well past its prime and un-reliable.

Specific Issues	*Recommendations*
Pneumatic control system is leaky, antiquated, and un -reliable.	Upgrade all pneumatic control components to be tied into the existing DDC system.
Densely occupied spaces did not appear to include a means for demand control ventilation.	Add CO2 sensors and programming to the Gym, Cafeteria, Media Center, and classrooms to minimize
Abandoned pneumatic controls appeared to be present in some spaces.	Upgrade all pneumatic control components to be tied into the existing DDC system.

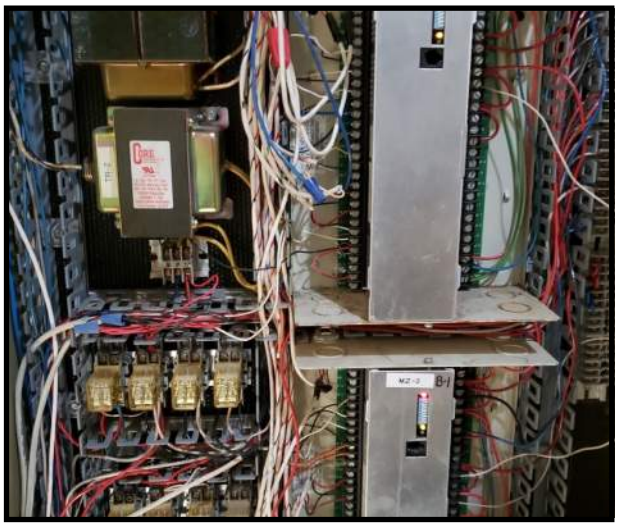

Image 19: ATC Panel

Image 20: Air compressor system

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RTU#1 - 1968 Serving Media Center with (2) condenser units & FA intake at roof - Mech. Unit in ceiling of Media Center

Roof Ladder in custodial closet

Kitchen Exhaust Fan -#1 replaced in 1958 w/ black Iron to chimney

EF- 1958 #5 serves Kitchen Storage

EF-1968- #1 Serving Classrooms # 18, 19, 20, 21, 22 & 23

Large Capacity Unit Ventilator CP6031- FA unit Serves Cafeteria from Attic Fan Rm #201

EF- 1968 - #2 serving toilets & JC

EF-1958-#4 Serves Gym & office

EF - 1968 - #3 serving MC office & utility Rm

EF-1949- #1 Serves Cafeteria

Fan Rm# 201 in Kitchen Attic

EF-1958- #3 serving Toilets

EF- 1949- #4 Serves Toilets & JC

Fan Room #202 in Attic with chimney

EF-1958-#1- serving classrooms 10,11,12,13,14,15, 16 & 17

EF-1949 - #3 Serves Classrooms 2,3,4,5,6,7,8 &9

EF-1958-#2 serving toilets & JC

2015 - Kindergarten Modular Classrooms: (5) Thru-wall vent units

EF-1958-#4 in storage room serves Classroom #1 & toilets

2019- Modular Classrooms added in this area with Art & Music classrooms two electric wall units(see Plans)

Parcels with Orthos
Towers
Satellite Dish
Tower
Tower Anchor
Tank
MA Highways
Interstate
US Highway
Numbered Routes
Town Boundary
Abutting Towns
Abutting Towns Mask

0 40 80 ft

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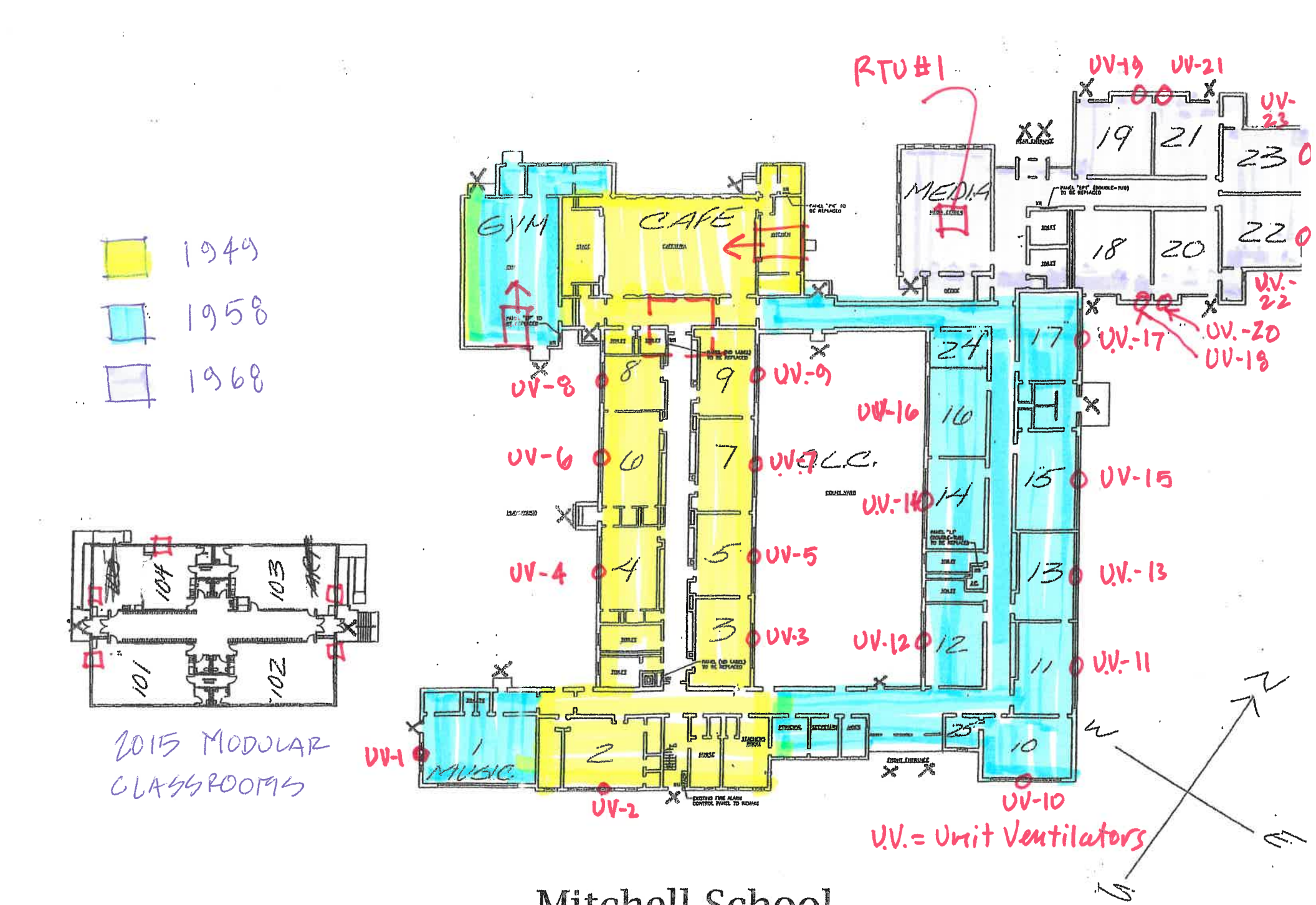
MITCHELL ELEMENTARY SCHOOL Needham, MA



Mitchell School

187 Brookline St. Needham, MA. 02492

ELECTRICAL ASSESSMENT

General Building Information

The Mitchell School currently has 3 electrical services, all 208Y/120V, 3-phase, 4-wire. Service 1 runs underground and serves the main building, which is split into a metered 600 Amp section and a metered 200 Amp and 100 Amp sections. Equipment for this service appears to be original to the building, and manufactured by Frank Adams, which no longer exists, making replacement parts difficult to acquire.

Service 2 is a 400 Amp service run underground from a pole located on the property and serves the modular classrooms to the west, built in 2014. Equipment is in excellent condition.

Service 3 is a 200 Amp service, fed overhead, from pole mounted transformers and serves the modular classrooms to the east, built in 2018. Equipment for this service is in excellent condition.

Lighting for the school is a mixture of LED and fluorescent lighting. Fixtures are mostly recessed 2'x4' troffers and surface wraparounds, with prismatic lenses. Emergency lighting is provided by individual emergency battery units (EBUs).

The fire alarm system control panel is newer and in excellent condition, but does not meet current code.

Power Distribution System

Service 1, for the original building ,comes in underground from a pole mounted transformer located on pole #116/20 across Brookline St.

Service 2, for the modular building to the west, is a 400A service fed underground from pole mounted transformers located on pole 16/192X to a meter on the exterior of the 2014 modular classrooms.

Service 3, for the modular building to the east, is a 200A service fed overhead from pole mounted transformers on a pole located on the property. No utility identification could be found on this pole.

All services are 208Y/120V,3-phase, 4-wire with two meters located in the original building and one located on each of the modular buildings. Equipment in the main building appears to be original to the building except where small sub-panels have been installed for more breaker capacity. Most panel-boards are manufactured by Frank Adams which is no longer in business.

Specific Issues	*Recommendations*
Panelboards in many locations do not have code required working clearance. (Image 1) (Image 2) (Image 3) (Image 4) (Image 5)	Provide code required working clearance in front of all panelboards and electrical equipment.
Distribution panel, panelboards, and some disconnects, while in fair condition, are from a discontinued manufacturers and may have difficulties finding replacement parts. (Image 6) (Image 7) (Image 8) (Image 9)	Replace existing panels and breakers.
Shelving is obstructing working clearance for unit heat disconnect and wire trough. (Image 10) (Image 11)	Remove shelving to provide proper clearance.
Insufficient quantity of receptacles throughout the existing building resulting in the use of extension cords, plug strips. (Image 12) (Image 13) (Image 14) (Image 15) (Image 16) (Image 17)	Provide more receptacles in both classrooms and offices.
Building service size equates to approximately 5.9 watts/ft which is inadequate for what is normally carried for a building of this use. (typically 10 watts/ft).	Provide a new electric service.

Image 1: Panel board with storage placed in front

Image 2: Panel boards with storage in front

Image 3: Panel board with furniture in front

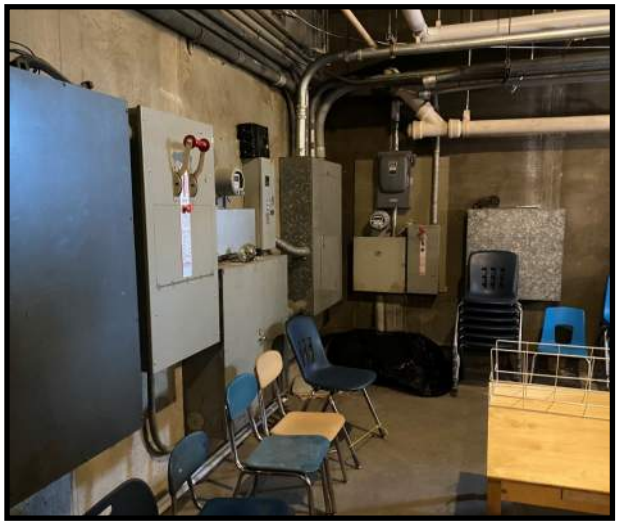


Image 4: Panel boards with storage in front

Image 5: Panel board with storage in front

Image 6: Mfg Tag on equipment

Image 7: Antiquated equipment mfg

Image 8: Antiquated equipment mfg

Image 9: Antiquated equipment mfg

Image 10: Shelving blocks access to equipment

Image 11: Shelving unit blocks access to equipment

Image 12: Use of extension cords

Image 13: Use of extension cords

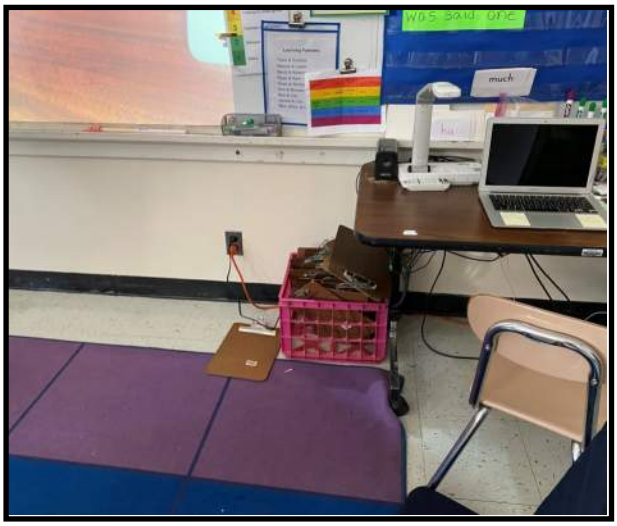


Image 14: Use of extension cords

Image 15: Use of extension cords

Image 16: Use of extension cords

Image 17: Use of extension cords

Interior Lighting

Lighting fixtures in classrooms located in the original building consist of 2' x 4' recessed fluorescent troffers with prismatic acrylic lenses. Fixtures are controlled via a combination occupancy/photo sensor typically centered in the space. Lighting in offices is a variety of 2'x4' recessed fluorescent fixtures, 1'x4' recessed fluorescent fixtures, and 4' fluorescent wraparound fixtures. Corridors have 2'x4' fluorescent troffers. Gymnasium lighting is provided by LED linear strip fixtures , surface mounted. The media center/library lighting consists of 2'x4' LED fluorescent troffers, and controlled via combination occupancy/photo-electric-daylight sensors. Emergency lighting is provided by emergency battery units (EBU)s.

The modular additions consists of LED 2'x4' recessed flat panels.

Specific Issues	*Recommendations*
Lighting levels appear adequate for classrooms and offices. Fixtures look to be in good condition but the majority of fixtures are inefficient fluorescent lamps. (Image 18) (Image 19) (Image 20)	Lighting throughout the building should be upgraded to energy efficient LED lighting.
Some fixtures had missing lamps. (Image 21)	Provide new fluorescent lamps or provide new LED fixtures.
Combination occupancy/photo sensors are not adequately spaced. There is no occupancy sensors in corridors. There is no dimming provided or centralized management of lighting controls. (Image 21) (Image 25)	Provide a new automatic lighting system to meet code.

Image 18: Lighting restroom

Image 19: Lighting in corridor

Image 20: Classroom lighting

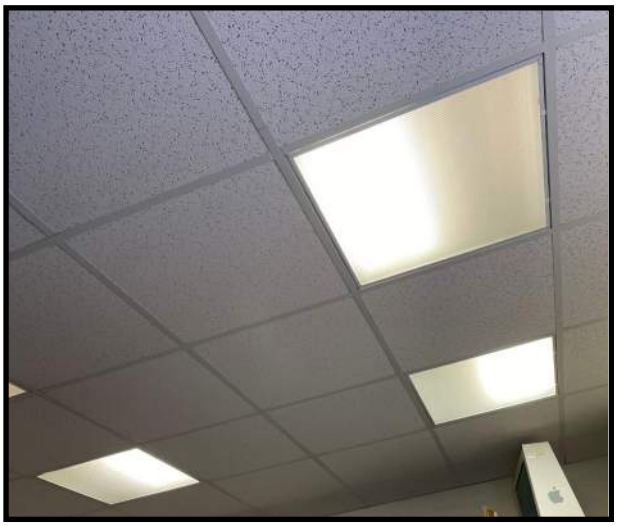


Image 21: Lighting with missing lamps

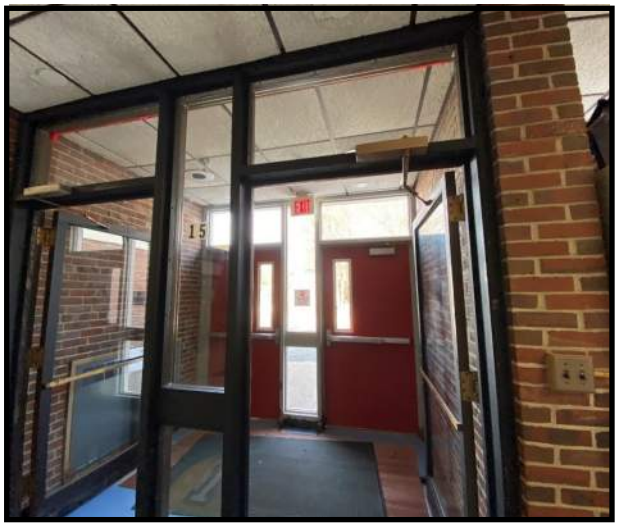


Image 22: Third condensate receiver

Image 23: Vestibule

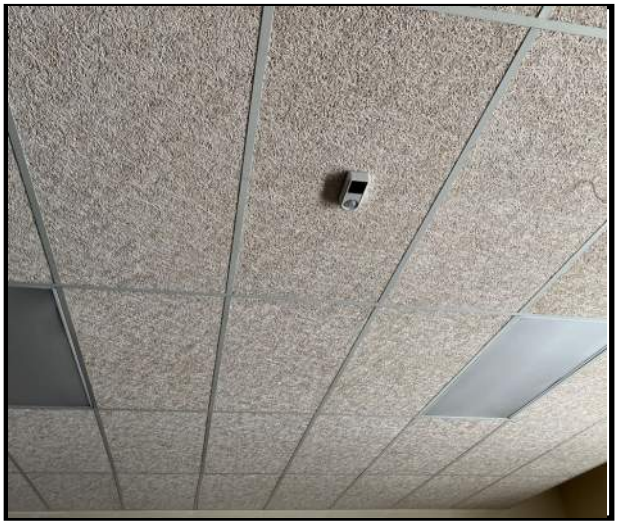


Image 24: Occupancy Control

Image 25: Occupancy Control

Exterior Lighting

Building mounted sconces are installed at egress doors and HID flood lights are installed around the building for safety and security lighting. These lights are not dark sky compliant.

Specific Issues	*Recommendations*
Several egress doors exiting to grade do not have EBUs. (Image 22) (Image 23)	Provide new LED type EBUs or fixtures with an emergency driver for emergency egress lighting.
No exterior emergency egress lighting at some doors on original building. It was reported at time of visit that most exterior lighting does not work. (Image 26) (Image 27)	Provide new weatherproof LED egress lighting with remote emergency battery.
No exterior emergency egress lighting in the courtyard or exit signage. (Image 28)	Provide new weatherproof LED egress lighting with remote emergency battery and weatherproof exit signs.

Fire Alarm System

The fire alarm system is a Honeywell addressable system located at the Door #3. The fire alarm control panel (FACP) is a Silent Knight model #6820 and is in excellent condition. The system was installed in after 2011, but it is not up to today's codes. A knox box, exterior strobe are provided at the exterior of the building. A SIGCOM radio masterbox is located next to the FACP and a remote annunciator is located at the main entrance lobby.

Specific Issues	*Recommendations*
System uses horn/strobes for notification which is not code compliant for an educational use building. (Image 29) (Image 30) (Image 31)	Provide a code compliant speaker/strobe system.
Older heat detectors are used throughout in lieu of smoke detectors. While this layout for early detection was allowed at one point, it does not meet current code. (Image 32) (Image 33)	Provide smoke detectors throughout.
Fire Alarm pull stations are missing from some egress doors that lead outside. (Image 34) (Image 35) (Image 36)	Provide manual pull stations per code.
No notification devices in classrooms or bathrooms.	Provide code-compliant notification devices throughout.

Image 26: Exterior door

Image 27: Exterior door and lighting

Image 28: Courtyard with no exterior lighting

Image 29: Emergency lighting

Image 30: Horns and strobe

General Miscellaneous

The facility does not have a lightning protection system. The facility does not have a bi-directional system.

Specific Issues	*Recommendations*
There is no BDA system present in the building, although this is not a requirement for existing buildings, the fire dept. may require this to improve safety.	Contract with a Radio systems vendor on the state contract to determine if the building requires a BDA system.

Image 31:

Image 32:

Image 33:

Image 34:

Image 35:

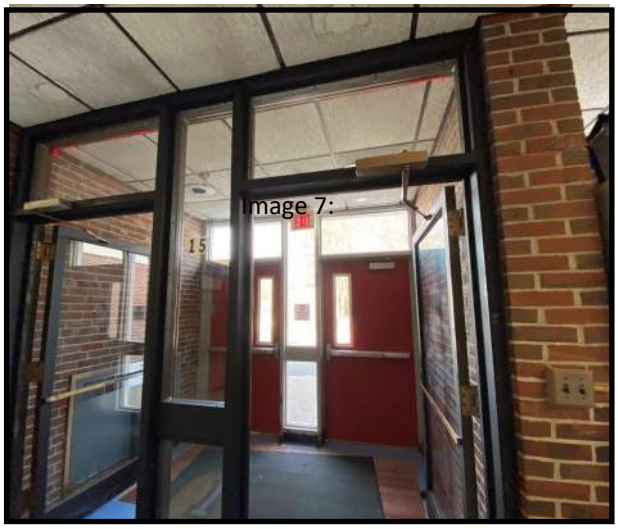


Image 7:

Image 36:

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PLUMBING ASSESSMENT

General Building Information

The Mitchell Elementary School Building was constructed in 1948; renovations and addition were constructed in 1958, and 1968. Presently, the plumbing systems serving the building are cold water, hot water, sanitary, waste and vent system, storm drain piping, and natural gas. Municipal sewer and municipal water service the building.

The majority of the plumbing systems are original to the building and its additions. Portions of the system have been updated as part of building renovation and upgrade projects. The plumbing systems, while continuing to function, have served their useful life. The school plumbing systems could continue to be used with maintenance and replacement of failed components; however other non-dependent decisions will likely force the plumbing upgrade. Due to its age, a complete new water piping systems is recommended. The copper piping is in poor condition and has served its useful life.

The plumbing fixtures are in fair condition. Attempts have been made to make bathroom fixtures accessible, however, the majority of fixtures do not meet current accessibility codes. In general, the fixtures appear to have served their useful life.

Current Access Code requires accessible fixtures wherever plumbing is provided. In terms of the water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. Essentially, the code does not require these fixtures to be upgraded, but where new fixtures are installed, as may be required by other codes or concerns, the new fixtures need to be water conserving type fixtures. All new fixtures are recommended.

Cast iron is used for sanitary and storm drainage. Rainwater from flat roof areas is collected by interior rain leaders which appear to discharge to a below grade drainage system. At pitched roof areas, gutters and downspouts are used to direct rain water from roofs to site storm drainage system. Where visible, the cast iron pipe appears to have exceeded its life expectancy. Smaller pipe sizes appear to be copper. In general, the drainage piping cap needs to be repaired when failing and should be replaced for the intended new use.

Plumbing Fixtures

The water closets are predominately wall hung vitreous china with manually operated flush valves (Image 1). There are a few floor mounted flush tank type water closets and floor mounted with manually operated flush valves in the building as well.

Urinals are wall hung vitreous china with manually operated flush valves (Image 2).

Lavatories are wall hung vitreous china. The majority of lavatories have been retrofitted with single handle metering faucets (Image 3). Accessible lavatories are fitted with hot and cold water handle faucets (Image 4).

Drinking fountains consist of concealed, vitreous china fountains (Image 5).

Electric water coolers are surface mounted, wall hung, non-accessible units with bottle filler (Image 6).

Janitor's sinks are generally trap standard mounted, enameled cast iron sinks (Image 7). There are also mop receptors in the building (Image 8). Faucets are equipped with vacuum breakers.

Classroom sinks are stainless steel with hot and cold water faucets and include a bubbler (Image 9).

Kitchen area fixtures are in fair condition. The pot washing sinks are fitted with grease interceptors (Image 10).

Specific Issues	*Recommendations*
Plumbing fixtures are in fair condition but may not be water conserving type.	The school plumbing systems could continue to be used with maintenance and replacement of failed components. All new plumbing fixtures are recommended.

Domestic Water System

The main domestic water service is located in the Basement Mechanical Room. The service is 4" in size and includes a 2" meter (Image 11). The main domestic cold-water distribution is 2" in size. The majority of the domestic distribution piping is located in the ceiling of the crawl spaces throughout the facility.

Piping, where exposed, appears to be copper with sweat joints. The domestic water piping is mostly insulated but not labeled. Gate and ball valves are utilized for isolation purposes. Gate valves have exceeded their life expectancy and should be replaced.

Domestic hot water in the building is generated through a gas-fired storage type water heater (Image 12). The hot water systems are recirculated (Image 13). There are no thermostatic mixing valves on

Image 1: Wall hung water closet

Image 2: Typical urinal

Image 3: Wall hung lavatory

Image 4: Accessible lav.

Image 5: Original drinking fountain (classroom)

Image 6: Drinking fountain with bottle filler (corridor)

the systems to prevent scalding. The water heater has a natural gas input of 370,000 BTUH and 80 gallon storage capacity. Water heater is relatively new and in good condition.

A cold water make-up line for boilers includes a reduced pressure backflow preventer (Image 14).

Wall hydrants with vacuum breakers are provided around the building's perimeter (Image 15).

Specific Issues	*Recommendations*
Portions of the domestic water piping is original. Some is missing insulation. Original gate valves are utilized for isolation purposes and have exceeded life expectancy.	Due to its age, a complete new water piping systems including insulation and ball valves are recommended. The copper piping is in poor condition and has served its useful life.

NATURAL GAS SYSTEMS

An elevated pressure natural gas service is supplied to the building. The exterior gas service includes a pressure regulator and gas meter at exterior wall (Image 16). Natural gas is distributed throughout the building from this location to the boilers (Image 17), domestic water heater and kitchen equipment.

Gas piping is black steel with a combination of screwed and welded joints and fittings depending on the size of the pipe. Gas piping, including gas regulator vents on the roof or exterior is painted to prevent rust from forming (Image 18). Kitchen supply is equipped with an automatic shutoff valve.

Specific Issues	*Recommendations*
None	None

DRAINAGE SYSTEMS

Cast iron is used for sanitary and storm drainage. Where visible, the cast iron pipe appears to have exceeded its life expectancy (Image 19) (Image 20). Smaller pipe sizes appear to be copper.

In general, the cast iron drainage piping can be reused even in a major renovation where adequately sized for the intended new use.

The pot washing sink is fitted with a grease interceptor in the floor (Image 10).

The Kitchen waste is directed to an exterior grease trap (Image 21).

Image 7: Janitor sink

Image 8: Mop sink

Image 9: Classroom sink

Image 10: Greece trap in kitchen

Image 11: Main domestic water

Image 12: Water heater

Roof drains are located throughout flat roof areas. The horizontal storm piping which is collecting rain-water from roof drains is insulated. In addition to an interior roof drainage system, some roof drainage is being directed by gutters and downspouts to the site storm system by downspout boots (Image 22).

Specific Issues	*Recommendations*
Cast iron sanitary, waste, vent and storm piping has exceeded its life expectancy.	Due to its age, a complete new drainage piping is recommended as it has served its useful life.

Image 13: Re circulator

Image 14: Backflow preventor

Image 15: Wall hydrant

Image 16: Gas meter

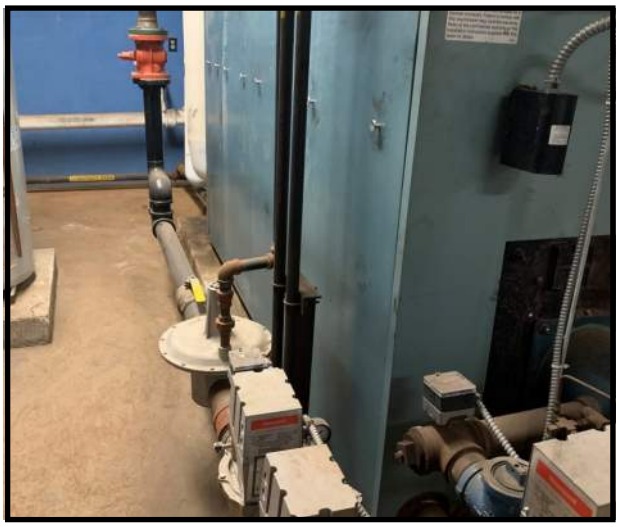

Image 17: Boilers

Image 18: Gas piping

Image 19: Cast iron piping

Image 20: Cast iron piping

Image 21: Exterior grease trap

Image 22: Downspouts

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FIRE PROTECTION ASSESSMENT

General Building Information

The Mitchell Elementary School was originally constructed in 1948, major renovations/additions took place in 1958 and 1968. Modular classrooms were added in 2014 and 2018 but are detached from the main building structure. The building is not protected with an automatic sprinkler system.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing building over 7,500 square feet that undergoes ***major*** alterations or building addition must be fully sprinklered. Examples of major alterations are: demolition or reconstruction of existing ceilings or installation of suspended ceilings, removal of sub flooring, demolition and/or reconstruction of walls, doors, or stairways, or removal or relocation of a significant portion of the building's mechanical or electrical systems. Alterations are considered major when such work affects 33% or more of the building area or when total work (excluding sprinkler installation) is equal to 33% or more of the assessed value of the building.

If the proposed project scope exceeds these thresholds, then the existing building, and its additions if applicable, will require installation of an automatic sprinkler system in all building areas that are not currently protected. A hydrant flow test will be required to determine adequate capacity for Fire Protection requirements.

Specific Issues	*Recommendations*
Compliance with Massachusetts General Law M.G.L. Chapter 148 Section 26G is required in all existing buildings which exceed 7,500 square feet in area and undergo major alterations. Under these conditions, an existing building must provide a full sprinkler fire suppression system. A major alteration is defined as a reconfiguration of walls, doors, windows, mechanical systems, etc., which effectively makes installation of sprinkler systems easier and which affects more than 33% of the building area or more than 33% of the assessed value of the building.	A hydrant flow test will be required to determine Municipal water supply capacity.

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	MITCHELL ELEMENTARY SCHOOL	Health, Safety & Welfare	Code Compliance	Functional Use of Building or Site	Handicap Accessibility	Extending the Life of the Building (Maintenance)	Energy Efficiency / Energy, Water Saving	Hazardous Material Abatement	Quantity	Cost of Repair / Replacement (2020)	Designer / Pricing Contingency (15%)	Soft Cost (25%)	Estimated Project Cost (2020)	High Priority (1-3 yrs)	Medium Priority (4-6 yrs)	Low Priority (7-10 yrs) or under full renovation project	On Going Maintenance	Notes
	53,785 GSF																	
1	**Site & Civil**																	
1.01	Review parking requirements for School and locations for parking expansion on site. (additional parking needs including appropriately located HC parking)		x	x	x				25-30 parking spaces	$345,000	$51,750	$99,188	$495,938			$495,938		
1.02	Develope efficient site circulation for buses and parent drop off so that all children are dropped-off and picked up on site	x		x					expand front drop-off loop to east	$172,500	$25,875	$49,594	$247,969		$247,969			
1.03	Upgrade drainage system to meet current MADEP Stormwater Standards	x	x	x					entire site	$300,000	$45,000	$86,250	$431,250		$431,250			
1.04	Provide new sewer and water line connections - existing is more than 50 years old.			x		x			entire site	$80,500	$12,075	$23,144	$115,719			$115,719		
1.05	Review accsessibility signage, provide signage that is accepted by the U.S. Access Board				x				3	$6,900	$1,035	$1,984	$9,919				$9,919	
1.06	Add walkways from doors on east side of building to connect to the egress path	x			x				252 ln ft	$26,082	$3,912	$7,499	$37,493	$37,493				could be done by Town for less cost
1.07	Mill and overlay pavement in drop-off loop					x						$0	$0					could be done by Town for less cost
1.08	Provide new ADA parking spaces (one for vans) near front entrance				x							$0	$0					could be done by Town for less cost
1.09	Provide hydrant flow test to verify capacity for sprinklers			x					2	$3,000	$450	$863	$4,313		$4,313			could be done by Town for less cost
1.10	Conduct tightness test and remove UST	x							1		$0	$0	$0					could be done by Town for less cost
	TOTAL									$933,982	$140,097	$268,520	$1,342,599	$37,493	683531.25	611656.25	9918.75	$1,342,599
2	**Structural Elements**																	
2.01	no items noted																	
	TOTAL													$0	$0	$0	$0	$0
3	**Exterior Architectural Elements**																	
3.01	Replace handrails at ramp that leads to main entrance - install handrails with proper extensions at top and bottom landings				x				2	$17,250	$2,588	$4,959	$24,797	$24,797				
3.02	install compliant handrails on each side of ramp at the north entrance and at entrance ramp on the west side				x				4	$23,000	$3,450	$6,613	$33,063	$33,063				
3.03	Main entrance doors do not provide 32" clear opening. Remove all doors and storefront and install new door systems. Provide interior vestibule as part of this project	x	x		x		x		6 doors	$172,500	$25,875	$49,594	$247,969			$247,969		
3.03	Install of minimum rigid insulation with above grade insulation protection, and appropriate flashing / trim components over a complete waterproofing system as part of a significant facility envelope upgrade / renovation project.						x		entire foundation	$313,950	$47,093	$90,261	$451,303					
3.03	Remove loose / damaged concrete and masonry materials, prep for patching, and install mortar pointing, masonry materials, grout, etc... as required for associated repairs.					x			approx 5% of foundation	$24,150	$3,623	$6,943	$34,716	$34,716				
3.04	Remove asphalt fill at window wells. Remove existing windows and / or plywood. Fill existing openings with cmu block. Install proper water proofing. Back fill with stone and concrete			x		x			5 locations	$20,125	$3,019	$5,786	$28,930		$28,930			
3.04	Grout window / door sills (at grade) in 1968 addition			x		x			5 locations	$2,875	$431	$827	$4,133	$4,133				
3.05	Damage / broken sections of brick. Remove damaged / loose materials, replace and repoint as needed.			x		x			approx 10% of exterior wall	$152,145	$22,822	$43,742	$218,708	$218,708				
3.06	Install continuous wall insulation system to exterior walls of 1948 and 1958 sections of the building			x		x			1948 & 1958 building	$274,537	$41,181	$78,929	$394,647			$394,647		
3.07	Repoint and regrout all exterior walls			x		x			entire building	$1,014,300	$152,145	$291,611	$1,458,056	$1,458,056				
3.08	Damaged flashings and missing sealant. Clean and prep areas for repair or replacement of flashing materials and sealant.			x		x			entire building	$50,715	$7,607	$14,581	$72,903	$72,903				
3.09	Broken, poor, and underperforming window, louver, and vent assemblies throughout. Replace all the windows and louvers in the facility (excluding the new modulars)	x		x		x	x		entire building	$1,195,425	$179,314	$343,685	$1,718,423	$1,718,423				
3.10	Peeling paint, delaminating wood at oldest wood doors. Replace doors with institutional grade storefront or hollow metal door								5 doors	$34,500	$5,175	$9,919	$49,594	$49,594				
3.11	Replace rotting and rusting door frames with new frames, thresholds, weather stripping and gaskets			x		x	x		all doors (entrance doors are included in 3.03)	$23,000	$3,450	$6,613	$33,063	$33,063				
3.12	Replace all wood and aluminum windows with thermally broken window frames and min. double pane glazing			x		x	x		entire building	Included in 3.09								
3.13	Clean and reseal all vents	x		x		x	x		entire building	$17,250	$2,588	$4,959	$24,797	$24,797				
3.14	Replace flat roof system			x		x			flat area of 1948 building	$437,184	$65,578	$125,690	$628,452		$628,452			
3.15	Remove damaged, worn, and loose flashing materials and reset, replace, and / or re-seal as needed throughout.					x			approx. 15 % of roof area	$44,712	$6,707	$12,855	$64,274		$64,274			
3.16	clean all gutters and downspouts					x			entire building	$11,500	$1,725	$3,306	$16,531	$16,531				
	TOTAL									$3,829,118	$574,368	$1,100,671	$5,504,357	$3,622,658	$28,930	$642,616	$0	$4,294,204
4	**Interior Architectural Elements**																	

	MITCHELL ELEMENTARY SCHOOL	Health, Safety & Welfare	Code Compliance	Functional Use of Building or Site	Handicap Accessibility	Extending the Life of the Building (Maintenance)	Energy Efficiency / Energy, Water Saving	Hazardous Material Abatement	Quantity	Cost of Repair / Replacement (2020)	Designer / Pricing Contingency (15%)	Soft Cost (25%)	Estimated Project Cost (2020)	High Priority (1-3 yrs)	Medium Priority (4-6 yrs)	Low Priority (7-10 yrs) or under full renovation project	On Going Maintenance	Notes
4.01	Resolve pull clearance for classroom doors: Remove 30" of existing adjacent wall and construct new wall (requires demolition of built in cabinets on classroom side of all)				x				10 locations	$104,650	$15,698	$30,087	$150,434		$150,434			
4.02	Existing doors to restrooms that are less than 32" wide to not meet accessibility. Remove existing doors, frames & hardware. Expand opening size to meet minimum opening		x		x				6 locations	$38,640	$5,796	$11,109	$55,545		$55,545			
4.03	Existing corridor exit doors - neither leaf of the door meets 32" clear. Remove doors, sidelights, and transoms andinstall new 36" wide doors, sidelights and transoms	x	x		x				8 locations	$92,000	$13,800	$26,450	$132,250		$132,250			
4.04	Doors to media center do not provide clear 32" wide opening. Remove both doors and adjacent wall to provide doors that meet clear opening	x	x		x				1 location	$5,750	$863	$1,653	$8,266		$8,266			
4.05	North entrance vestibule does not provide enough clear distance between doors to meet accessibility requiremnts				x				1 location	$11,500	$1,725	$3,306	$16,531		$16,531			
4.06	Replace double doors that enter the gym with new doors that include a vision panel at the proper height	x	x		x				1 location	$5,750	$863	$1,653	$8,266			$8,266		
4.07	Install ramps to transition between lower floor and the main level (4 ft height difference)		x		x				3 locations	$72,450	$10,868	$20,829	$104,147		$104,147			
4.08	Replace handrails at stairways to include extensions at the top and bottom of the landings	x	x		x				4 locations	$9,200	$1,380	$2,645	$13,225		$13,225			
4.09	Install ramp from the cafeteria to the stage	x	x		x				1 location	$23,000	$3,450	$6,613	$33,063		$33,063			
4.10	Renovate multi user toilet rooms to provide accessible stalls and sinks		x		x				6 locations	$62,100	$9,315	$17,854	$89,269	$89,269				
4.11	Remove damaged / loose sections of older VCT flooring, prepare substrate, and replace with similar materials.			x		x			1958 building	$107,309	$16,096	$30,851	$154,256				$154,256	
4.12	Clean and re-grout quarry tile in kitchen	x				x			kitchen area	$23,000	$3,450	$6,613	$33,063				$33,063	
4.13	Replace quarry tile in restrooms					x			1 multi user restroom 2 single user restrooms	$34,500	$5,175	$9,919	$49,594	$49,594				
4.14	Replace gym floor with new wood athletic floor			x		x			1 gym area	$138,000	$20,700	$39,675	$198,375			$198,375		
4.12	Mis-aligned expansion joint covers and edge trim. Soundly fasten existing expansion joint covers and edge trim—replace as needed.					x			2 locations	$4,600	$690	$1,323	$6,613				$6,613	
4.13	Clean glazed and painted CMU block in corridor					x			1958 corridor	$16,560	$2,484	$4,761	$23,805				$23,805	
4.13	Remove loose and damaged plaster wall material, patch, prep, and paint.					x			1958 stairway to gym	$5,750	$863	$1,653	$8,266				$8,266	
4.14	Remove non-function folding partitions and replace with acoustically sound permenant walls			x		x			3 locations	$15,180	$2,277	$4,364	$21,821			$21,821		
4.15	Replace ACT tiles where dirty, damaged, wet, or failing after eliminating the source(s) of excessive moisture or water.			x		x			25% of ceiling area	$111,335	$16,700	$32,009	$160,044				$160,044	
4.16	Clean, sand and re-stain existing wood doors that are suitable for re-use			x		x			5% of doors	$5,750	$863	$1,653	$8,266				$8,266	
4.17	Replace heavily damaged wood doors and frames			x		x			95% of doors	$235,040	$35,256	$67,574	$337,871	$337,871				
4.18	Replace door hardware with ADA / MAAB compliant hardware		x	x	x	x			95% doors	$117,520	$17,628	$33,787	$168,935	$168,935				
4.17	Remove existing wire glass in doors, sidelights and borrowed lites replace with appropriate fire, tempered, or other rated glass as required.	x	x	x		x			entire building	$34,500	$5,175	$9,919	$49,594		$49,594			
	TOTAL									$1,274,084	$191,113	$366,299	$1,831,496	$556,400	$49,594	$220,196	$394,312	$1,220,501
5	**Mechanical - HVAC**																	
5.01	Replace the entire heating plant with new high-efficiency hot water plant for increased efficiency, reliability, and controllability. This would require the replacement of all steam terminal units and piping throughout the building.	x		x		x	x		entire building	$1,237,055	$185,558	$355,653	$1,778,267		$1,778,267			
5.02	Steam was pouring out of the drip valve associated with the main condensate receiver; this indicates that steam traps somewhere in the building are not operating properly and require maintenance. Service all existing steam traps and ensure proper working order; replace as-necessary.	x		x		x	x		entire building	$69,000	$10,350	$19,838	$99,188	$99,188				
5.03	There is not currently a low-space combustion air inlet, which is required by current codes in addition to the high-space combustion air inlets. Direct vent a new hot water heating plant to eliminate the combustion air louvers, or add low-wall combustion air inlets sized appropriately to support the max plant firing rate.	x	x	x		x	x		entire building	$28,750	$4,313	$8,266	$41,328	$41,328				
5.04	Conduct tightness test on underground oil tank and remove tank	x	x						1 tank	$149,500	$22,425	$42,981	$214,906			$214,906		
5.05	Fuel oil controls were observed to be old and antiquated. The entire fuel oil system requires replacement if future use is expected						x		entire building	$34,500	$5,175	$9,919	$49,594		$49,594			
5.06	Steam and hot water piping insulation alike is damaged and/ or missing in many places. Replace all existing piping and equipment insulation with new insulation products complying with current code requirements.		x				x		entire building	$185,558	$27,834	$53,348	$266,740				$266,740	

		MITCHELL ELEMENTARY SCHOOL	Health, Safety & Welfare	Code Compliance	Functional Use of Building or Site	Handicap Accessibility	Extending the Life of the Building (Maintenance)	Energy Efficiency / Energy, Water Saving	Hazardous Material Abatement	Quantity	Cost of Repair / Replacement (2020)	Designer / Pricing Contingency (15%)	Soft Cost (25%)	Estimated Project Cost (2020)	High Priority (1-3 yrs)	Medium Priority (4-6 yrs)	Low Priority (7-10 yrs) or under full renovation project	On Going Maintenance	Notes
	5.07	Replace all existing 1948 and 1968 terminal heating equipment with new equipment of similar use and capacity.			x			x		entire building	$371,117	$55,667	$106,696	$533,480		$533,480			
	5.08	Replace existing attic-mounted exhaust systems in kind with new systems of similar type and capacity.		x						entire building	$92,779	$13,917	$26,674	$133,370	$133,370				
	5.09	Replace ventilation equipment throughout the building	x	x				x		entire building	$1,237,055	$185,558	$355,653	$1,778,267	$1,778,267				
	5.10	Janitorial closets including chemicals and mop sinks do not include code-required exhaust. Provide dedicated exhaust systems for spaces used for the storage of chemicals and noxious materials.	x	x	x					6 locations	$34,500	$5,175	$9,919	$49,594	$49,594				
	5.11	The installed ventilation equipment for large spaces does not appear to be sized appropriately for the potential occupant load based of available floor area and potential seating arrangements. Provide ventilation requirements to meet anticipated maximum occupant load in cafeteria and gym	x	x	x					2 locations	$575,000	$86,250	$165,313	$826,563	$826,563				
	5.12	Although it is code-compliant, natural ventilation through operable windows is not a reliable or effective source of ventilation for occupants. Provide a means of mechanical ventilation for all spaces currently utilizing operable windows for natural ventilation.	x							entire building	$1,237,055	$185,558	$355,653	$1,778,267		$1,778,267			
	5.13	Window Air conditioners are undersized for classroom applications and are very inefficient in comparison with current technologies. Remove the window A/C's and replace with current cooling technologies sized appropriately for the application.	x		x					entire building	$1,546,319	$231,948	$444,567	$2,222,833		$2,222,833			
	5.14	Upgrade all pneumatic control components to be tied into the existing DDC system.			x			x		entire building	$402,043	$60,306	$115,587	$577,937	$577,937				
	5.15	Densely occupied spaces did not appear to include a means for demand control ventilation. Add CO2 sensors and programming to the Gym, Cafeteria, Media Center, and classrooms to minimize the outdoor air during periods of low occupancy.	x	x						entire building	$123,706	$18,556	$35,565	$177,827	$177,827				
		TOTAL									**$7,323,936**	**$1,098,590**	**$2,105,632**	**$10,528,158**	$3,684,072	$6,362,440	$214,906	$266,740	$10,528,158
6	**Electrical**																		
	6.01	Panelboards in many locations do not have code required working clearance. Create additional storage areas to provide code required working clearance in front of all panelboards and electrical equipment.	x	x	x					entire building	$123,706	$18,556	$35,565	$177,827					
	6.02	Distribution panel, panelboards, and some disconnects, while in fair condition, are from a discontinued manufactures and may have difficulties finding replacement parts. Replace existing panels and breakers.			x					entire building	$247,411	$37,112	$71,131	$355,653					
	6.03	Insufficient quantity of receptacles throughout the existing building resulting in the use of extension cords, plug strips. Provide assitional receptacles in both classrooms and offices.	x	x	x					entire building	$185,558	$27,834	$53,348	$266,740					
	6.04	Building service size equates to approximately 5.9 watts/ft which is inadequate for what is normally carried for a building of this use. (typically 10 watts/ft). Provide a new electric service.	x		x			x		entire building	$154,632	$23,195	$44,457	$222,283					
	6.05	Lighting throughout the building should be upgraded to energy efficient LED lighting.						x		entire building	$494,822	$74,223	$142,261	$711,307					
	6.06	Some fixtures had missing lamps. Provide new fluorescent lamps or provide new LED fixtures.			x					20% of light fixtures	$80,500	$12,075	$23,144	$115,719					
	6.07	Provide new automatic lighting sytem to meet code	x	x	x					entire building	$154,632	$23,195	$44,457	$222,283					
	6.07	Several egress doors exiting to grade do not have EBUs. Provide new LED type EBUs or fixtures with an emergency driver for emergency egress lighting.	x	x	x					15 locations	$12,938	$1,941	$3,720	$18,598					
	6.08	No exterior emergency egress lighting at some doors on original building. Provide new weatherproof LED egress lighting with remote emergency battery.	x	x	x					15 locations	$15,525	$2,329	$4,463	$22,317					
	6.09	Provide new weatherproof LED egress lighting with remote emergency battery and weatherproof exit signs in courtyard	x	x	x					2 locations	$20,700	$3,105	$5,951	$29,756					
	6.10	System uses horn/strobes for notification which is not code compliant for an educational use building. Provide a code compliant speaker/strobe system.	x	x						entire building	$247,411	$37,112	$71,131	$355,653					
	6.11	Older heat detectors are used throughout in lieu of smoke detectors. While this layout for early detection was allowed at one point, it does not meet current code. Provide smoke detectors throughout.	x	x	x					entire building	$154,632	$23,195	$44,457	$222,283					
	6.12	Fire Alarm pull stations are missing from some egress doors that lead outside. Provide manual pull stations per code.	x	x						15 locations	$92,779	$13,917	$26,674	$133,370					
	6.13	No notification devices in classrooms or bathrooms. Provide code-compliant notification devices throughout.	x	x	x					entire building	$92,779	$13,917	$26,674	$133,370					

		MITCHELL ELEMENTARY SCHOOL	Health, Safety & Welfare	Code Compliance	Functional Use of Building or Site	Handicap Accessibility	Extending the Life of the Building (Maintenance)	Energy Efficiency / Energy, Water Saving	Hazardous Material Abatement	Quantity	Cost of Repair / Replacement (2020)	Designer / Pricing Contingency (15%)	Soft Cost (25%)	Estimated Project Cost (2020)	High Priority (1-3 yrs)	Medium Priority (4-6 yrs)	Low Priority (7-10 yrs) or under full renovation project	On Going Maintenance	Notes
	6.14	There is no BDA system present in the building, although this is not a requirement for existing buildings, the fire dept. may require this to improve safety. Contract with a Radio systems vendor on the state contract to determine if the building requires a BDA system.			x					entire building	$61,853	$9,278	$17,783	$88,913					
		TOTAL									$2,139,877	$320,982	$615,215	$3,076,073	$0	$0	$0	$0	$0
7	Plumbing																		
	7.01	Replace all plumbing fixtures including classroom sinks, water bubblers, janitor's sinks and restroom fixtures			x			x		entire building	$247,411	$37,112	$71,131	$355,653	$355,653				
	7.02	Portions of the domestic water piping is original. Some is missing insulation. Original gate valves are utilized for isolation purposes. Provide complete new water piping systems including insulation and ball valves. Replace entire domestic water system	x	x	x			x		entire building	$494,822	$74,223	$142,261	$711,307					
	7.03	Cast Iron sanitary, waste, vent and storm piping has exceeded its life expectancy. Install a complete new drainage piping system	x	x	x					entire building	$494,822	$74,223	$142,261	$711,307					
		TOTAL									$1,237,055	$185,558	$355,653	$1,778,267	$355,653	$0	$0	$0	$355,653
8	Fire Protection																		
	8.01	Install automatic fire supression system throughout the facility	x	x	x					entire building	$494,822	$74,223	$142,261	$711,307					
	8.02	Conduct hydrant flow test to determine if a pump is required for new system		x						3 locations	$23,000	$3,450	$6,613	$33,063					
		TOTAL									$517,822	$77,673	$148,874	$744,369	$0	$0	$0	$0	$0
9	Hazardous Material																		
		HAZMAT ALLOWANCE											$0	$0				$0	
		TOTAL									$17,255,874.50	$2,588,381.18	$4,961,063.92	**$24,805,319.59**	**$8,256,275.75**	**$7,124,494.73**	**$1,689,374.73**	**$670,970.38**	
											$1,069,948.50								

GENERAL NOTES

1. Refer to each section of the Report for more detailed information. Before moving forward with a specific project, a detailed review of the scope of work and a re-assessment of the cost estimate for that scope should be performed.

2. Some items should be completed in combination with other items. Some of these suggestions may be noted above. We recommend that once a scope of work is desired to be pursued, a mini-study should be done to confirm which work should be done together. See the next general note below for additional information.

3. Due to the conceptual nature of these recommendations and estimates and the complexity of existing conditions, several solutions may be provided to achieve the end result. Existing conditions in some areas may limit the ability to fully implement the proposed scope of work. Part or all of this work may trigger other renovation requirements related to code, seismic, sprinklers or handicap accessibility. Once a determination is made to move forward with a specific improvement line item, a mini study specific to the scope of work should be done to confirm the scope of work, prepare sketches as necessary and prepare a refined cost estimate.