4 EVALUATION OF EXISTING CONDITIONS

Countryside Elementary School & Site Existing Conditions Report

Legal Deeds to Sites (Electronic Copy Only)

Traffic Study Report (Electronic Copy Only)

Hydrant Flow Test (Electronic Copy Only)

Wetland Resource Area Delineation Report (Electronic Copy Only)

Phase I ESA Report (Electronic Copy Only)

HazMat Report (Electronic Copy Only)

AHERA Report (Electronic Copy Only)

Geotechnical Report (Electronic Copy Only)

COUNTRYSIDE ELEMENTARY SCHOOL

Property Data

Address: 191 Dedham Street
Newton, MA 02461

Use: Elementary School
(Grades K through 5)

Site Area: 7.39 acres

Date Built: 1953

Renovations:

Additions & Reno: 1958 – 6 classroom annex addition
1986 – 2 classroom annex addition & renovations
1991, 1999, 2000 – 4 modular classrooms and 2 modular offices

Occupancy Group: E – Educational

Construction Class: Type IIB (noncombustible, unprotected)

Zoning District: Public Use (the site itself); Single Residence 3 to the west, north, and east; Single Residence 2 to the south

Flood Zone: Zones X, AE, Regulatory Floodway (and small area of Minimal Flood Hazard)

Building Data

No. Floors: 2 (modular classroom and annexes are single story)

Gross Area 56,150 GSF

Structure: 1953 + 1958 - Steel framed with open web steel joists and conventional spread concrete footings. Basement and first floor of the original building are soil-supported concrete slab on grade. Portions of the first floor over the basement and boiler room are framed w/ one-way, reinforced concrete joist slab system. Second floor and roof are 2" thick concrete slabs supported by open web steel bar joists.

Exterior Walls: 1953 - Brick veneer masonry on unreinforced CMU backup and precast concrete panels.

1958 Addition – mix of glazing and wall panels

1986 Addition – mix of glazing and brick veneer or insulated metal panels with steel stud backup wall.

Roofing: 1953 Building - Single-ply EPDM roofing ca. 2012.

1958 & 1986 Addition – Asphaltic built-up roof

Window Systems: 1953 Building - double-glazed aluminum frame system consisting of fixed transoms and operable units.

1958 & 1986 addition – single-pane steel frame system consisting of fixed and limited awning windows.

Modular classrooms – double-glazed vinyl sliding windows

Exterior Doors: Hollow metal doors in steel frames.

Interior Doors: Wood and hollow metal doors in hollow metal frames.

Interior Walls: Painted CMU and exposed brick masonry.

Floors:	Typically vinyl composition tile (VCT) throughout, hardwood flooring at the Gym, resinous flooring (epoxy) at toilet rooms and carpet in office areas.
Ceilings:	Plaster ceilings, some with adhered 12”x12” tile throughout most of the original school building; suspended 24”x24” acoustic tile at first floor classrooms (original building), and gym. Suspended 24”x48” acoustical tile in modular classsroms. Exposed structure ceiling at Annexes.
Sprinklers:	None
HVAC:	Spaces within the original (c.1953) and annex (c.1958) buildings are mechanically heated and ventilated via unit ventilators with central roof exhaust fans. The gym and cafetorium are heated and ventilated by the original steam system. Classrooms in the portables are heated and cooled by gas/electric rooftop units which are in poor condition. The original building was steam heated with oil fired boilers. The steam boilers were replaced in 2007 and 2012 and the heating system was converted to natural gas in 2011. While there has been selective replacement of components, most of the distribution system is original and beyond its useful life.
Sewerage:	6” connection to municipal sewer system on eastern Dedham Street.
Water:	3” service from main running on eastern Dedham Street.
Electric:	120/208 volts, 3-phase, 600 amp in the original main building 120/208 volts, 3-phase, 200 amp in the rear portable classrooms 120/208 volts, 3-phase, 400 amp in front portable classrooms 150 KW, 120/208V, 3-phase diesel emergency generator
Gas:	Service main from eastern Dedham Street

INTRODUCTION

The purpose of this section is to report the physical conditions of the existing building in order to identify the maintenance needs, capacity of existing systems, and the potential for expansion. Information has been obtained from historic drawings, previous reports and studies, on-site visual inspection, and interviews with school staff and maintenance personnel. No intrusive investigations or test opening have been performed to date.

General

The Countryside Elementary School is located at 191 Dedham Street in Newton, MA on an approximately 7.39 acre parcel.

The school parcel is bounded by wetlands and brooks on the west and south with residential neighborhoods beyond and across the streets on the north and east.

Countryside is one of fifteen (15) elementary schools in the district with an enrollment of 372 students during the 2022-23 academic year.

Originally constructed in 1953, the two-story building has had several additions:

1958 – 6 classroom annex addition
1986 – 2 classroom annex addition & renovations
1991, 1999, 2000 – 4 modular classrooms and 2 modular offices

However, there have been no recent significant upgrades or renovations to the existing brick and mortar structures.

Legal Title

The City of Newton has legal title to the school property.

Historical Significance

The MACRIS database at the Massachusetts Historical Commission, contain an entry for the Countryside Elementary School. The inventory B form describes the historical significance of the the Countryside Elementary School as follows:

The Countryside School was built in 1953 to accommodate the growing post WWII baby-boom population. Additions to the building became necessary in 1958 and 1986. In 1991, 1999, 2000 4 modular classrooms and 2 modular offices were added. In an ongoing effort to improve the energy efficiency of city-owned buidings, metal replacement windows were installed in 1991.

A complete ENF and associated filings will be submitted if necessary.

SITE – LANDSCAPE

The existing school is approximately 50 feet from Dedham Street and is located on the property's eastern and northern property lines. The building sits low on the site, within the floodplain. The building runs north-south parallel to the east property line.

Primary Issues

- Vehicular pavement is in various stages of failure.
- Overturned, damaged, and poor-quality curbing.
- Pedestrian pavement is in various stages of failure.
- Non-accessible egress around the building.
- Limited and dead-end parking.
- Limited drop-off locations for both bus and parent drop-off.
- Two handicap spaces are required. One handicap spaces is provided.
- Non-accessible playground surfaces have created multiple ADA and MAAB code compliance issues.

Site Access and Pavements — Vehicular

The school has one parking area on the northeast corner of the property. The parking area provides 44 parking spaces with one handicapped space. Two handicap spaces are required, with one of the spaces designated as a van space. The handicapped space appears to be accessible. The parking lot access is off of the north property line. The parking lot is dead-end, with bollards on the southern end to prevent cars from driving over the sidewalk.

There is a drop-off location/blue zone along the southwestern edge of the property along Dedham Street. The drop-off is a 100-foot lay-by drop-off.

There is a fire lane access off of Dedham Street between the building and the north parking lot. The fire lane wraps around the north and west corners of the building. There appears to be a mountable curb and a wide enough fire lane at the southern end of the building for fire access. The lane is between the building and temporary classroom structures.

Vehicular paving throughout the site is bituminous paving and is in poor condition. Granite curbing is around the parking lot, fire lane, and Dedham Street. It is in poor condition.

Site Access and Pavements — Pedestrian

There is pedestrian access from the surrounding neighborhoods. The pedestrian connections include:

- Pedestrian concrete sidewalk along the north and eastern property line connecting the northwest, north, and eastern neighborhoods.
- Pedestrian crosswalk at the corner of Dedham and Walnut Street
- Pedestrian crosswalk at the corner of Dedham Street and Woodcliff Road
- Bituminous pavement pedestrian walk at the center of the site towards the western property line connecting the western neighborhoods and to the stream.

The pedestrian pavement around Dedham Street and the parking lot area is concrete pavement. It is in fair to poor condition. The rest of the pedestrian pavement is bituminous and fair to poor condition.

Two paved courtyards are between the school building and the temporary classroom building structures. They are paved with bituminous pavement and are in poor condition. Egresses to these courtyards are not accessible.

Landscape

There is a mature tree buffer around the western and southern edge of the side, with a small grove of oak trees along the northern property line. A brook and wetland area is located on the site's southwestern corner. Trees and underbrush surround this area. A brook/wetland continues north along the western property line.

The site's topography is high on the northern property line and drops about 7 feet toward the building. The grade falls further in the wetland and brook areas.

There is a baseball diamond on the northwestern edge of the site. The field, backstop, and infield are in poor condition. Two small soccer nets are set up in the outfield of the baseball diamond. The area is in poor condition.

Around the northwestern and west corners of the school building, there is an asphalt play area, basketball court, and play structure. The asphalt play area is in fair condition. The basketball court is in poor condition. The play area is not ADA accessible, with no accessible path into the woodchip area. The playground has a large play structure and a swing set. There are benches within the play area and a buddy bench.

Miscellaneous

Throughout the site, there are dedicated benches and memorials. Towards the left of the main entrance, there are three dedicated benches. Within the southern courtyard is a dedicated statue of a girl and a bunny. Around the play areas, there are dedicated wood benches as well as granite plaques in the ground around some trees. There is one dedicated granite bench within this area.

In the north courtyard, an outdoor classroom is shaded by a tree. The classroom consists of wood logs within a grassed area. The outdoor classroom is not accessible.

South, on the site, there are raised planter beds for an outdoor garden area.

There is limited lighting around the site, with most lighting illuminated by wall packs on the building façade.

There is a chain-link fence along the brook's pedestrian path. It is in fair to poor condition.

SITE – CIVIL

General

The site is located west and south of Dedham Street, north of South Meadow Brook and Bound Brook Road, and east of Andrew Street, with a thin wooded area with a potential intermittent stream separating the site from the residential properties on Andrew Street. An approximately 4-foot high fence runs along the apparent western property boundary in this area. In general, the site slopes down to the west and south, away from Dedham Street.

The northern portion of the site contains a parking lot in the northeast corner, along Dedham Street at the intersection of Dedham Street and Walnut Street, with access to and from Dedham Street to the north only. A baseball field, athletic field, and adjacent grassy areas are located to the west of the parking area, extending to the northwest corner of the site. South of the parking lot is an access driveway to Dedham Street.

The interconnected school buildings are in the southeast corner of the site. The original 1954 school building is along Dedham Street and connected to the 1958 annex classrooms via a passageway off the southwest portion of the 1954 building. Connected to the 1958 annex classrooms to the north are the 1986 annex classrooms, followed by the 2000 modular classrooms to their north. Connected to the 1958 annex classrooms to the east is the 1991 modular classroom off of the southeast side of the 1958 annex classrooms, with the 1999 modular classroom to the east of the 1991 modular classroom.

The access driveway to Dedham Street runs along the northern edge of the 1954 school building and wraps around it to a courtyard area between the 2000 modular classrooms, 1986 annex classrooms, and 1954 school building. A pedestrian path continues south from this courtyard to the passageway between the 1954 school building and 1958 annex classrooms. South of the passageway, another pedestrian path and smaller courtyard extend south and east to Dedham Street between the 1958 annex classrooms, 1954 school building, and 1991 and 1999 modular classrooms. Additional landscaping, picnic tables, and seating areas are present within the internal courtyard areas adjacent to the access driveway and pedestrian paths. In addition, several raised planting beds are present in the southeast corner of the site on Dedham Street.

Off of the northwest corner of the 1954 school building is a small asphalt multi-purpose play area (i.e., schoolyard), located between the building and the access driveway. A thin landscaped grass strip and walkways are located between the school buildings and Dedham Street. South of the baseball field and grassy areas are a playground and basketball court, on the northwest side of the building. An approximately 5-foot-wide pedestrian path runs east-west along the southern edge of the playground and basketball court, from the Andrew Street neighborhood to the site. At the apparent western property boundary, this path is bisected by a thin wooded area and potential intermittent stream that runs north to south. South of this path, in the southwest corner of the site, is a wetland resource area. South Meadow Brook is located south of the wetland flowing east to west.

The school's dumpster is located on the north side of the 2000 modular classrooms, just to the southeast of the basketball court. In addition, there are two large blue dumpsters for clothes and shoes donations on the northwest side of the school building on Dedham Street. There are also waste and recycling bins between the access road and the baseball field.

Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, nearly the entire site is soil type Udorthents, wet substratum. The northwest corner is soil type Merrimac-Urban land complex, 0 to 8 percent slopes, and a small area in the very northeast corner is Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky. Areas to the south (south of South Meadow Brook) are soil type Paxton-Urban land complex, 3 to 15 percent slopes.

- According to NRCS, soil type Udorthents, loamy “consists of nearly level to hilly areas of poorly drained and very poorly drained soils that have been filled in with various types of soil material, rubble and refuse. Depth of the fill material ranges from 2 to 20 feet or more. Areas of this unit are irregular in shape and range in size from 6 to 150 acres. The areas were typically flood plains, meadows, and swamps that were filled for various urban land use purposes.”
- According to NRCS soil type Merrimac-Urban land complex, 0 to 8 percent slopes “consists of very deep, somewhat excessively drained Merrimac and similar soils, and areas of Urban land on broad plains. Individual areas of this unit are rectangular or irregular in shape and range from 6 to 1,680 acres. These areas are 40 percent Merrimac soils, 40 percent Urban land, and 20 percent other soils.”
- According to NRCS, soi type Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky “consists of very deep, well drained Charlton soils; areas of Urban land; and shallow, somewhat excessively drained Hollis soils on uplands. Individual areas of this unit are irregular in shape and range from 10 to 700 acres in size…This complex is about 40 percent Charlton soils, 40 percent Urban land, 10 percent Hollis soils, and 10 percent other soils. Up to 2 percent of the surface is bedrock outcrop.”
- According to NRCS soil type Paxton-Urban land complex, 3 to 15 percent slopes “consists of very deep, rolling, well drained Paxton and similar soils, and areas of Urban land on convex slopes of glaciated hills. The areas are oval or irregular in shape and range from 6 to 350 acres in size. These areas are 40 percent Paxton soils, 40 percent Urban land, and 20 percent other soils.” (Source: USDA NRCS)

Wetlands and Floodplains

The site includes approximately The southwest corner of the site is occupied by a wetland area characterized by MassDEP as Shrub Swamp. South Meadow Brook runs eat to west along the southern property boundary. In addition, a potential intermittent stream runs along the western property boundary north to south into South Meadow Brook. Historic maps (e.g., 1893, 1903, 1944, 1946) of the area illustrate South Meadow Brook and wetlands in these areas prior to the construction of the school, with the wetlands extending east of Dedham Street at one time. The presence of these areas would trigger Newton’s 100-foot buffer zone for vegetated wetlands and intermittent streams and the 200-foot Riverfront Area for perennial streams, requiring an Order of Conditions from the Newton Conservation Commission. Based on a 2022 site survey, the 100-foot wetland buffer extends onto areas of the school buildings, playground, and basketball court, while the 100-foot riparian zone and 200-foot riverfront areas extent onto areas of the school buildings. More detailed wetland delineation and confirmation from the Newton Conservation Commission would be needed to confirm extent, designation, and applicability. (Source: MassMapper, ESRI Historic Topographical Maps)

Nearly the entire site is characterized by the Federal Emergency Management Agency (FEMA) as Flood Zone AE (1% Annual Chance of Flooding, with Base Flood Elevation), with the northeastern and northwestern edges Zone X (0.2% Annual Chance of Flooding). The very northeast corner (i.e., roughly the northeast quarter of the parking lot) of the site is characterized by FEMA as an area of minimal flood hazard. According to FEMA, the Base Flood Elevation along the eastern edge of Zone AE in this area is 112 feet. The very southern edge of the site appears to overlap with the Regulatory Floodway of South Meadow Brook. A 2022 site survey confirmed these flood zone locations. These designations would trigger Newton’s Floodplain Ordinance. Any land disturbance will require compensatory flood storage calculations to confirm that the available flood storage will not be reduced.

(Source: FEMA FIRM panels 25017C0554E, 25017C0562E, effective 6/4/10)

The Newton Department of Public Works completed a stormwater project in 2012 that addressed chronic flooding in the courtyard of the school, which often resulted in flooding of the school itself.

Zone II Aquifers and Regulated Water Supplies

There are no water supply aquifers (Zone IIs) or outstanding resource waters on the site or in the immediate vicinity. (Source: MassMapper)

Wildlife Habitat

There is no Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife or Priority Habitats of Rare Species on the site or in the immediate vicinity. (Source: MassMapper)

Trees

There are several scattered small trees around the outside of the parking lot. Several larger trees are present in front (east) of the 1954 school building and entrance. There are several large trees along the northern edge of the site and baseball field on Dedham Street and several trees between the baseball field and playground and basketball court to its south.

The western edge of the site has a thin strip of wooded land between the site and the Andrew Street residential neighborhood to the west.

The southwestern corner of the site is a wooded wetland referenced above.

Infrastructure

Stormwater Management

There are four catch basins on the north side of the school within the parking lot and access driveway. The catch basins appear to be piped to the municipal system in Dedham Street. The municipal drainage system in Dedham Street outfalls to South Meadow Brook.

There are five catch basins on the east side of the school that are piped to the municipal system in Dedham Street.

It appears that the catch basin on the west side of the school building discharges into the wetland resource area.

Based on 1951 original construction plans for the school, the roof of the 1951 building drains to South Meadow Brook, via a 10-inch pipe.

There is an 8-inch drain line between the 1951 building and the 1957 addition, discharging to South Meadow Brook.

The drainpipe sizes and inverts will need to be confirmed by an on the ground field survey.

Water Supply System

Based on 1951 original construction plans for the school, a 3-inch domestic water service is connected to the building just south of the exterior door to the auditorium (Door #21) and is tapped off of an 8-inch water main in Dedham Street. Based on subsequent plans for the school, the 1957 and 1986 additions are connected to this water service via pipes located in the passageway between the two buildings.

The adequacy of the water system with respect to pressure should be verified by a hydrant flow test. It has been reported that there are chronic problems with non-compliant sewage ejector pumps, sewer flooding, and sewer odors in the building.

Sanitary Sewer

Based on the 1951 original construction plans for the school, a 6-inch sanitary sewer service exits the building, just south of the exterior door to the auditorium (Door #21), travels southeast across the domestic water and gas service connections to the building to a manhole and 12-inch sewer main in Dedham Street. Based on subsequent plans for the school, the 1957 addition is connected to this sanitary service via a 3-inch pipe in the passageway between the two buildings, while the 1985 addition is connected to this sanitary service via a 4-inch pipe, piped to a manhole in the courtyard north of the passageway.

Precise locations and capacities of sewer connections will need to be field verified.

Gas Utility

Based on the 1951 original construction plans for the school, the building is connected to a 12-inch gas main in Dedham Street. Gas enters the building, just south of the exterior door to the auditorium (Door #21), to the south of the domestic water connection. The gas connection in Dedham Street is located between the sewer and water connections in Dedham Street. According to the Existing Conditions report, "The heating system was converted to natural gas in 2011."

Electrical Utility

Overhead electrical lines run via utility poles along Dedham Street and appear to connect to the building via wires above the exterior door to the auditorium (Door #21). Precise locations and connections will need to be verified. Electric equipment for the buildings solar panels is located on the northwest corner of the 1957 building.

Vehicular Circulation and Parking

There are approximately 44 staff parking spots, including 1 accessible parking spot, in the parking lot on Dedham Street in the northeast corner of the site. Parent and guardian drop-off occurs on Dedham Street to the east of this parking lot. School bus and van drop-off occurs farther south on Dedham Street, between the two exterior doors on Dedham Street (Doors #1 and #21). There is curbing between the parking lot and access driveway to Dedham Street that loops around the back of the building, and a Do Not Enter sign is present at the intersection of this access driveway and Dedham Street.

SITE DESCRIPTION

The existing school is located directly off of Dedham Street within a residential area. The site is defined by the school building at the southern end of the parcel, adjacent to an on site wetland, a basketball court and playground in the mid section of the site with a softball field and staff parking lot at the northern portion of the site. The school parcel is bounded by brooks on the west and south with residential neighborhoods beyond and across the streets on the north and east. The overall site's topography is relatively flat, but the northern edge is defined by a steep embankment from the street/sidewalk elevation to the playfield and grassed areas within the site.

TRAFFIC STUDY

An existing traffic conditions assessment for the Countryside Elementary School site dated October 18, 2022 by Pare Corporation is attached at the end of this section.

STRUCTURAL

Introduction

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with *DiNisco Design, Inc. (DDI)* and their consultants in the review and evaluation of structural issues/conditions at the Countryside Elementary School in Newton, Massachusetts. The purpose of this report is to identify and describe the structural systems of the building and to comment on the structural issues/conditions observed. General comments relating to potential renovations, alterations, and additions to the school (governed by the Existing Building Code of Massachusetts (EBCM - 9th Edition)) are presented as well.

Structural conditions at the Countryside Elementary School were reviewed at the site by FBRA on August 30, 2022.

The following documents were reviewed in the preparation of this Existing Conditions Structural Report:

Countryside Elementary School: Structural Drawings F-1 to F-4 and various Architectural Drawings, prepared by Cram & Ferguson Architects, Boston, Massachusetts; dated November 19, 1951.

Addition to the Countryside School: Structural Drawing S-1 prepared by Goldberg, LeMessurier Associates, Cambridge, Massachusetts, and various Architectural Drawings, prepared by Hugh Stubbins & Associates, Architects, Cambridge, Massachusetts (Drawing A-1 (Foundation Plan) missing). All drawings are undated (Circa 1957).

Additions and Renovations to Countryside School - Newton, Mass: Structural Drawing S-1 and various Architectural Drawings, prepared by Whitman & Howard, Inc., Wellesley, Massachusetts, dated December 1986.

Countryside Elementary School Existing Conditions Report: Undated.

No exploratory demolition, ceiling tile removal or structural materials testing was conducted in conjunction with this review; accordingly, observations are based solely on the documents referenced above and on a limited visual survey of those areas of the building which were accessible and exposed to view.

General Description

The Countryside Elementary School is located at 191 Dedham Street in Newton, MA. The original two-story building was constructed in 1953 on a relatively level section of the site. A one-story classroom addition (annex) was constructed to the west of the original building in 1957. In 1986, a one story, two classroom addition (annex) was constructed at the north end of the 1957 addition. Four modular classrooms have since been added at various locations in 1991, 1999 and 2000. The total floor area is approximately 49,612 gross square feet.

The Countryside Elementary School is basically rectangular in plan. The main (south) entrance is on the east side of the original building and leads to a central, north-south main corridor. First floor program spaces include classrooms, offices, the library, a kitchen, a gym, an auditorium, and various support spaces. The gym and the auditorium (partially used as the cafeteria) are located at the north end of the building and can also be accessed by the north entry. A partial basement and a boiler room are located at the northwest end of the building. Additional classrooms are located at the second floor of the original building. Subsequent additions and modulars added classroom spaces; however, additional support spaces were not provided.

The second floor and roof of the original building are steel framed, with open web steel bar joists supported by steel beams. The first floor is a soil-supported concrete slab on grade. Portions of the first floor (over the partial basement and boiler room) are framed with a one-way, reinforced concrete joist slab system. The basement floor was constructed with a structural slab, designed to resist hydrostatic uplift based on a high water elevation of 111'- 6" (approximately 3'-7" to 8'-7" above the high and low basement floor sections, respectively and 5'-6" below the first floor). Foundations are conventional spread footings. Typical exterior walls of the original building consist of a 4" brick veneer with a masonry backup wall.

The roof of the 1957 addition and the roof of the connecting (ramped) corridor to the original building are framed with metal deck supported by steel beams and columns. First floor construction is a soil-supported concrete slab on grade. Foundations are conventional spread footings. Typical exterior wall construction is a mix of glazing and wall panels.

The roof of the 1986 addition is framed with metal deck supported by steel beams and columns. First floor construction is precast, prestressed concrete plank (with a concrete topping), supported by reinforced concrete grade beams, spanning over the crawl space below. Foundations are conventional spread footings. Typical exterior wall construction is a mix of glazing and brick veneer or insulated metal panels with a steel stud backup wall.

A lift was installed in 2010 to access the second floor of the original building; however, the lift does not meet current code requirements.

With the exception of repurposing several classrooms and the locker room/storage space on the west side of the gymnasium, it does not appear that any major renovations or alterations to the original building or the additions have been undertaken since they were constructed.

The original building and the 1957 addition were designed and constructed prior to the introduction of the Massachusetts State Building Code. The 1986 addition would have been designed and constructed in accordance with the 4th Edition of the Massachusetts State Building Code.

Structural Systems Description

Structural Materials: No original Specifications were available; limited information is presented on the referenced drawings. Concrete for footings, foundation walls and slabs of the original building is 2,500 psi strength at 28 days. Reinforcing steel properties are unknown; however, reinforcing is assumed to be deformed bars with a 40 ksi yield strength. Structural steel likely has a yield strength of 33 ksi or 36 ksi. Concrete for the 1986 addition is noted to be 4,000 psi at 28 days.

Subsurface Soils/Foundations/Groundwater: No Geotechnical Reports or subsurface soils information was available; however, as noted above, foundations for the original building and the subsequent additions are conventional shallow spread footings. Perimeter foundation walls of the original building and subsequent additions are reinforced concrete construction (8" to 16" thick), with a continuous strip footing). Interior and perimeter columns are supported on individual spread footings of various sizes. Both the original building and the 1986 addition foundations were designed for a 2.0 tons per square foot allowable soil bearing pressure. The design groundwater elevation is at EL. 111'-6"; basement floors have been designed for hydrostatic uplift, as previously noted.

Structural Bays/Spans: The structural bay size varies throughout the original building and the additions; refer to the original Architectural and Structural Drawings.

Story Heights: Story heights vary; refer to the original Architectural Drawings for additional information.

Design Live Loads: The Structural Drawings for the original building indicate that the roof structure was designed for a 40 psf snow load. Snow drift loading does not appear to have been addressed in the design. The design roof load for the 1957 addition is not noted on the available Structural Drawings. The roof of the 1986 addition was designed for a 30 psf snow load plus drifting snow. Note that the current edition of the Massachusetts State Building Code (780 CMR - 9th Edition) requires a minimum flat (or low-slope) roof design snow load of 30 psf (higher at snow drift areas).

The original building was designed for a typical floor live load of 50 psf at classrooms and 100 psf at corridors and public spaces (meets current code requirements). The design live load for the framed first floor of the 1986 addition is noted to be 45 psf, which does not meet current code requirements.

Representative structural calculations generally confirm the design loads noted on the Structural Drawings. A comprehensive structural evaluation of the original building and the subsequent additions is beyond the scope of this report.

Expansion Joints: It appears that an expansion joint was provided between the 1957 corridor link and the original building. An expansion joint was also provided between the 1986 addition and the 1957 classroom addition.

Roof Construction: Roof construction of the original building consists of a 2" thick concrete slab supported by open web steel bar joists spaced at 2'-0" o.c. Joists are supported by wide flange steel beams spanning in the east-west direction and supported by steel columns. Perimeter steel beams have been encased in concrete for fire protection. Elsewhere, roof construction may be protected (to some degree) by the original plaster ceiling. The roof of the 1957 addition is framed with a 7½" deep metal roof deck spanning 28'-0" in the north-south direction to wide flange steel beams that are supported by steel columns. Roof construction of the 1986 addition consists of a 1½" deep metal roof deck spanning 5½ +/- feet in the north-south direction to open web steel bar joists. Joists are supported by steel beams and columns.

Second Floor Construction (Original 1953 Building): Second floor construction in the 1953 original building is similar to the roof construction, consisting of a 2" thick concrete slab supported by open web steel bar joists spaced at 2'-0" o.c. Joists are supported by wide flange steel beams spanning in the east-west direction and supported by steel columns. Perimeter steel beams have been encased in concrete for fire protection. Elsewhere, roof construction may be protected (to some degree) by the original plaster ceiling.

First Floor Construction: Typical first floor construction in the original building is a 5" thick, soil-supported concrete slab on grade, reinforced with welded wire fabric. A 4'-0" wide utility tunnel was constructed at the building perimeter; a 4" thick, reinforced concrete slab spans over the tunnel. First floor construction over the basement is a reinforced concrete, one-way joist slab with 4" or 5" wide by 10" or 12" deep concrete ribs spaced at 24" or 25" o.c., with a 2½" thick, integral concrete topping slab (12½" or 14½" total slab thickness).

Basement Floor Construction (Original 1953 Building): A one-way, reinforced concrete slab was constructed at the basement level, designed to resist hydrostatic uplift from the high water table. The design water elevation is noted to be Elevation 111'- 6". The slab thickness is 11" at the (deeper) boiler room and 8" at the (higher) typical basement floor.

Wall Construction: Typical exterior wall construction in the original building consists of a 4" brick veneer (no cavity), with an 8"or a 12" thick, unreinforced masonry block backup wall (12" or 16" total wall thickness; the latter at taller walls). Original exterior wall construction was a composite brick and block wall, 12" or 16" thick. The face brick was reportedly removed and replaced with a 4" brick veneer in 1991. Weep holes and control joints were observed in the present brick veneer. Removal of the original face brick from the masonry backup may have impacted the structural integrity of the exterior walls. Details of the present wall construction are unknown, as no drawings or reports were available. New windows were also installed at the time.

Typical exterior wall construction at the 1957 addition is a mix of glazing and wall panels. Exterior wall construction at the 1986 addition is a mix of glazing and brick veneer or insulated metal panels, with a steel stud backup wall.

Fire Resistance: The original building and the additions are generally classified as Type IIB Construction (Noncombustible, Unprotected); unprotected steel floor and roof framing have no fire resistance rating. The floor and roof structure of the original building may be protected (to a degree) by the original plaster ceiling; further review and investigation would be required to make that determination. There are no sprinklers in the building.

Lateral Load Resistance: As the original building and the 1957 addition were designed and constructed prior to the introduction of the Massachusetts State Building Code (MBC), those structures do not meet current wind and seismic load requirements (strength and detailing). There does not appear to be a clearly defined lateral force resisting system in either direction in either building. However, the perimeter and interior unreinforced masonry walls of the original building provide a level lateral force resistance (by default). The moment connected roof beams of the 1957 addition may be providing a degree of lateral force resistance in the east-west direction. Although the 1986 addition was designed and constructed under the 4th Edition of the Massachusetts State Building Code, there is no clearly defined lateral force resisting system and the building does not meet current code requirements.

Structural Condition / Comments

Structural Conditions at the Countryside Elementary School were reviewed (where accessible and exposed) on August 30, 2022. Generally speaking, floor and roof construction appear to be performing satisfactorily; there is no evidence of structural distress that would indicate significantly overstressed, deteriorated, or failed structural members.

Foundations appear to be performing adequately; there are no apparent signs of significant, total or differential settlements.

Structural/structurally related conditions observed during the August 30, 2022 site visit and associated comments are noted below. Relevant photographs are included at the end of this report. All items would be addressed in conjunction with a potential, future renovation of the building, unless noted otherwise.

1. Flooding: As noted above, the basement and boiler room floors were constructed below the design groundwater elevation and were designed for hydrostatic uplift. Reportedly, these area experience chronic flooding; sump pumps are frequently replaced and not adequate to prevent flooding. Damage to services has occurred and the structure has likely been compromised to a degree. Standing water was observed in the basement during our visit. The continuous introduction of moisture into the building is a major concern. Any effort to rectify this situation would be both challenging and costly.
2. Exterior Walls (1953 Original Building): As noted earlier in this report, it appears that the original face brick was removed in 1991 and replaced with a new, 4" brick veneer. Depending on the as-built details, the structural integrity of the exterior walls may have been compromised. Further review/investigation is recommended.
3. Exterior:
    - Masonry veneer is generally in satisfactory condition, with limited cracking or deterioration of the face brick observed. Repointing of approximately 5% of exterior brick veneer may be needed, in conjunction with a potential future renovation of the building.
    - Efflorescence was observed in some locations on exterior walls of the original building. Cleaning the veneer is recommended, in conjunction with a potential future renovation of the building.
    - Loose lintels over window/door openings and above unit ventilators have rusted in some locations; cleaning and coating with zinc-rich paint or replacement (if necessary) is recommended. Note that the unit ventilators are located close to the exterior grade and require maintenance during the winter months.
    - Exterior concrete elements (brick areaway walls and stair/ramp walls, etc.) have deteriorated in some locations; Repair/replacement of these elements should be undertaken, in conjunction with a potential future renovation of the building.
    - The exterior stair (west side) and ramp (north side) that lead to the basement/boiler room from the outside of the building are a potential channel for water to enter the building. Drains at the bottom landings of these elements should be maintained on a regular basis to ensure that they are functioning properly.
    - Metal doors have rusted in some locations; cleaning and coating and/or repair is required.
    - Plant growth has damaged the roof and ceiling of the 1957 addition in some locations (south end).
4. Roofing: The roof was not accessed during our visit. Reportedly, the roof of the original (1953) building was replaced in 2012. The ages of the other roofs (additions and modulars) are not known; however, they are reportedly in poor condition.
5. Exterior stairs at the modulars and the additions are failing/in poor condition. Repair/replacement is recommended.
6. Snow Loads: The snow load capacity of the roofs has not been fully evaluated (beyond the scope of this report). However, as noted earlier in this report, the 30 psf design snow load meets current code requirements. The current code requires a minimum, flat (or low slope) roof design snow load of 30 psf for a school building in Newton. As the design of the building preceded the introduction of the Massachusetts State Building Code, it is unlikely that provisions were made in the structural design for snow drift loading. Drifting snow loads on lower roofs can be significantly higher. FBRA recommends that these conditions be evaluated in conjunction with a future renovation of the school (such an evaluation is beyond the scope of this report). In the interim, these conditions should be monitored during periods of heavy snow.

7. Lateral Force Resistance/Seismic Hazards: As previously noted in this report, there are no clearly defined lateral force resisting systems (LFRS) in the original building or the additions. Unreinforced, interior and exterior masonry walls provide a degree of lateral force resistance (by default) in the original building. The original building and the additions do not meet current seismic code requirements. Lateral force resistance issues and seismic hazards would need to be evaluated and addressed in conjunction with a potential, future renovation of the school. Refer to additional comments in the next section of this report.
8. Ponding: An evaluation of potential rainwater ponding on the various flat roof areas should be conducted, in conjunction with a future renovation of the school (such an evaluation is beyond the scope of this report). In the interim, roof drains should be periodically inspected and maintained to ensure that they are clear and functioning properly.
9. Masonry Walls: Interior CMU partitions and perimeter CMU backup walls are generally in satisfactory condition. However, cracks in the west masonry exterior wall (former storage area) were observed during our visit. These cracks are relatively large and should be monitored and repaired if conditions worsen. The anchorage/bracing of all interior and exterior masonry walls as well as their height-to-thickness ratios will need to be evaluated (per code) in the event that the building is renovated in the future.
10. Floor tiles have moved and/or deteriorated in some locations. It appears that some of the conditions observed may be due to moisture issues. Further review and evaluation would be recommended, in conjunction with a potential, future renovation of the building.

Refer to the documents prepared by the Architect and the other consultants for additional comments and recommendations relating to the building envelope and MEP/FP systems in the original building and the additions.

Renovations and Additions – Code Requirements

General comments relating to potential renovations, alterations, and additions to the Countryside Elementary School are presented in this section. Renovations, alterations, repairs, and additions to existing buildings in Massachusetts are governed by the provisions of the Massachusetts State Building Code (MSBC; 780 CMR - 9th Edition) and the Existing Building Code of Massachusetts (EBCM; 780 CMR - 9th Edition, Chapter 34.00). These documents are based on amended versions of the 2015 *International Building Code (IBC)* and the 2015 *International Existing Building Code (IEBC)*, respectively.

Code Compliance Methods

Section 104.2.2.1 of the EBCM requires that the existing building be investigated and evaluated in sufficient detail as to ascertain the effects of the proposed work on the structural systems (both gravity load carrying elements and lateral force (wind and seismic) resisting elements).

The EBCM defines three (3) compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods.

The *Prescriptive Compliance Method* (IEBC Chapter 4) prescribes specific minimum requirements for construction related to additions, alterations, repairs, fire escapes, glass replacement, change of occupancy, historic buildings, moved buildings and accessibility. If the impact of the proposed alterations and additions to structural elements carrying gravity loads and lateral loads is minimal (less than 5% and 10% respectively), structural/seismic reinforcing of an existing building are not required. Provided that not more than 50% of the spaces in the building are reconfigured, seismic hazards such as bracing the tops of interior masonry walls and partitions, anchorage of floor and roof diaphragms to the exterior walls, bracing of parapets and chimneys, etc. would not be required by code, but could be addressed on a voluntary basis. If the area of reconfigured spaces exceeds 50% of the gross floor area, these seismic hazards must be addressed by code. ***Note that, in determining the area of reconfigured spaces, the new floor layout would need to be compared to the original (not the current) floor layout (typical for all compliance methods).***

The more widely chosen (and appropriate for this project) *Work Area Compliance Method* (IEBC Chapters 5 through 13) is based on a proportional approach to compliance, where upgrades to an existing building are triggered by the type and extent of work. The Work Area Compliance Method includes requirements for three levels of alterations, in addition to requirements for repairs, changes in occupancy, additions, historic buildings or moved buildings. A complete seismic evaluation of the existing building is required under the following conditions: Level 2 alterations where the demand (mass/seismic force) to capacity (lateral force resistance) ratio of lateral load resisting elements has been increased by more than 10%, all Level 3 alterations, a change in occupancy to a higher category (not applicable to this project) and where structurally attached additions (vertical or horizontal) are planned (any major addition(s) to the building will be structurally separated, so this is not applicable). Provided that not more than 50% of the spaces in the building are reconfigured (since the original construction), renovations would be classified as *Level 2*. Assuming that modifications to the existing masonry walls providing lateral force resistance will not be significant (i.e., less than 10%), seismic upgrades or seismic strengthening of the building would not be required by code. However, addressing certain seismic hazards by bracing the tops of interior masonry walls and partitions, anchoring floor and roof diaphragms to the exterior masonry walls, bracing of chimneys, etc. could be done on a voluntary basis. In a ***Level 3*** alteration (more than 50% of the building reconfigured), these seismic hazards must be addressed by code.

The less frequently chosen *Performance Compliance Method* (IEBC Chapter 14) provides for evaluating a building based on fire safety, means of egress and general safety (19 parameters total). This method allows for the evaluation of the existing building to demonstrate that proposed alterations, while not meeting new construction requirements, will maintain existing conditions to at their current levels (at a minimum) or improve conditions, as required. A structural investigation and analysis of the existing building is required to determine the adequacy of the structural systems for the proposed alteration, addition or change of occupancy. A report of the investigation and evaluation, along with proposed compliance alternatives must be submitted to the code official for approval.

Under all compliance methods, an evaluation of the roof diaphragm strength and anchorage of the diaphragm to the perimeter structure is required if the building is re-roofed, the building is in Risk Category IV and the ultimate design wind speed at the site exceeds 150 mph. As the Countryside Elementary School is a Risk Category III building and the ultimate design wind speed is 138 mph for a school building in Newton, these requirements would not apply.

Additions – General Comments – EBCM

The design and construction of a new addition to the Countryside Elementary School would be conducted in accordance with the code for new construction. Any planned, major additions should be structurally separated from the existing, adjacent construction by an expansion/seismic joint to avoid an increase in gravity loads or lateral loads to existing structural elements.

Renovations/Alterations – General Comments – EBCM

Where proposed alterations to existing, structural elements carrying gravity loads result in a stress increase of over 5%, the affected element will need to be reinforced or replaced (if necessary) to comply with the code for new construction.

Alterations to existing structural elements that are resisting lateral loads (i.e., full height, masonry walls/ partitions that are built on column lines between columns in the original building), which result in an increase in the lateral force demand (seismic load) to capacity (seismic resistance) ratio of over 10% should be avoided, if possible. Essentially, this means that removal of masonry walls resisting lateral forces (or creating large openings in these walls) should be avoided; otherwise, seismic strengthening of the building as well as additional seismic upgrades may be triggered.

Repair/reinforcing of conditions that do not meet current code requirements must be evaluated to determine if any danger to the occupants exists. In particular, as it does not appear that snow drift has been considered in the design of the original building low roofs, a structural evaluation of this roof construction would be warranted.

PHOTOGRAPHS

Photo No. 1: Concrete joist first floor slab over basement

Photo No. 2: 1957 addition roof structure

Photo No. 3: Standing water in 1951 basement

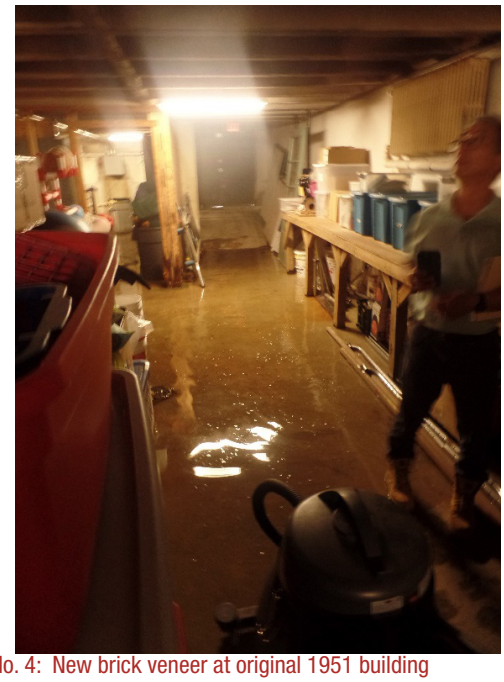


Photo No. 4: New brick veneer at original 1951 building

Photo No. 5: Unit ventilator grille at 1951 original building

Photo No. 6: Brick deterioration at 1951 building areaway walls

Photo No. 7: Exterior ramp to 1951 basement

Photo No. 8: Exterior stair to 1951 boiler room

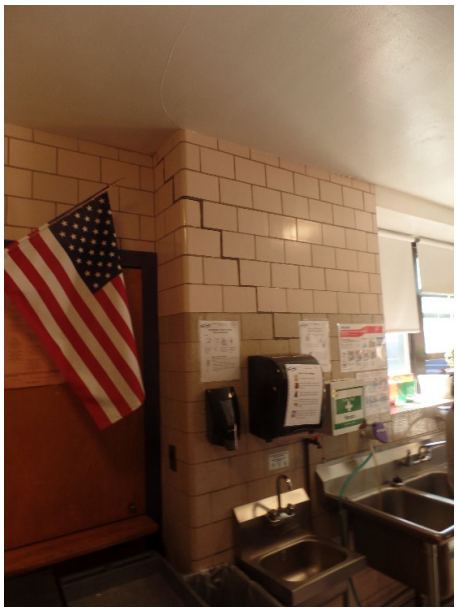


Photo No. 9: Step cracking in masonry in 1951 building

Photo No. 10: Cracked masonry at 1951 west wall window jamb

ARCHITECTURAL SYSTEMS

Exterior Walls

The typical exterior wall assembly used throughout the original 1953 building is 4" brick veneer (no cavity) on 8" or 12" thick unreinforced concrete masonry block wall. The original facebrick was removed and replaced with a 4" brick veneer in 1991. The exterior wall assemblies do not meet current energy code requirements for new construction.

While the condition of the exterior walls, appears generally in good condition from visual inspection, the replacement of the removal of the original face brick may have impacted the structural integrity of the exterior walls.

Exterior walls of the 1958 Annex are primarily metal curtainwall and insulated panels with 4" brick veneer end walls constructed similarly to the original building. The 1986 Annex addition was designed to match asthetically, except the brick veneer end wall was constructed with a 5/8" cavity between the veneer and backup stud framing.

Exterior walls of the modular classrooms have vertical wood siding that is in poor condition and, although repainted in the past five years, is chronically wet and rotting in some areas.

Roofing

The flat roof on the original building was replaced in 2012 and is an adhered single-ply membrane (EPDM), with aluminum flashings, facias, and caps. The roofs of the annexes and modular classrooms are built-up roofing and have been patched and repaired and are beyond their useful life and need to be replaced.

Windows

The windows in the original 1953 building were replaced in 1991 with aluminum double hung/transom window units but the windows in the annex, connector between the annex and original building, and modular classrooms are original. The windows in the annex and connector are single pane, steel framed curtainwall with limited vented (awning) units that are not thermally broken, while the windows in the modular classrooms are a combination of single and double pane vinyl replacement windows (sliders). All of the window systems within the entire school are beyond their useful life and are in poor condition.

Exterior Doors

All exterior doors are hollow metal leaves, set in original steel frames. The steel sidelights that surround the exterior doors at the main and secondary entrances of the original 1953 building are in poor condition.

Interior Walls

Interior partitions are typically painted plaster and gypsum wallboard with glazed concrete masonry units at the corridors of the original 1953 building. Interior walls are generally in good condition, with isolated areas of cracking and moisture damage.

Interior Doors

The original flush wood doors in hollow metal frames remain in-place throughout the building. Some interior doors are equipped with vision panels. Knob hardware has been replaced with lever-type hardware at most doors.

Flooring

Finish flooring throughout the building varies and appears original to the building in some instances. Flooring is typically vinyl composition tile (VCT); this includes all Classrooms, Corridors, Kitchen and the Cafeteria. The Stage and Gymnasium floor surfaces are hardwood flooring with game lines at the Gym. Resinous flooring is installed in the toilet rooms. Mechanical and service spaces are exposed concrete though some janitor's closets have VCT.

Ceilings

Ceilings throughout the original building corridors, toilet rooms, second floor classrooms, cafetorium and kitchen are painted original plaster with an added layer of 12"x12" adhered acoustical ceiling tile in some areas (corridors, stair wells, first floor cafeteria lobby and alcoves). The existing plaster ceilings are in fair condition, except at the kitchen and some toilet rooms where the plaster shows signs of damage, repair, and cracking. The adhered 12"x12" acoustical ceiling tiles are generally in fair condition, but select areas show damage and adhesive failure (missing tiles). Classrooms on the first floor have a suspended 2'x2' acoustical ceiling tile and grid system and are in good condition. Ceiling heights are ypically 10'-3" except where new acoustical ceiling systems are suspended.

Ceilings in the Gym are suspened 2x2 acoustical ceiling tile and grid and are in fair to poor condition.

Ceilings at the connector and 1958 annex addition are exposed underside of steel deck, painted. Ceiling heights at the connector and annex are approximately 8'-11" above the finish floor.

Lockers & Cubbies

Full height metal lockers are provided for students in corridors near classrooms in the original part of the school. Plywood cubbies for kindergarten students are located along the Kindergarten wing corridor. These are in poor condition.

FOODSERVICE

The Countryside Elementary School serves approximately 374 students in grades Kindergarten through five. In short, the space which houses the warming kitchen is in very poor condition. Almost all of the kitchen equipment is worn save one two door refrigerator that is in fair condition. The kitchen is undersized and underequipped.

Ceilings and walls are constructed of appropriate materials but significant cracks in the block mortar joins cause Health Code violations. Surfaces must be smooth and easily cleaned. The floor is a vinyl tile however many tiles are missing with the adhesive being exposed. Lighting is poor and exposed conduits and piping on the walls cause obstructions that make it difficult to easily clean surfaces. In modern kitchens these conduits and pipes are concealed behind walls or above ceilings in order to create flat unobstructed surfaces.

The following observation will reference codes and standards. For the purposes of this report when we reference the health code, we will be citing the Federal Food Code 2017 addition published by the FDA as well as the Merged Massachusetts Food Code. Additionally, the National Sanitation Foundation (NSF) is an independent governing body and testing agency that develops standards for equipment design that is to be used in commercial foodservice applications. All equipment in a commercial kitchen must comply with NSF standards in order to be compliant for use.

The following are detailed observations we noted during our site visit.

Image 1:

Wood is a prohibited material within the kitchen environment. Material must be smooth, non-absorbent, and easy to clean. Equipment must be marked with the NSF designations which conforms it's safe to use with food. Detergents and cleaners are to be stored separately from food and non-food storage. Due to a lack of space and equipment this is not possible.

Image 1

Image 2:

The warming oven is located adjacent to the back door. The door lacks a screen which prevents flying insect from entering the space. The hood above the oven is not large enough to capture and contain heat and cooking vapors. Behind the oven is a heating radiator which impossible to clean.

Image 3:

The flooring is in poor condition. The floor must be a monolithic surface that is easily cleaned, non-absorbent, and offers some level of slip resistance. Vinyl tile is not monolithic due to the seams. This type of floor is also very slippery when wet. Where the tiles are missing the concrete floor is porous and not easily cleaned.

Image 2

Image 4:

The three-compartment sink is missing drain boards on each end. Drain boards for drying washed ware is a requirement of the Health Code. The floor in front of the pot wash sink is a concern as it can be wet and vinyl is slippery when wet.

The balance of the kitchen equipment is comprised of a hand washing sink, a two-door reach-in refrigerator which appears to be in good condition, and wood wall cabinets that are being used for paper goods and food storage. A direct connection to the serving area is nonexistent. A direct connection is needed to facilitate direct replenishment and support during and between lunch servings.

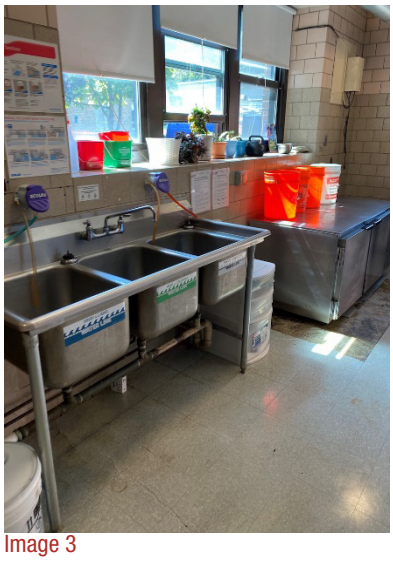


Image 3

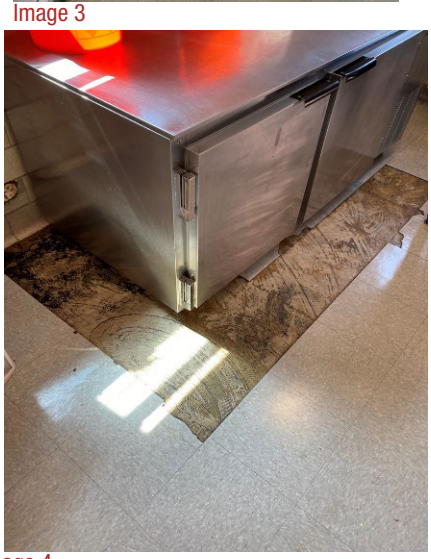


Image 4

Recommendations:

A reorganized and expanded kitchen is warranted. The serving line is lacking and the ability to hold hot and cold food during serving is critical. The equipment mix must be expanded in order to meet modern standards for a foodservice operation.

1. Eliminate all wood surfaces. Replace them with appropriate materials that are complaint with the modern health code standards.
2. An appropriately sized walk-in cooler and freezer must be added for proper storage capacity and provide for the ability to adequately store cold food at stable temperatures.

CODE

The existing Countryside Elementary School building was built as an educational facility in 1953. The building includes classrooms, a gymnasium, cafetorium, library, and administrative offices.

The following is a chart of codes applicable to the development of the project:

Code Type	Applicable Code (Model Code Basis)
Building	780 CMR: Massachusetts State Building Code, 9th Edition • Amended 2015 International Building Code (IBC) • Amended 2015 International Existing Building Code (IEBC)
Fire Prevention	527 CMR: Massachusetts Fire Prevention Regulations M.G.L. Chapter 148 Section 26G – Sprinkler Protection
Accessibility	521 CMR: Massachusetts Architectural Access Board Regulations 2010 ADA Standards
Electrical	527 CMR 12.00: Massachusetts Electrical Code • Amended 2020 National Electrical Code
Elevators	524 CMR: Massachusetts Elevator Code • Amended ASME A17.1-2013/CSA B44-13
Mechanical	2015 International Mechanical Code (IMC)
Plumbing	248 CMR: Massachusetts Plumbing Code
Energy Conservation	2018 International Energy Conservation Code (IECC)

Occupancy Classification

The existing building is considered Use Group E. Assembly spaces (i.e. cafeteria) that are associated with a Use Group E occupancy are also considered Use Group E (IBC 303.1.3). If these spaces are used for non-school events however they must be classified as a Use Group A occupancy.

Construction Type

From visual analysis and limited above-ceiling inspection, the building appears to be Type IIB construction (non-combustible, unprotected).

Interior Finishes

The existing finishes generally consist of painted drywall or masonry that complies with the code requirements for new construction (IEBC 803.4). All wall finishes, ceiling finishes, and trim materials installed as part of a future project must comply with IBC Table 803.11.

Means of Egress

The means of egress including the number of exits and egress capacity must be sufficient for the number of occupants on all floors (780 CMR 102.6.4). The first floor has multiple exterior exit doors and the relatively small second floor includes three exit stairs that provide capacity well in excess of the building's occupant load and therefore comply with this requirement.

All of the larger assembly spaces with greater than 50 occupants are provided with at least two egress doors as required. All of the existing primary egress doors swing in the direction of egress as required. The existing primary egress doors with latches appear to include panic hardware as required.

The building does not contain dead-end corridors.

Energy Code

New work is subject to the International Energy Conservation Code (IECC) or ANSI/ASHRAE/IESNA 90.1 with Massachusetts Amendments (Massachusetts Energy Code). Alterations to existing buildings are permitted without requiring the entire building to comply with the energy requirements of the International Energy Conservation Code (IECC). The alterations (new elements and additions) must conform to the energy requirements of the IECC as they relate to new construction only (IEBC 811.1).

The Massachusetts Stretch Code has been adopted by the City of Newton.

Ventilation Requirements

All reconfigured spaces must provide mechanical or natural ventilation in accordance with the International Mechanical Code, except that existing ventilation systems are permitted to remain provided they achieve not less than 5cfm of outdoor air per person and not less than 15 cfm of ventilation air per person (IEBC Section 809).

Flood Hazard Requirements within Flood Hazard Areas

When work to the existing building exceeds 50% Substantial Improvements as defined by the International Existing Building Code (IEBC), the building must comply with the IBC Flood Hazard requirements.

[BS] 701.3 Flood Hazard Areas. In *flood hazard areas, alterations* that constitute *substantial improvement* shall require that the building comply with Section 1612 of the *International Building Code* or Secion R322 of the *International Residential Code*, as applicable.

[BS] SUBSTANTIAL IMPROVEMENT. For the purpose of determining compliance with the flood provisions of this code, any ***repair, alteration, addition***, or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure, before the improvement or ***repair*** is started. If the structure has sustained ***substantial damage***, any repairs are considered ***substantial improvement*** regardless of the actual ***repair*** work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the ***code official*** and that is the minmum necessary to ensure saft living conditions; or
2. Any *alteration* of a historic structure, provided that the ***alteration*** will not preclude the structure's continued designation as a historic structure.

Architectural Access Board Regulations (MAAB)

The existing building does not fully comply with MAAB regulations.

A limited use elevator provides access to the second floor classrooms in the original building.

The building includes several toilet rooms with multiple fixtures – one is equipped with an accessible toilet stall but none of the other toilet rooms are accessible.

Classroom sinks and sink areas are not accessible. Signage does not meet current MAAB regulations and does not include raised characters or Braille.

While most doors along the main corridors of the original building have lever hardware, knob hardware remain in several locations. Also, door openings into many of the classrooms of the original building do not have the required clearance on the latch side of the door. All doors in the annexes and modulars are equipped with lever hardware.

Handrails at the 2 sets of stairs in the original building are not code compliant.

Future alterations to the building must comply with the requirements of the Massachusetts Architectural Access Board Regulations (521 CMR). For existing building alterations, the requirements of 521 CMR are based on the cost of the proposed work.

If the cost of the proposed work is greater than 30% of the full and fair cash value of the existing building, the entire building is required to comply with 521 CMR (521 CMR Section 3.3.2). All portions of the building open to the general public (students, visitors, etc) must be upgraded to comply in full with the current requirements of 521 CMR.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Lord Environmental, Inc. prepared a Phase I Environmental Site Assessment & Subsurface Investigation Report for the Countryside Elementary School on September 28, 2022. Please refer to the electronic copy of this report for the Phase I Environmental Site Assessment and Subsurface Investigation Report.

HAZARDOUS MATERIALS ASSESSMENT SURVEY

Universal Environmental Consultants prepared an Existing Conditions Evaluation and Hazardous Materials Identifcation Study Report for the Countryside Elementary School on September 26, 2022. Please refer to the electronic copy of this report for the Hazardous Materials Identifcation Study.

HVAC, PLUMBING & FIRE PROTECTION SYSTEMS

1. Built in phases:
    a. 1953 Original Building (69 years old)- 35,910 SF, included 2-story classroom wing, kitchen, Gym and the Cafetorium.
    b. 1958 Six Classroom Annex (64 years old) - single story.
    c. 1986 Two Classroom Annex (36 years old) - single story.
    d. 1991, 1999 & 2000 Modulars- 4 classrooms + office, 13,702 SF (average 23 years old).
2. Single story building with total floor area of 49,612 SF, or 38% expansion since 1953.
3. Chronic flooding of basement.

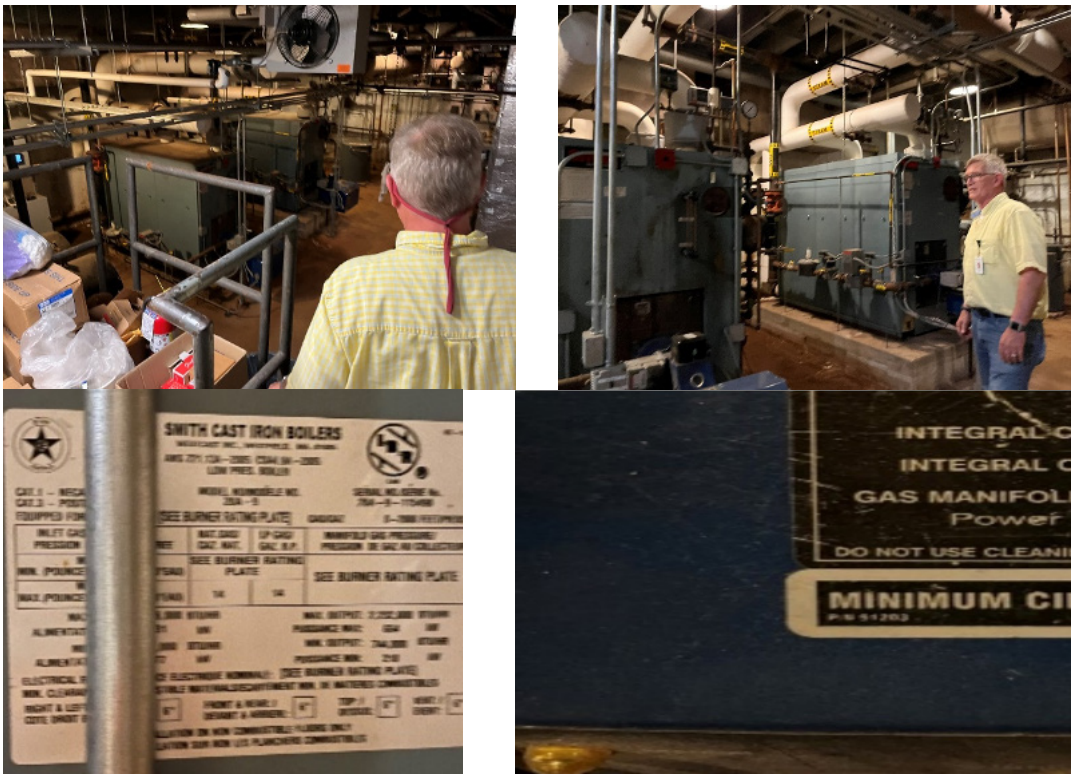
Executive Summary:

1. The HVAC System:
    a. Original building was steam heated with oil fired boilers.
    b. Subsequent annexes were hot water heated and ventilated, using hot water generated with the steam converter. The 1958 Annex have packaged rooftop units for air conditioning, which are in very poor shape.
    c. Original and Annex buildings' classrooms are heated and ventilated by unit ventilators and central roof exhaust fans.
    d. Converted to gas in 2011.
    e. Modular buildings have heating and air conditioning by gas/electric rooftop units in very poor shape.
    f. Cafetorium and Gym are heated and ventilated.
    g. Offices are heated by the base steam heating system and cooled by window AC units.
    h. Kitchen is not a full cooking type. Its convection oven has a type-II galvanized exhaust hood, but without makeup air system.
    i. Most all components, with exception of boilers, are the original vintage which are well past its useful life.
    j. Some parts of pipe insulated appears to have encapsulated ACM (Asbestos Contaminated Material), specifically at fittings.
    k. Most components are over 40 years past its useful life and are in need of total replacement.
    l. Town's new Bylaw dictates carbon-neutral all-electric system such as ground source heat pump system (aka geothermal) or air source heat pump system (aka VRF).
2. Plumbing System:
    a. Potable water is fed from the municipal supply.
    b. Sanitary waste system is connected to the municipal system.
    c. Accessible parts of plumbing waste piping were replaced, but the building has much plumbing piping in concealed spaces which cannot be inspected.
    d. Domestic hot water is generated by indirect heater, which means boiler has to run year-round.
    e. Most components are over 40 years past its useful life and are in need of total replacement.
    f. Town's new Bylaw dictates carbon-neutral all-electric system such as ground source heat pump system (aka geothermal), air source heat pump system (aka VRF), or electric-on-demand domestic hot water heaters.

3. Fire Protection System:
    a. This building is not protected by a sprinkler system.
    b. This building needs a sprinkler system added.

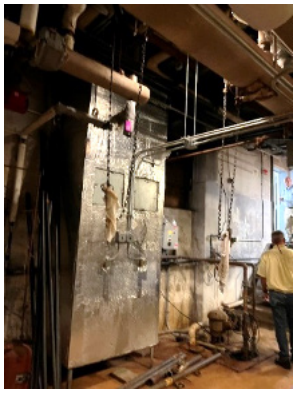
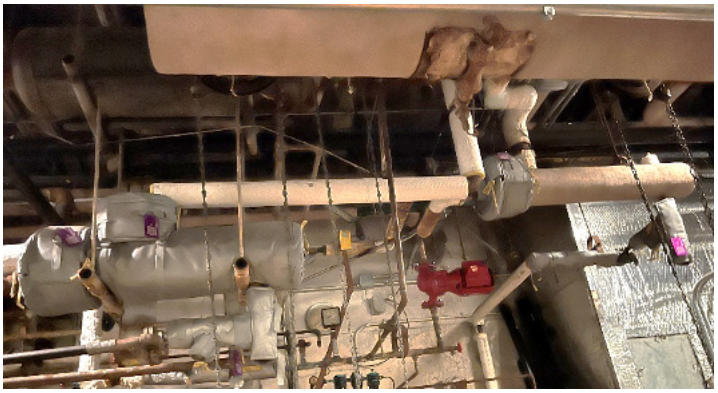
Mechanical:

1. Overall Description:
    a. Most of the building is heated and ventilated only:
        1. Original1953 building had oil fired steam boilers and steam heat.
        2. Six Classroom Annex 1958 has packaged gas/electric rooftop units, in very poor shape.
        3. Two classroom 1986 annex building had hot water heat.
        4. Modular buildings 19991, 1999 & 2000 have gas/electric rooftop units, which are extremely noisy and are in poor shape.
        5. Offices have window AC units, which are extremely noisy.
    b. Cast iron boilers were installed in 2007 and 2012, but both were submerged underwater numerous times during floods.
    c. Converted to gas in 2011.
    d. Heating pipe runs in crawl space pipe chase along the perimeter.
    e. Mostly the original pneumatic controls, with limited overlapping of DDC system.
    f. Mostly all components are well past its useful life, especially the piping with repair no longer being possible, are in need of complete replacement.
2. Photo Essay



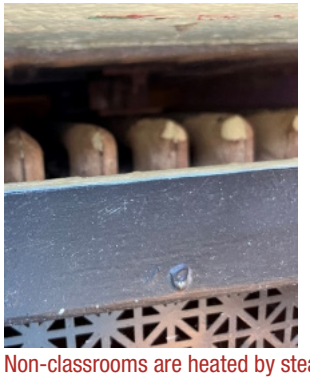
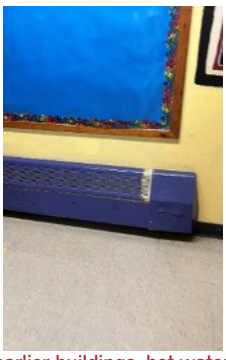
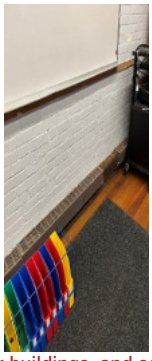
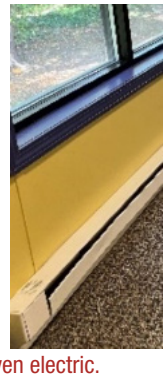
Two gas fired Smith cast iron low-pressure steam boilers with 2.8 million BTUH input Power Flame burner. The boilers were replaced in 2007 and 2012. School was converted to gas in 2011. Boiler room has been flodded numerous times over the years.


L - Original vintage boiler breeching. R - Recently replaced condensate receiver, but all the piping are the original. Note that entire floor is deeply stained from chronic flooding.

L - Boiler combustion air. R - Steam to hot water converters

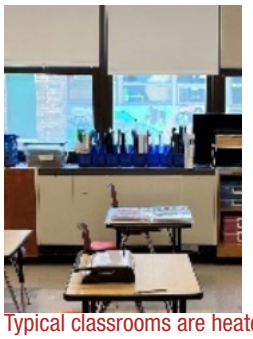
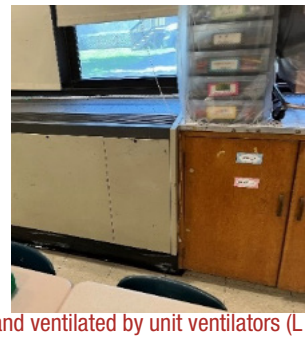
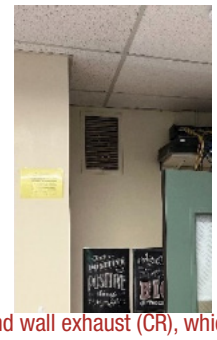
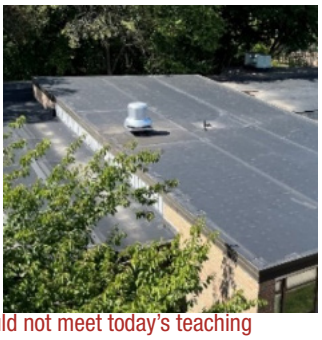

L - Pipe space runs along the perimeter to feed the radiators and unit ventilators.
R - One of the many access panels to the pipe space

Non-classrooms are heated by steam in the earlier buildings, hot water in later buildings, and some even electric.



Typical classrooms

Typical classrooms are heated and ventilated by unit ventilators (L & CL) and wall exhaust (CR), which would not meet today's teaching environment acoustical requirements. R - Central roof exhaust fan assure

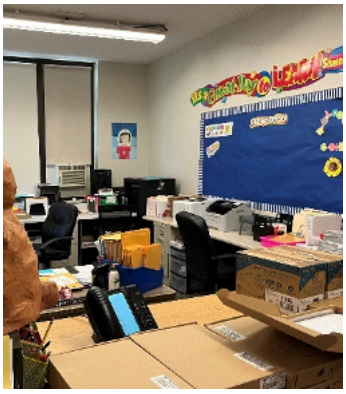
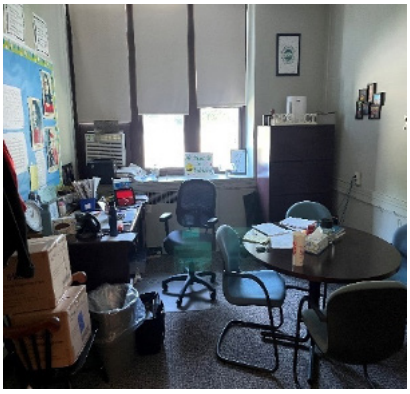


L - Modular annex with end mounted trailer home type AC unit. C - 1958 Annex with gas rooftop provides HVAC for the classrooms. R - Exposed ductwork with no attenuation on return ductwork, resulting in noise level far above what is considered acceptable in today's teaching environment.


Cafetorium is heated and ventilated by the original system.

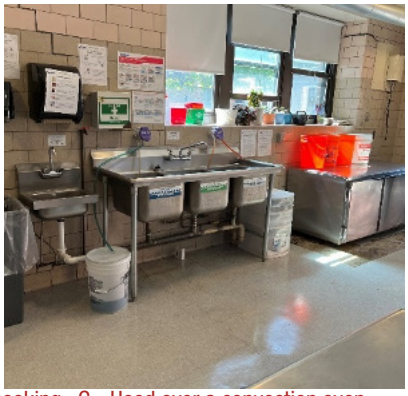


L&C - Gym is heated by steam radiator placed high just below the windows. R - Showing small ventilation ductwork feeding a grilled above the storage door.

Nurses' Offices are heated by the original steam system and cooled by window AC units.





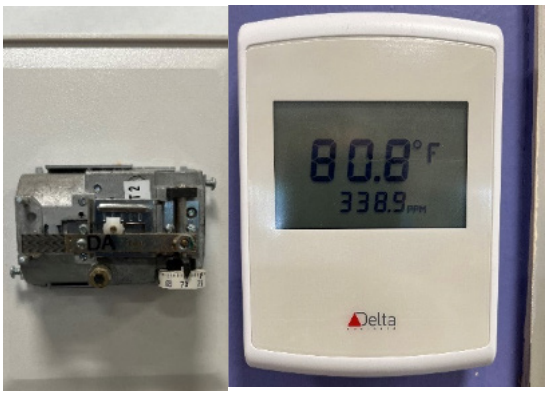
L - Kitchen is limited to preparation and warming functions and without the accommodation for full cooking. C - Hood over a convection oven. R - Hand and pot sinks.



Potential ACM encapsulation was observed at pipe fitting insulation.

Kiln hood and exhaust are no longer used.

L - Four 325-gallon fuel oil tanks were found in the boiler room, with the red strapping apparently installed to prevent floating during floods. R - Diesel standby generator with a belly tank.



L - Pneumatic control compressor and dryer were in fair working order and are operating. CL - Some spaces were found with two thermostats. CR - Right side thermostat was found to be Johnson Controls pneumatic thermostat; left side thermostat was Delta DDC Controls.

Delta DDC Controllers were found in the modular building.

3. Remaining Useful Life:

	BOMA Useful	Actual Years	BOMA Remain	
Components	**Years in Life (Yrs.)**			**Comments**
Air handling units	25	69	-44	
Boilers, cast iron	30	12	+18	Multiple floods
Radiators	30	69	-39	
Cabinet heaters	20	64	-44	
Convectors, fintube	15	36	-21	
Ductwork, Ventilation	30	69	-39	
Ductwork, AC	30	36	- 6	
Fans	20	52	-32	
Pumps	25	20	+ 5	Age estimated.
Controls	20	69	-49	DDC is newer.
Piping	30	69	-39	
Boiler metal flues	20	69	-49	
Masonry chimney	50	69	-19	

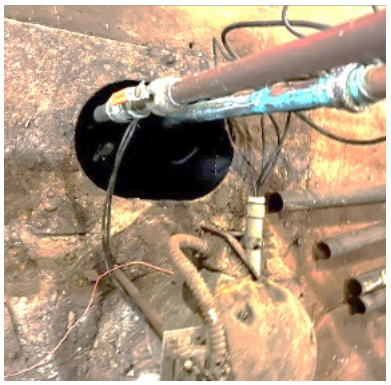
a. Conclusion - all components are well past its useful life and are in need of complete replacement.

PLUMBING:

1. Overall Description:
   a. Most of the is the original 1953 vintage, which is now 69 years old.
   b. Potable water is connected to the municipal system.
   c. Sanitary drain system is connected to the municipal system.
   d. Fixtures have been repaired/ replaced as required.
   e. Original waste and potable water piping.
   f. Chronic flooding issue of the basement level results in requirement for frequent sump pump replacements. Due to the multiple addition of this school, one sump pump system is three in series… that is first set pumps to the second set, which pumps to the third set before being discharged to the storm water system.
   g. Converted to gas in 2011.
   h. Gas fired tank type domestic hot water heater.
   i. Mostly all components are well past its useful life, especially the concealed piping, are in need of complete replacement.

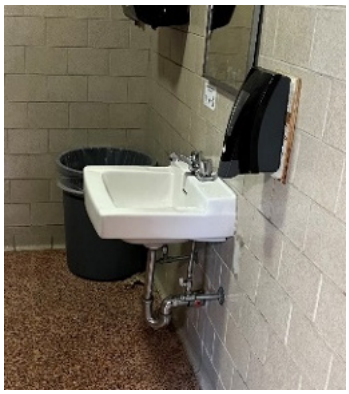
2. Photo Essay





L&C - Chronic flooding of basement level. R - One of numerous sump pumps, which have to be replaced frequently due to its nearly continuous operation.

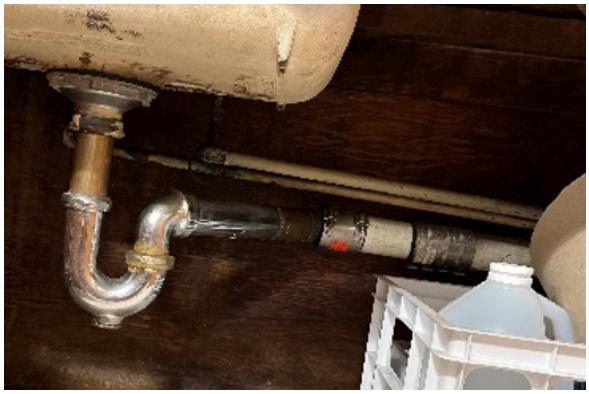
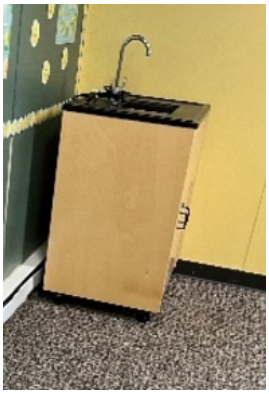




L - Urinals in the older part of the building are not code compliant. All - Vitreous china parts of the fixtures are original but are in fair condition. Faucets, flushometers and valves have been replkaced as needed and are in fair shape.




Vitreous china parts of the fixtures in the newer part of the building are original but are in fair condition. Faucets, flushometers and valves have been replaced as needed and are in fair shape.

L - Typical classroom original vintage sink. C - Inspection shows that waste piping has been repaired numerously using a PVC pipe section and neoprene plumbing patches.

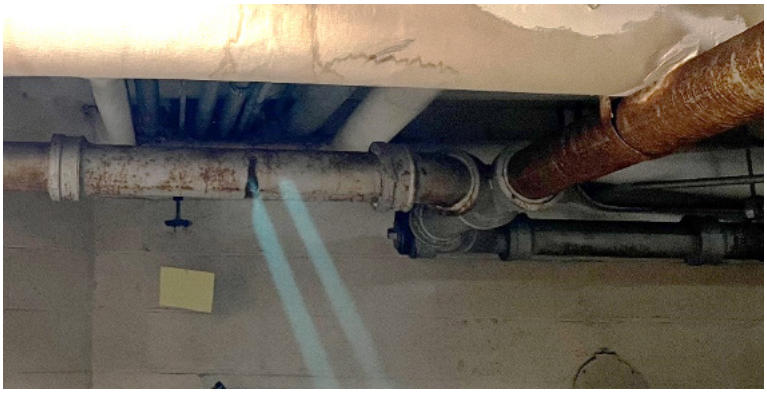

Art Room sink is residential laundry type sink, which is code compliant and functional but an unusual application for an institutional building.


L&C - Original vintage janitor's sink. R - Water cooler.

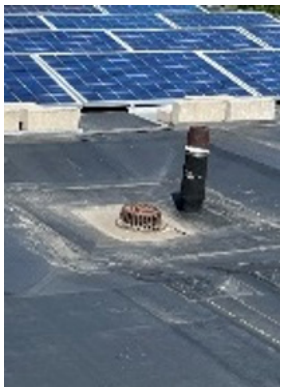

L - Kitchen is not a full cooking type but just a warm-up and preparation type. R - Note that section of hand sink waste piping has been replaced with non-compliant PVC piping; grease interceptor could not be located.

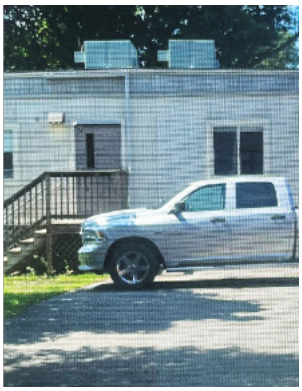


L - Boiler gas piping. C - Recently installed gas fired tank type domestic hot water heater. R - Heater flue.




L - Shows original vintage cast iron waste piping in basement with lead / okum packing, showing exterior corrosion. R - Same area shows extensive portion which has been replaced.





L&C - Original roof drains without overflow. R - Modulars have downspouts.

3. Remaining Useful Life:

	BOMA Useful	Actual Years	BOMA Remain	
Components	**Years in Life (Yrs.)**			**Comments**
Water heater	15	5	+10	estimated.
Fixtures		30	69	Faucets were replaced as needed.
Potable water piping	69	-39		
Waste water piping	30	69	-39	
Storm water piping	30	69	-39	
Gas piping, LP, threaded	11	+19	Installed in 2011.	

a. Conclusion – All components are well past its useful life and are in need of complete replacement.

Fire Protection:

1. Overall Description:
   a. This building has not sprinklered.
   b. Kitchen does not have a cooking line hood.
2. Conclusion: Needs to be fully sprinklered to comply with Code.

ELECTRICAL

Existing Conditions Evaluations:

The building was constructed in 1953, with additions added in 1958, and 1986. Modular classrooms were added in 1991, 1999, and 2000. The majority of the electric service equipment and wiring are original to the original construction and additions. The main building electrical equipment and systems are between 36 and 70 years old and well past their life expectancies. The electrical systems have been maintained by the owner over the years, however they do not properly support current educational needs. Modular classroom electrical equipment is 22 to 30 years old.

Electrical Service

The building is served by two incoming electric services

Eversource Utility #1 is an underground secondary underground electric service which emanates from a pole mounted transformer mounted on a utility pole on Dedham Street. Utility pole is located directly in front of the cafeteria. Pole #117/22. Utility meter located in basement.

Eversource Utility #2 is an aerial secondary electric service which emanates from a pole mounted transformer mounted on a utility pole on Dedham Street. Utility pole is located on the property line. Pole #117/25. Utility meter located on the side of the modular building.

The building was original served by primary switches, vault transformer and primary electric service cables that were installed by Boston Edison, now Eversource. This is equipment is de-energized. The vault door was locked and we were unable to verify that the equipment has been removed by Eversource.

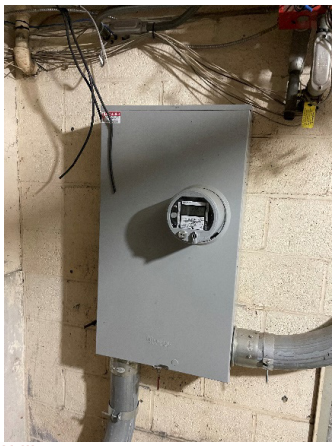
The building is served by four sources of power

1. Eversource Utility #1
2. Eversource Utility #2
3. Emergency Generator
4. Roof PV System

The building is served by four normal electric services:

1. Main Building
2. Rear Modular Classrooms
3. Front Modular Classrooms

Transformer vault door. Need to confirm transformers have been removed.


Utility meter #1

Electrical Distribution

The original main building electric service #1 is rated at 600-amperes, 120/208-volts, 3-phase and consists of a main circuit breaker, CT cubicle with meter, and a main distribution panel.

The rear modular classroom electric services #2 is rated at 200-amperes, 120/208-volts, 3-phase and consists of a disconnect switch and panel. The panel feeder is tapped of the service feeders for electric service #1.

Electric service #1 and #2 are located in the basement electric room are served by Eversource Utility #1.

The front modular classroom electric services #3 is rated at 400-amperes, 120/208-volts, 3-phase and consists of a panel located in the front modular classroom. Electric service #3 is served by Eversource Utility #2.

Despite being maintained by the owner; many of the 1951 and 1957 electric service panels are still operational, and well past their life expectancy.

Service #1

Service #2 and PV disconnect switch


Service #3 in modular classroom


Original 1953 distribution panel

During our walk-through of the building, it appeared to us that the Frank Adams panelboards and associated feeders have not been upgraded or replaced. We did notice that a newer panelboard was installed to serve selected new loads as required.

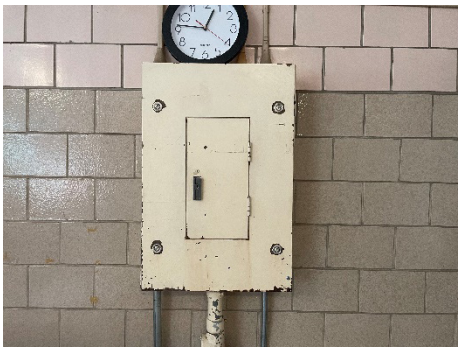
In addition, starters and disconnect switches have been replaced during maintenance programs.

Frank Adams has been out of the switchboard and panelboard business for fifty years. The electric service equipment is past its life expectancy, is in poor condition and needs to be replaced.

Water infiltration has been an issue in the basement. All electrical equipment including the main electric service equipment is vulnerable to water damage.


Water damaged equipment


Panel in corridor


Panel

Emergency Light and Power System

The building is served by a 150 KW, 120/208V, 3-phase diesel emergency generator with sub base tank manufactured by Olympian. The generator is located adjacent to the building, but the exhaust stack does not extend above the building roof. The automatic transfer switch, and panelboards are located in the basement electric room in the same room as the normal electrical equipment.

The original 20 KW generator was abandoned in place, it is located in the basement electric room.

The emergency equipment being installed in the same room as the normal electric service panels is a present day code violation. MA Electrical Code Article 700 requires the normal and emergency electrical equipment to be separated from normal power equipment. In addition, the generator location does not allow for code required work space for the generator and wall mounted electrical panels.

The emergency lighting consists of emergency only lighting fixtures. TEC did not observe the emergency lighting levels. Based on past experience, it is doubtful that all areas are properly covered by emergency lighting as required by code. In addition, emergency battery units have been installed in many areas in the main building. It's doubtful, the emergency generator lighting is properly function.

The most of the emergency electric service equipment is in poor condition, are almost 70 years old, and well past its life expectancy. The emergency system does not meet current life safety codes, and needs to be replaced.

Modular classroom emergency lighting is provided by self-contained emergency battery units. TEC did not rest or inspect the emergency battery system.

Generator with PV equipment adjacent

Transfer switch

Abandoned generator

Emergency battery units

Emergency battery units

Lighting Systems

There are multiple types of lensed lighting fixtures in the building:

- Two rows of linear 1'x4' surface mounted fixtures with wrap around lens in most classroom.
- 2'x2' recessed lens troffers in modular classrooms
- 1'x4' surface mounted fixtures with wrap around lens cafeterias.
- 2'x4' recessed fixtures in the gym
- 1'x4' lensed surface fixtures and 2'x4' parabolic in offices
- Corridors: pendants and 1"x4" surface linear fixtures.

During a 2017 utility retrofit programs, fluorescents lamps were replaced with LED tube lamps or the fixtures were replaced with a LED fixtures. Occupancy sensor controls were installed

Overall quality of the lighting is fair to poor condition but the lighting creates glare. Glare was observed on whiteboards and computer screens.

All lighting appears to be controlled by local switches including corridors. Corridors are controlled by local switches. There are occupancy sensors in classrooms and other spaces in building.

Site lighting: There are no lighting fixtures in the parking lot. There are lighting fixtures at egress doors. There are a few wall mounted full cut wall packs on the building.

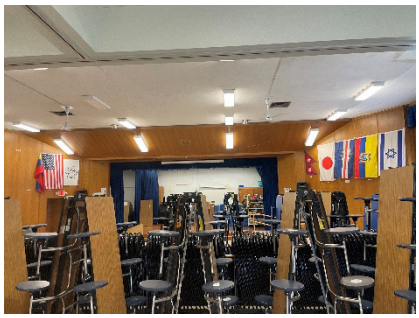
TEC did not observe the site lighting functioning so we can not confirm light levels or if there is emergency egress lighting at doors. However, based on the quantity of site lighting fixtures, the entire site lighting system is completely inadequate for egress from the building and in the parking lots.


Typical Classroom


Typical Classroom

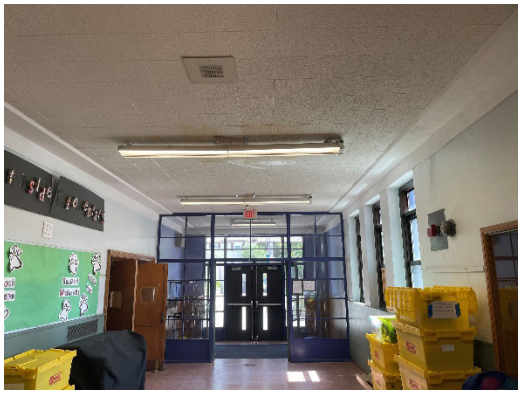

Typical Classroom

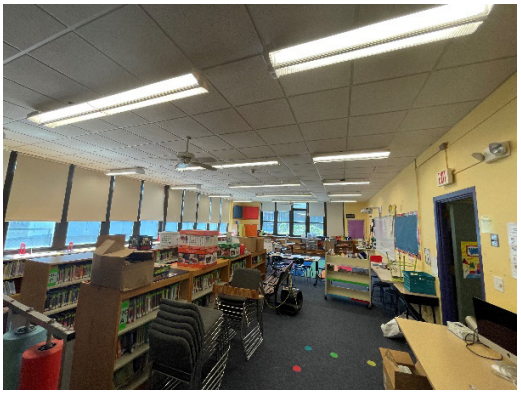
Typical room lighting controls


Cafeteria


Stage in Cafeteria


Lighting relays


Corridor

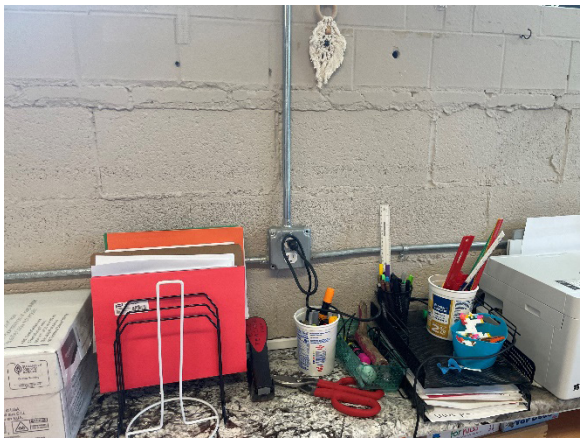

Library - Normal and emergency battery unit

Receptacle Systems

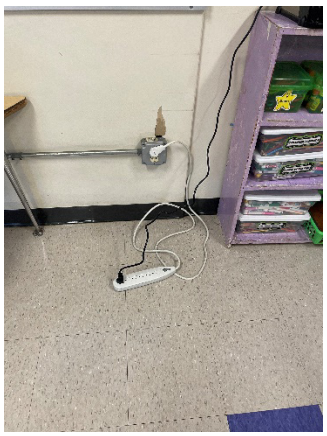
There are a limited number of receptacles in all spaces including classrooms and offices. Originally, there was two to three receptacles in each classroom and observed two receptacles in many classrooms. The receptacles are of the grounded type.

Receptacles in surface mounted raceways have been added in classrooms and other spaces to meet increased power needs for technology, however the quantity of receptacles is insufficient for current classroom and office requirements.

Power strips are being used in several areas. Power strips are a fire hazard to use. With the minimum number of circuits, power strips can easily overload a circuit.



Receptacle



Power strip / Receptacle

Fire Alarm System

The building does not have a sprinkler system. The fire alarm system consists of a control panel, manual pull stations, smoke and heat detectors, and horn/strobe notification devices. Fire alarm devices are a combination of addressable and conventual zoned devices. The control panel is a Notifier panel located in the main entrance. The Notifier panel was installed in 2016

The previous fire alarm control panel is located in the main entrance and is used as a junction box. The previous fire alarm system was a four zone FCI fire alarm system. Devices have been updated or replaced over the years. There are multiple generations of fire alarm system devices.

There are multiple fire alarm system code violations:

- Many pull stations are not located within 5’-0” of the egress door jambs. Also, some are installed above ADA height.
- Without a sprinkler system, the smoke detectors coverage should be 100% of all rooms. Smoke and heat detectors are installed in the majority of rooms but not 100%.
- Horns are used for the audio notification, present day codes require voice.
- The AV notification system provides very minimal coverage.
- Devices are not mounted at ADA heights.

TEC did not witness the fire alarm system operation and are unable to comment on its operation. However, the fire alarm system is obsolete and well beyond its life expectancy.

The fire alarm system is in poor to failing condition, well past its life expectancy, and needs to be replaced.

Control Panel

AV notification device and bell

Smoke Detectors - Different models

Pull station not at door

New detector in old base

FA devices, emerg. lighting / exit sign

Exit Signs

There appears to be exit signs in all paths of egress. There are several different generations of exit signs in the building. Overall exit signs conditions are fair.

Exit sign in gym

Exit Sign

Exit sign with emergency lighting

Exit sign not working

Structured Cabling System

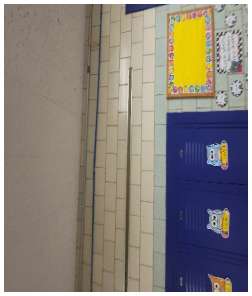


Figure 1

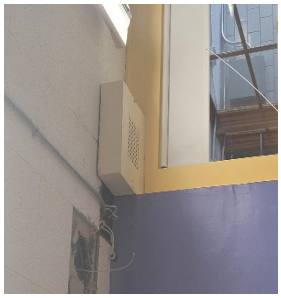


Figure 2

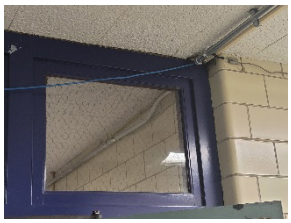


Figure 3

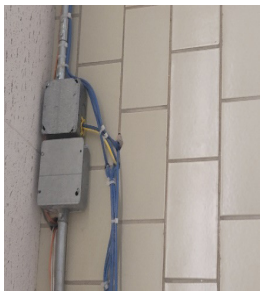


Figure 4

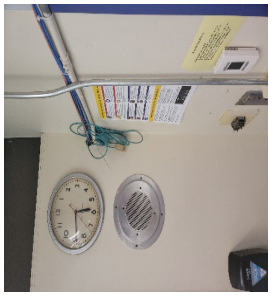


Figure 5

Figure 6

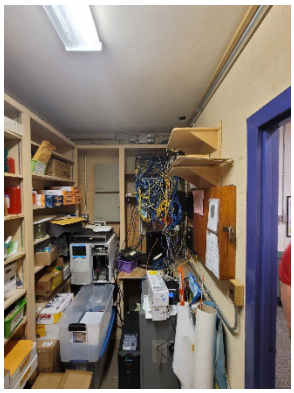


Figure 7

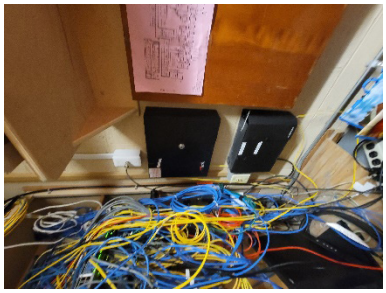


Figure 8

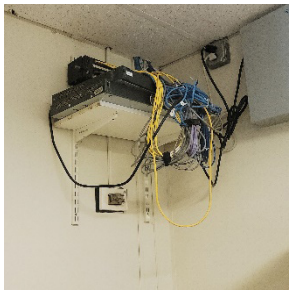


Figure 9

The School has Category 5e and 6 UTP data cabling installed throughout. Much of the data cabling has been added to the building over time and cable runs fully exposed in numerous locations outside conduit or raceway (Figures 1-5), with some cabling loosely contained in surface mount raceway (Figure 6).

All the voice and data a cabling appears to be in working order although it does not meet the latest cabling standards for structured cabling systems and does not meet building codes for the way it is installed. The MDF is comprised of a wall mount rack collocated at one end of an accessible storage closet in the administrative office area (Figure 7). Structured voice and data cabling is terminated onto wall mounted data patch panels in a wooden open frame wall cabinet. Building communication services including telephone and RCN fiber optics are terminated on the wall in this location (Figure 8). A telephone system controller is also located in this room. The room lacks security, power and environmental conditioning, or adequate cable management. There is a separate location high up on a wall in another shared space where additional cabling is terminated on a wall mount patch panel and connecting to a network switch that is sitting a shelf. It was assumed but not evident that this location was connect to the MDF via fiber optic cabling.

Structured voice and data cabling appears to be installed to all rooms and spaces throughout the school providing connectivity for telephones, network peripherals, and wireless access devices.

Distributed Communications System

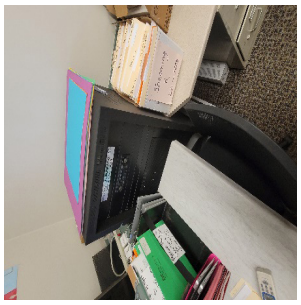


Figure 8

Figure 9

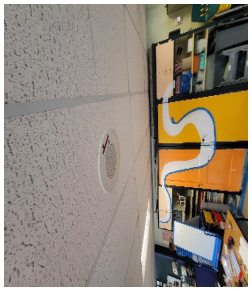


Figure 10

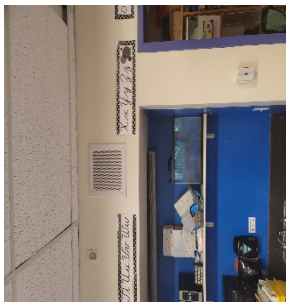


Figure 11

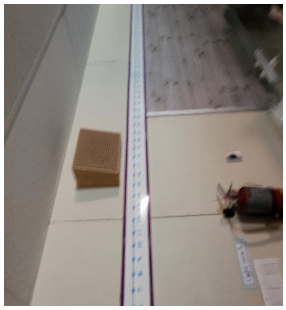


Figure 12

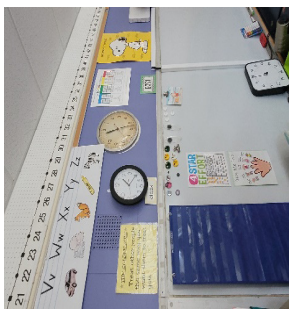


Figure 13

Figure 14

The public address main system cabinet is in the main office area. It appears to be a Bogen public address system, which is an analog system with analog end points. The speakers throughout the school are a mixture of older horn speakers (Figure 9), flush mount ceiling and wall mount speakers (Figures 10 and 11), as well as surface mount speakers (Figure 12). The master clock system does not work and battery-operated wall clocks of various types and sizes are located throughout the school. (Figure 13). All rooms appear to be equipped with older style toggle call in switches (Figure 14). It was noted that the intercom and paging system doesn't work and that areas exist in the school where pages are not heard.

Local Sound Systems

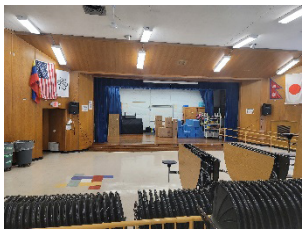


Figure 15

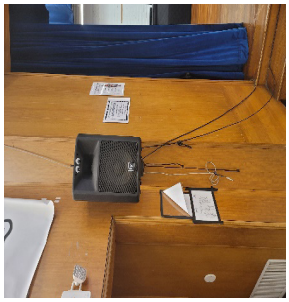


Figure 16

Figure 17

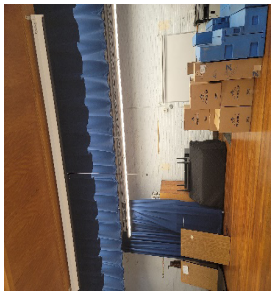


Figure 18

There is a Cafetorium with antiquated audio-visual system equipment that includes older EV program loudspeakers mounted on either side of the proscenium (Figures 15 and 16). Sound system equipment includes an older Pevey mixer amplifier on a cart with an older portable Pevey speaker and two Audio-Technica wireless handheld microphones and receivers (Figure 17). The stage is equipped with a pull-down screen presumably used with portable projection system (Figure 18). The equipment was not tested and may be functional, but none of it is current audio-visual technology according to today's large venue spaces in schools.

Network and Wireless

Figure 19

Figure 20

Cisco PoE network switches are installed in MDF and in the small wiring center located on the wall. These two locations are presumably where all structured network voice and data cabling originates and is terminated. Network switches support all hard-wired data cabling and wireless access points throughout the School.

Cisco Wireless Access devices mounted to the underside of the suspended ceiling were observed throughout the school including corridors (Figure 19) and office and instructional spaces (Figure 20).

Security Systems

Figure 21

Figure 23

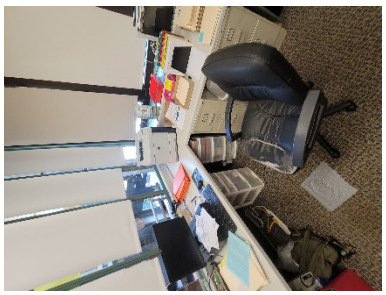


Figure 22

Figure 24

An Aiphone video intercom system with the capability of remote visual monitoring was observed at the main entrance to the building (Figure 21). This system has a management console in the main office for remotely viewing and communicating with visitors at the exterior of the building and unlocking the main entrance door.

There is good visibility by the main office to anyone entering using the exterior video intercom system (Figure 22). However, the main vestibule provides no way to contain someone for processing once they are let into the building. A secured entry system for processing visitors to the building should be added.

There is an older intrusion alarm system (figure 23) which most likely works with door contacts installed at exterior doors. Current motion sensor technology was not observed in corridors. Rooms on the ground floor with accessible windows do not appear to be equipped with motion sensors. An upgraded intrusion system with motion sensors in all ground floor rooms with windows with exterior door contacts should be considered.

Surveillance cameras were not observed around the perimeter of the building or at the main entrance to the School. Cameras were not observed at interior locations including corridors, stairwells, and large assembly spaces. A modern high resolution IP based surveillance system should be added.

There is an access control system installed with Card Readers at various exterior doors including the main entrance (Figure 24)

Operation of the installed system was not observed.

Classroom Technology

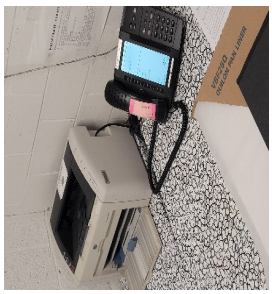


Figure 25

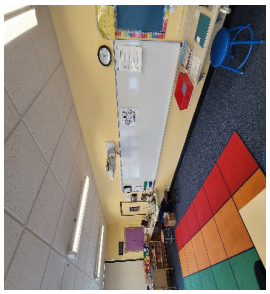


Figure 26

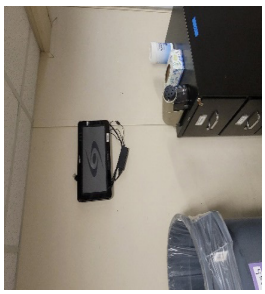


Figure 27

Figure 28

Figure 29

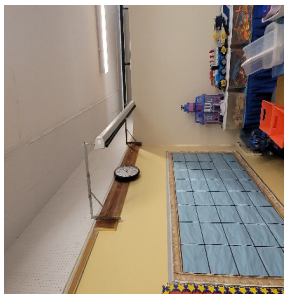


Figure 30

Telephone handset were not observed in the classrooms and educational spaces and are only provided in administrative locations (Figure 25).

Wireless Access Points were observed in classrooms and throughout the school. Older model ultra-short interactive projectors were observed in classrooms (Figure 26). Many classrooms, but not all were equipped with speech reinforcement systems mounted to the wall (Figure 26). Most classrooms observed included an Elmo document camera (Figure 27).

Work group and personal laser printers were observed in some classrooms (Figure 28).

Some classrooms that were observed included older pull down projection screens (Figure 29), presumably for use with either older overhead projectors or standard throw projectors on carts.