Building Conditions Investigations Report

DRAFT

Ralph M. T. Johnson Elementary School:
500 Whittlesey Drive
Bethel, CT

About 520 Students currently enrolled.
Occupancy 725 (owner's Report)
Grade Levels 4 and 5.
58,475 Square Feet total gross area. (Per AIA standard calculation methods, to outside of outside walls, except not including lower level mechanical spaces.)
57,000 Square Feet total gross area. (Per BSF standards, to inside surface of outside walls.)
Per Owners report: "Constructed 1971 and updated in 1979".
School Dept. Website states 'opened in 1980. Original bid drawings are dated April 1978.

Utilities / Services:
Oil; underground tank 10,000 gallons installed in 2005.
No Gas
1200 Amp electrical service
Propane exterior above-ground tanks serve kitchen.
Public sewer system.

Site:
Drives and Parking:

- Bus loading and drop-off drive in front (south side of building).
- Same drive is used by private automobiles for parent pick-up and drop-off; separated from busses by plastic (sand filled) 'Jersey' barriers.
- Visitor parking is located along the sides of the loop drive at front of building, and general parking in the adjacent lot; a total of 86 spaces. (If 18 spaces in the lot further along Whittlesey Drive are included, the total becomes 104)
  Accessible parking is located at the center island auto loop area; only 2 spaces.
- Overall parking capacity is adequate, with consideration of the additional parking in a lot to the southeast of the building, along the main road. The east and west lots are perceived to be far away from the building, and so people tend to park illegally along the entranceway drives, rather than park in the more remote spaces.
- All pavement markings including parking space striping, are faded and in poor condition.
- There is no continuous paved fire-lane around the entire building, for fire-fighting apparatus. Fences obstruct fire-fighting access.
- Drives in general are in fair to poor condition. Curbing is also in fair to poor condition; with asphalt curbs in very poor condition in some areas, and concrete curbing along the drop-off lane in fair condition.
- Accessible parking is not in compliance with regulatory requirements. There are only two spaces, and either 4 or 5 are required, depending on how the available total number of spaces is counted. There is no designated 'van accessible' space, and signage and striping of spaces does not meet current code requirements.

Walks, ramps and steps:

- Walks. Are in fair to poor condition, with worn and uneven paving.
- Ramps. None.
- Steps. No exterior sets of stairs at this school.
- Handrails. No stairs, not applicable.
- Accessible Route. The route from the accessible parking to the curb-cut in front of the school, is blocked by the temporary plastic Jersey barriers, and lacks other features required for code compliance. There is no accessible path of travel from the building, to the play area or the play fields.

Plantings etc.:

- Shrubs and similar plantings are minimal, but are in good condition at the front entry area.
- Grass lawn areas are in generally fair to good condition.

Drainage:

- Roof drainage is via internal drains inside the building, to underground drainage system.
- Landscaped area drainage is generally OK, except at the southeast side of the building where the ground slopes towards the building and drainage is poor.
- Roadways drain adequately with good slope, but deteriorated paving is subject to erosion and accelerating deterioration due to surface water run-off.

Recreation

- Play fields are located to the North and Northwest sides of the building. General condition is fair. The asphalt surfaced basketball play area to the far North (rear of the building) is in fair condition, but the backboards are rusted and in very poor condition.

Interior Rooms and Finishes:

Corridor Walls: Painted Concrete Masonry Units (CMU) on both levels, in good condition.

Classroom Walls: Painted CMU, in good condition.

Toilet rooms: 2" x 2" ceramic mosaic floor tiles in good condition. Painted CMY walls in good condition; some painted finishes need to be updated. Metal toilet partitions are in poor condition and should be replaced. 1x1 acoustical tile ceilings are in poor condition.

Ceilings: At corridors are 2' x 2' suspended acoustical tile in fair condition. Some tiles have been replaced and some show minor damage. At classrooms, ceilings are 2' x 4' suspended acoustical tile in fair to poor condition, with some sagging of panels. All classrooms have ceiling-mounted residential-style fans, two per room generally. The cafeteria ceiling is also 2 x 4 in fair condition. There is no ceiling in the gymnasium. The kitchen ceiling is an appropriate vinyl-faced gypsum suspended panel ceiling, in good condition.

Floors: Terrazzo in corridors, in good condition. Vinyl composition tile (VCT) in classrooms in good condition. There is a large area of damaged floor tile in one classroom on the first floor level.

Specialty floors: The cafetorium floor is 12" VCT in good condition. The kitchen floor is 3" square quarry tile, in good condition. The Gymnasium floor is a sheet resilient vinyl composition product, in poor condition. The carpet in the main office area is in fair to good condition.

Casework / Equipment / Furnishings:

- Classroom casework in the original building is generally solid wood with clear natural finish, in good functional condition, but in poor visual condition. Sinks are non accessible to disabled persons.
- Teaching boards are original green chalkboards, with while marker board overlays.

- Science classroom does not have lab-style casework, but has moveable tables with solid surface tops, in good serviceable condition.
- Music storage casework is open wood shelving, in good serviceable condition.
- Art Classroom equipment and storage is provided in metal painted cabinets with plastic laminate counters. These areas are non-accessible to persons with disabilities. There are concerns about the venting of the Kiln, with a disconnected 4" round flexible duct that appears to be intended to vent directly through an opening in the exterior masonry wall, but which is now disconnected. The kiln area is not separated from the rest of the classroom.
- Gym equipment is fair. The composite floor material is worn and the lines are faded.
- Kitchen equipment is in good condition, with a new serving line installed earlier this summer.
- There are no student lockers in the corridors.

Elevators / Lifts:

- The elevator is centrally located in the classroom wing. The town currently has a cost proposal for reconstruction of the elevator at a new location in the building, which is necessary because the shaft size at this location cannot be modified to accept a larger cab. The operating controls do not meet current codes for accessibility.
- The stage in the cafetorium has no lift, and is not accessible to persons with mobility impairments.

General Life-Safety / Code Compliance Issues:

- No known open citations issued by local code enforcement officials.
- Fire alarm system is in good condition, but additional notification devices are needed for full coverage in accordance with current regulations.
- Exit doors are in good condition with appropriate hardware and all doors operated during our investigation were noted to operate freely.
- Guardrails at stairs have large openings, and do not meet current code requirements.
- See engineer's report paragraphs for additional information, including more information on alarms, exit signs, and emergency lighting.
- Owner reports traffic flow and parking issues at pick-up and drop-off times of the day as a safety concern that requires close monitoring. Pick-up is reported to be more difficult than drop-off, as cars tend to queue up and interfere with bus traffic. This is particularly problematic during rainy and snowy weather.
- Lack of sidewalks for walkers to approach the school is noted as a safety concern, particularly during the winter when pedestrians are forced to walk in roadways. The walkway that heads towards the Rockwell school is discontinuous. There is no sidewalk at the center island parking spaces leading towards the building, and no sidewalk along the east side of the east entrance roadway, towards the Middle School.
- Uneven paving on walkways should be replaced.
- Site lighting is provided by building mounted wall-packs. Lighting of parking areas is minimal to none.
- See paragraph on accessibility.

Accessibility:

- No known citations or formal complaints filed.
- Building does not meet currently acceptable standards for accessibility, in general.

Accessible Route (site):

- The main front entrance is intended to be the designated accessible entrance to the building, and has an auto door opener. But there is a large gap in the concrete paving in front that forms a 'barrier' to access, and directional signage is needed to comply with regulations. The rear door directly opposite the main entrance also appears to be intended to be accessible (for access to rear play areas, etc.,) but has a 1" lip at the threshold which is a barrier.
- Most exits from the building have one or more steps, making the exits inaccessible to persons with mobility impairment. The current codes require that at least 50% of all exists are able to be used by persons in wheelchairs.
- The walkway to the main play fields, from the school, is non-accessible, due to excessive slope without ramps, and due to uneven paving. There is no path to the play structure.

Building Interior (accessibility):

- Classroom (and other spaces) entryway doors do not meet accessibility requirements; insufficient clearance on the latch side of the door is a typical condition.
- Door hardware is generally non-compliant; most doors have 'knob' hardware which cannot be operated with a closed fist and in a single motion. 'Lever' style hardware is required.
- Door widths are too narrow in many instances, including to toilet rooms and at the top of the main stairs (the double doors; each leaf is required to be at least 3' wide; these double doors are 5' overall, with each leaf only 2'-6").
- Steps to stage; no ramp or lift.
- Drinking fountains at the main corridor and the gymnasium do not meet current access requirement. In planning for compliance, it should be remembers that where low drinking fountains are provided, bi-level higher units should also be provided for persons with bending difficulties. As a temporary measure, some degree of accessibility can be provided by a permanently attached cup dispenser.
- Sinks in the art classroom are non-accessible.
- The fire alarm system does not fully meet current access code requirements: additional visual alarm indicators (for those with hearing impairments) are required in some spaces.
- There is no fully accessible toilet room in the building. Some degree of accessibility is provided in some toilet rooms, but none are fully compliant.

Hazardous Materials:

A review of existing records, and 'walk-through' review of the existing building, was conducted by Fuss & O'Neill EnvrioScience, LLC. See attached report. Findings are summarized here:

Asbestos:

Mold:.

Radon:.

PCB's in Caulking and Glazing Compounds: Due to ages of the earlier portions of the building indicate that this material could be present. Testing and positive results triggers automatic (expensive) mitigation. No testing was done as part of this current study, but the issue is noted and should be resolved early in the planning process of any future possible renovation project that might disturb these areas of the building.

Exterior:

Walls: Primarily split-face stack-bond concrete masonry in good condition, with aluminum windows. The CMU face block appears to have moved differentially at some of the corners of the building, opening up cracks along the vertical face of the adjoining wall.
There is a general need to replace sealant in masonry expansion joints, which appears to be aging and brittle.

Doors: All generally in good condition. Painted metal (steel) doors in steel frames. Operation verified to be OK.

Windows: Sliding aluminum with 3/8" insulated glass, in fair condition. Windows have screens, some in poor condition. There are no windows or other glazing in the upper walls of the gymnasium for daylighting.

Roof: The existing roof on the building is of the same type as the roof on the Rockwell School. Installation of this roof also dates to approximately 1997, now 14 years old. The roof is in poor condition overall.
The pitch of the roofs appears to be less than 1/8" per foot in some areas. This does not meet current CT requirements of minimum 1/2" per foot pitch for new roofs. Observations on the roof indicated multiple attempts to patch leaks, with large areas having new cap sheets installed by the roofing maintenance contractor.
The granular surface of the cap sheets has deteriorated, and is collecting at the low spots on the roof. This granular material is intended to protect the asphaltic cap sheets from cracking under the stress of weathering action of the elements over time.

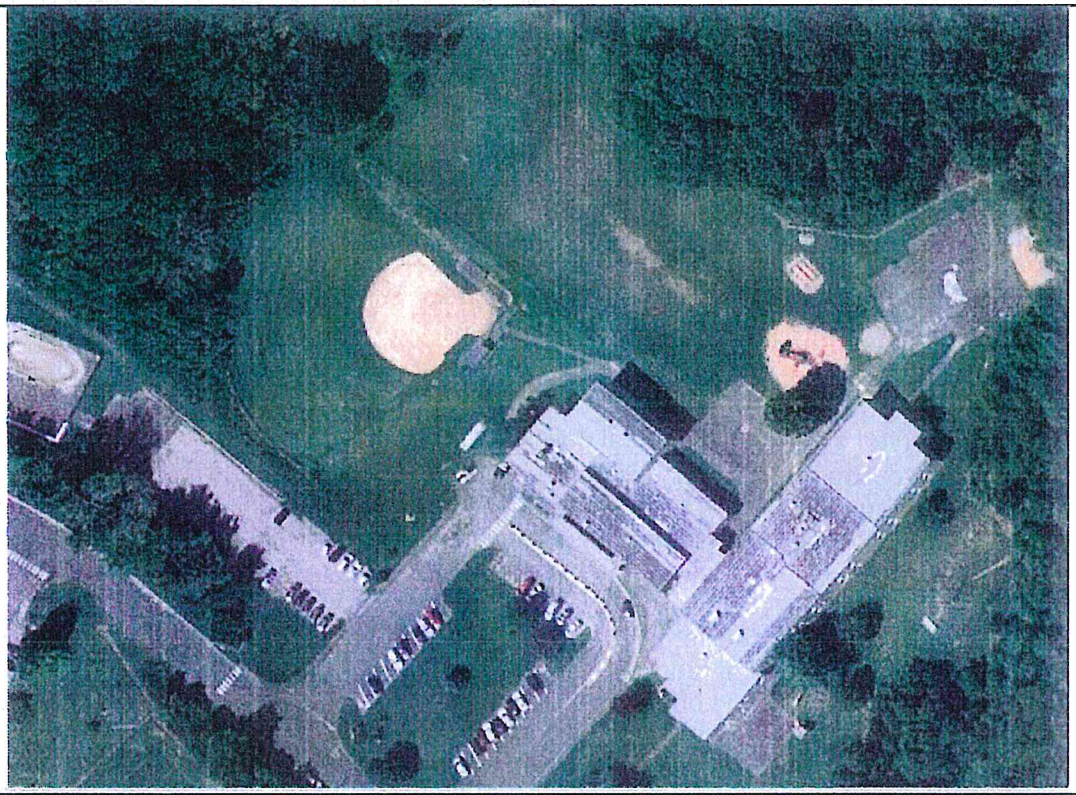
Pitched roofs: None.

Structure:

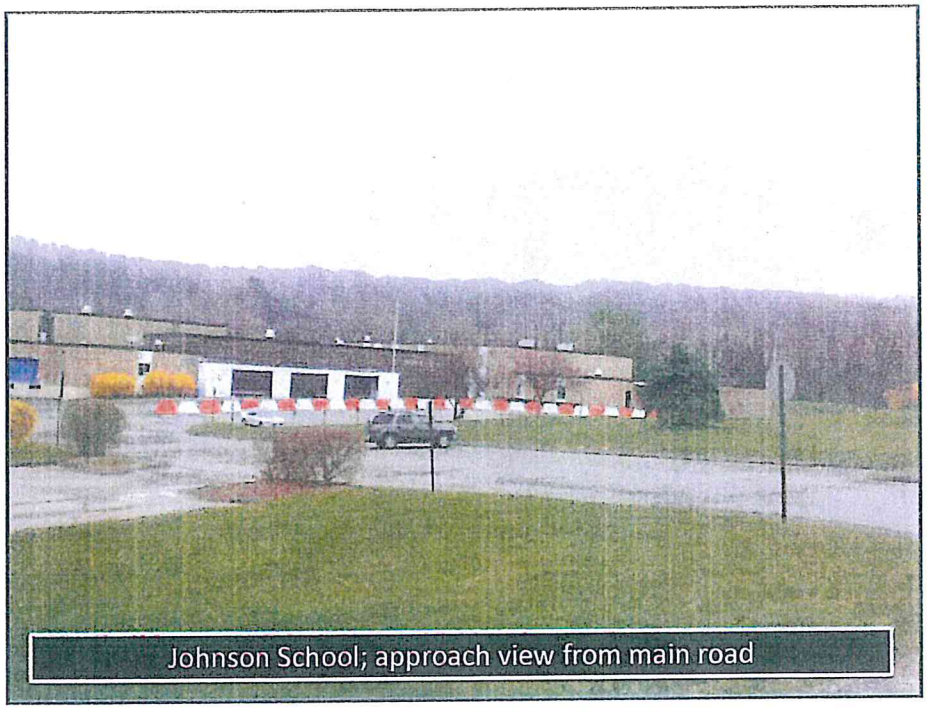
- No observed significant structural deficiencies.
- The foundation of the building is poured concrete. Minor 'hairline' cracking of the concrete foundation walls noted in two locations; does not appear to be a significant issue. One location has hairline 'step' cracking in the CMY above.

Other General Issues:

- Although maintenance over time has been good, limited resources have created an overall need for general renovations, particularly with regard to Mechanical and Electrical systems of the building.
- The general impression of the building is not untypical for older CT schools located in similar communities with limited maintenance funding: a generally aging facility in fair condition, with some specific deficiencies that need correction (such as roofing), and with a generally poor level of accessibility for the disabled.
- The cafetorium would need significant work to make the stage accessible, and to support small theatrical productions with appropriate rigging, lighting and sound.
- The gymnasium is undersized for today's sports programs and there is no space for spectator seating.
- General temperature control issues are a significant problem; both overheating and under-heating of spaces are reported at various times of the year. See HVAC issue of this report for additional information.

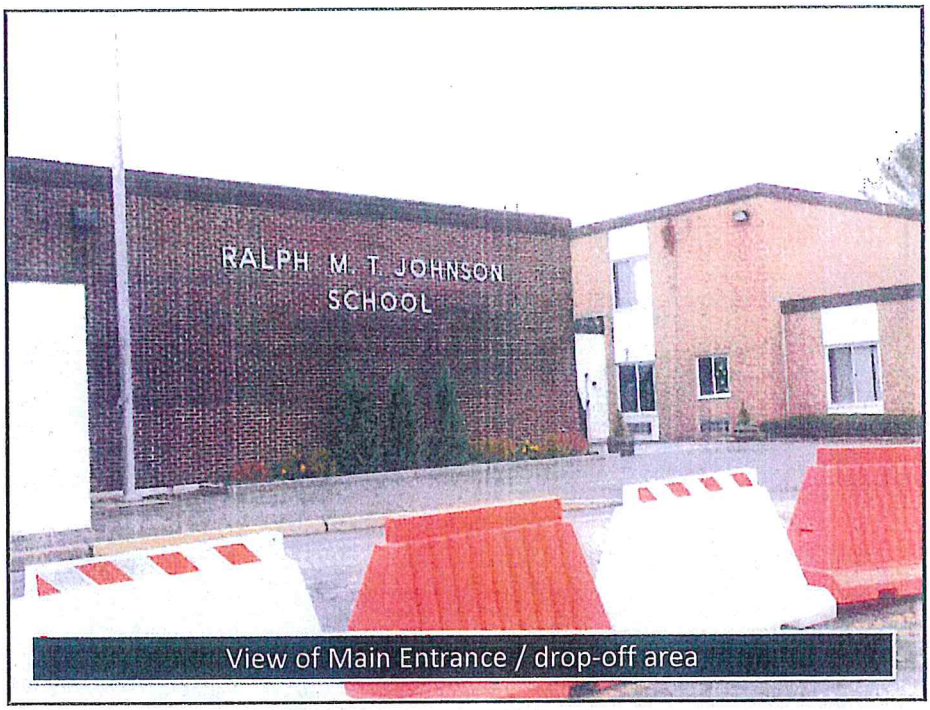


Aerial Photograph of Johnson School

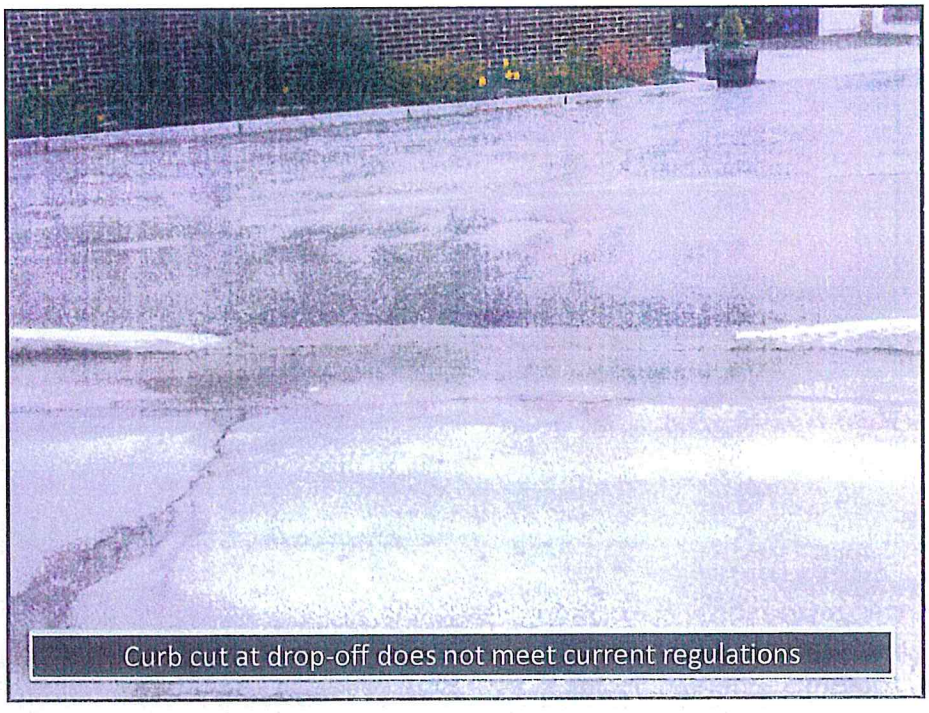


Johnson School; approach view from main road

Entry drive with temporary barriers for bus/car separation

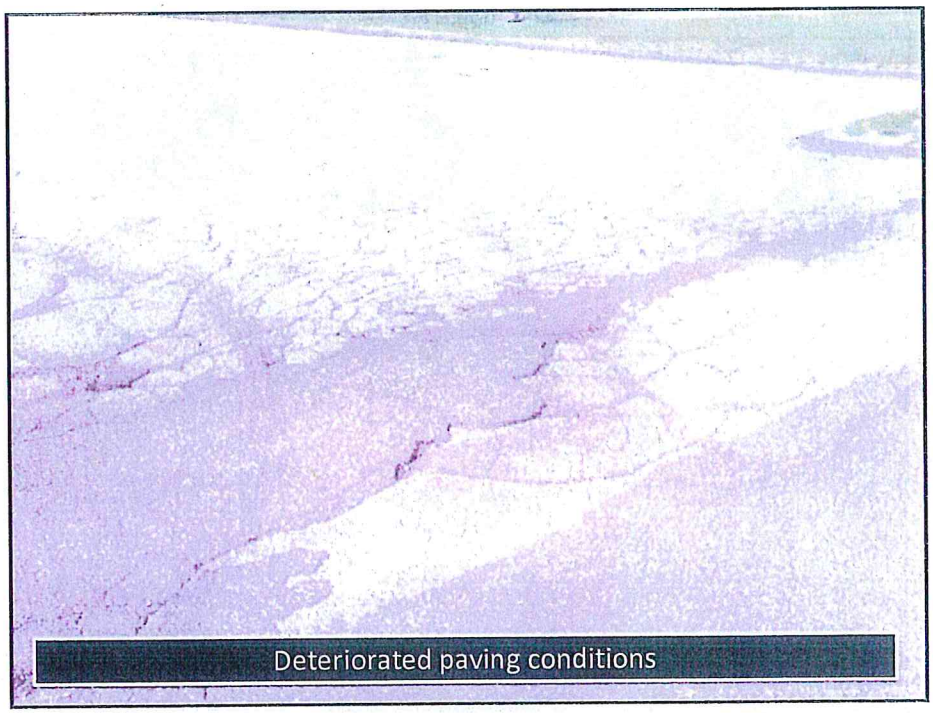


View of Main Entrance / drop-off area

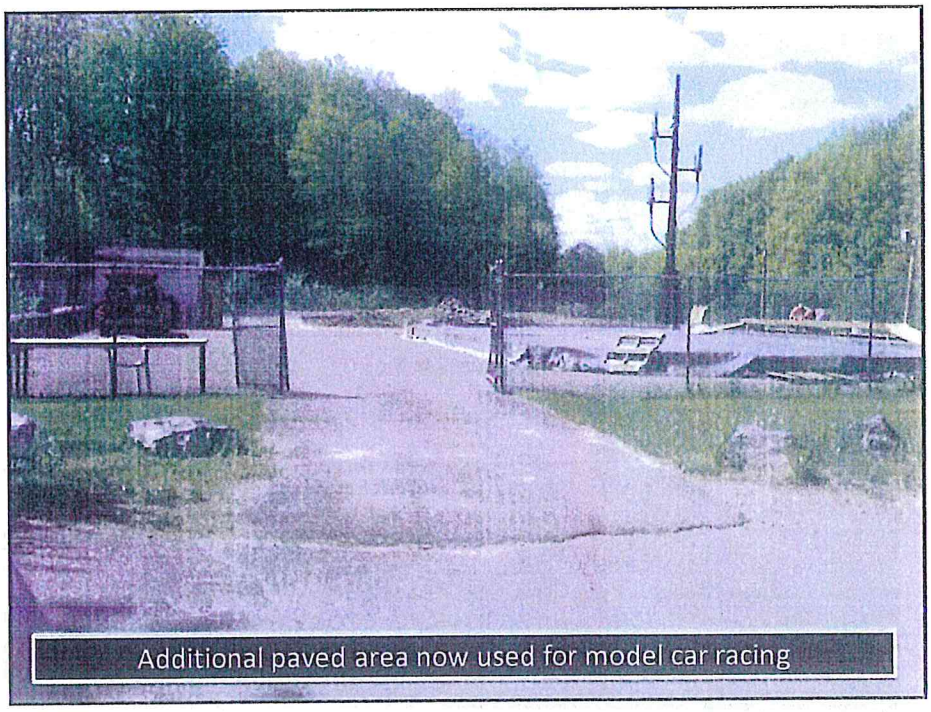

Curb cut at drop-off does not meet current regulations

Accessible parking; faded striping and signs do not meet code.

Faded striping and poor paving conditions at main parking area



Deteriorated paving conditions

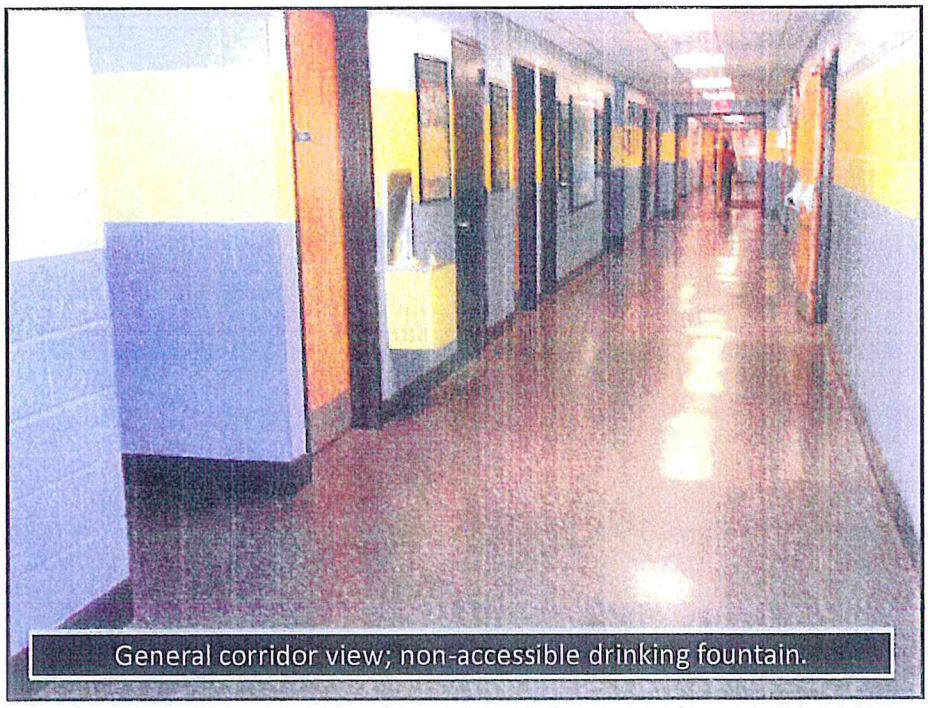


Additional paved area now used for model car racing

Broken asphalt curbing on entry drive

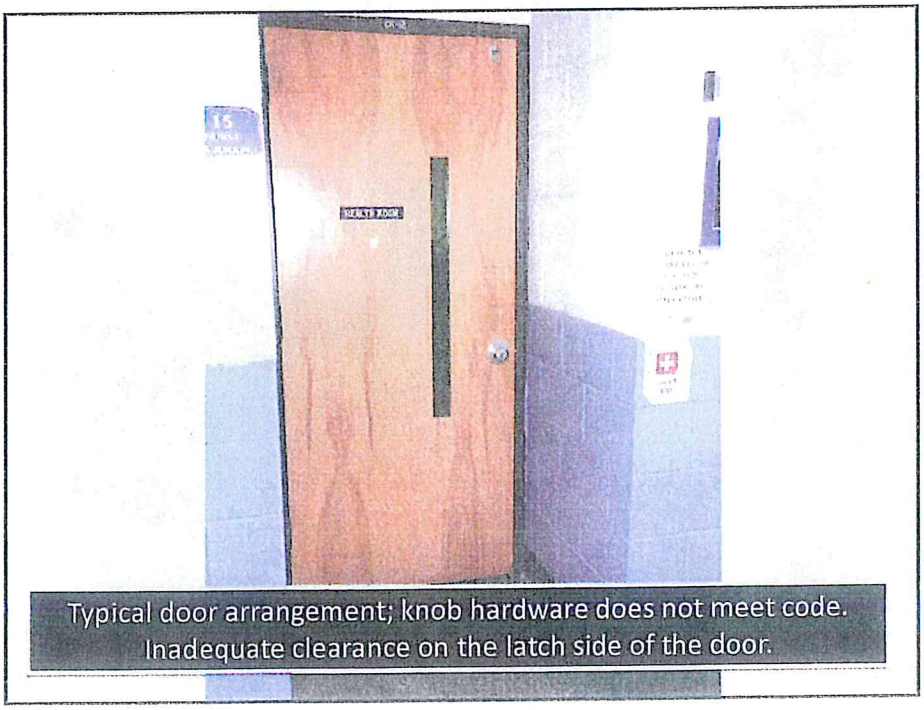
View of exit drive with parking and poor paving/curbs

Interior corridor terrazzo floors are in good condition



General corridor view; non-accessible drinking fountain.

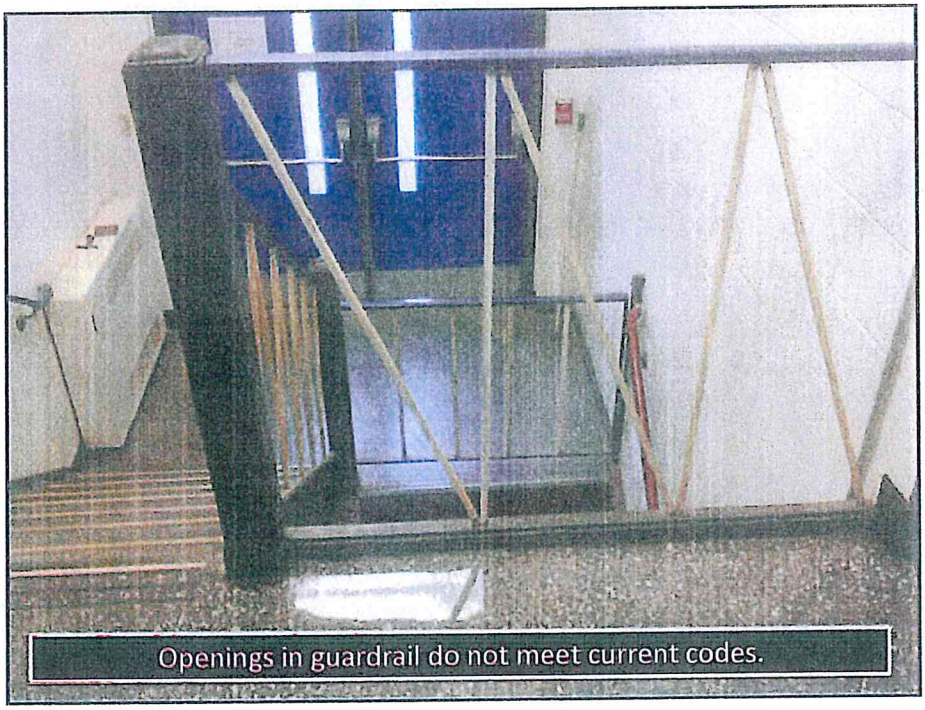
Corridor view; classroom wing. Painted CMU walls in good condition



Typical door arrangement; knob hardware does not meet code. Inadequate clearance on the latch side of the door.

Gymnasium is in good condition, but undersized.

Gym showers used for storage.



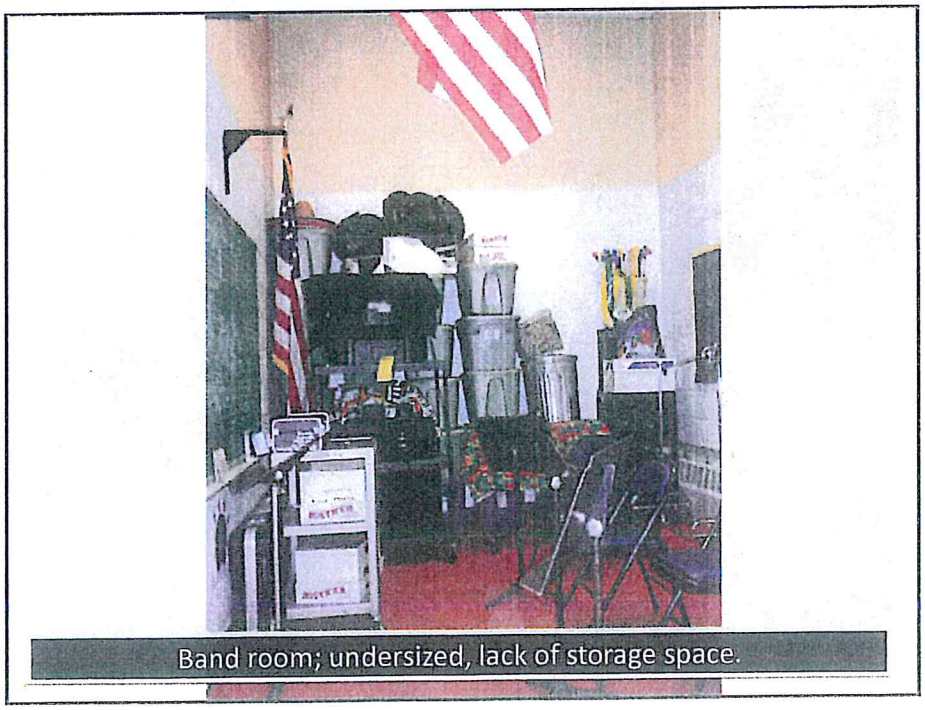
Openings in guardrail do not meet current codes.

Non-accessible drinking fountain in main corridor.

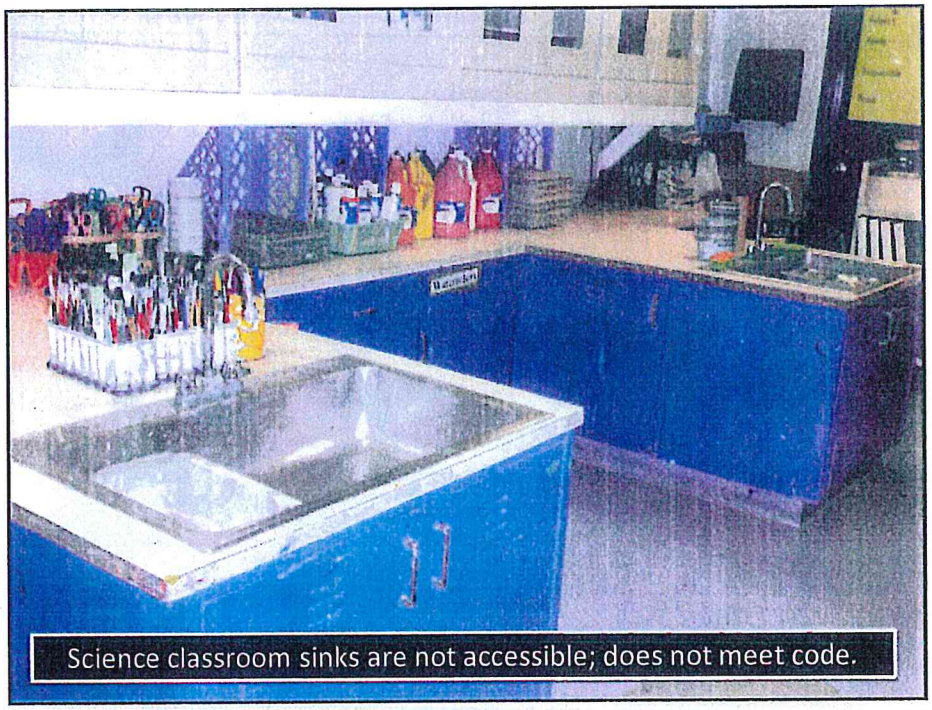
Cafeteria finishes in good condition; noisy air-handling equipment.

New serving line in Kitchen.

Kitchen exhaust hood with fire suppression, and ranges.



Band room; undersized, lack of storage space.



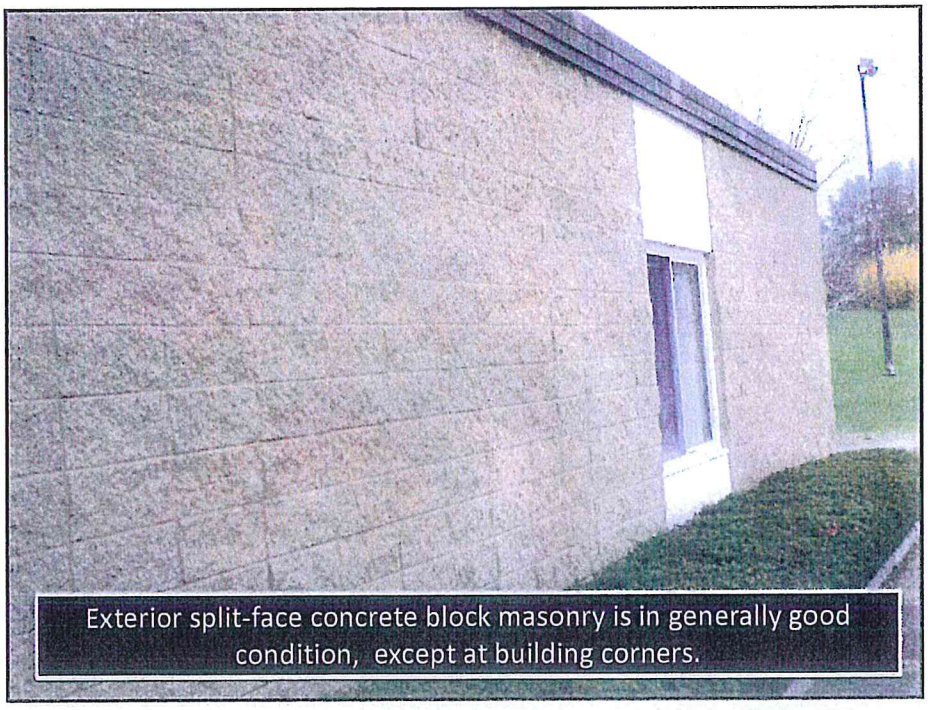
Science classroom sinks are not accessible; does not meet code.

Non-accessible toilet fixtures; does not meet codes.

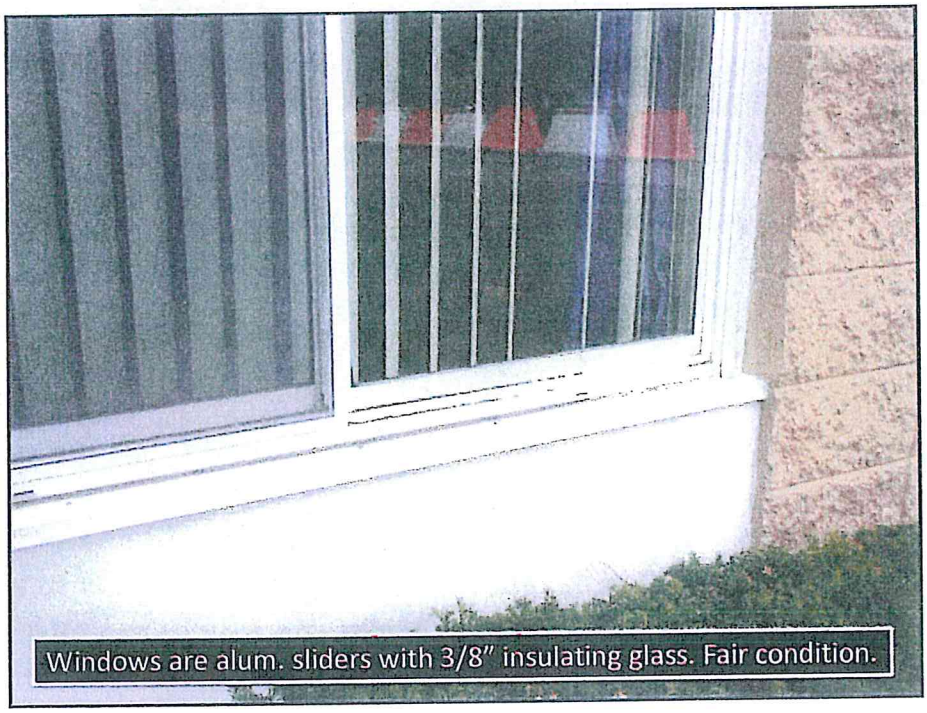
Non-accessible boys toilet room. Toilet partitions in poor condition.

Grab bar arrangement does not meet current regulations.

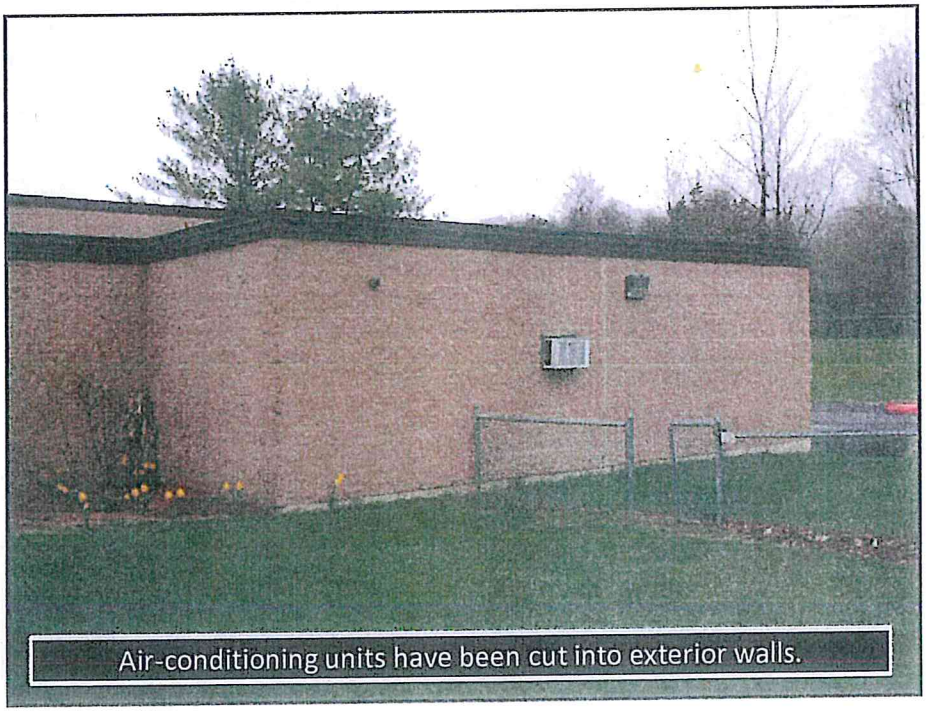
Electrical panels open onto under-supervised public corridor area.



Exterior split-face concrete block masonry is in generally good condition, except at building corners.

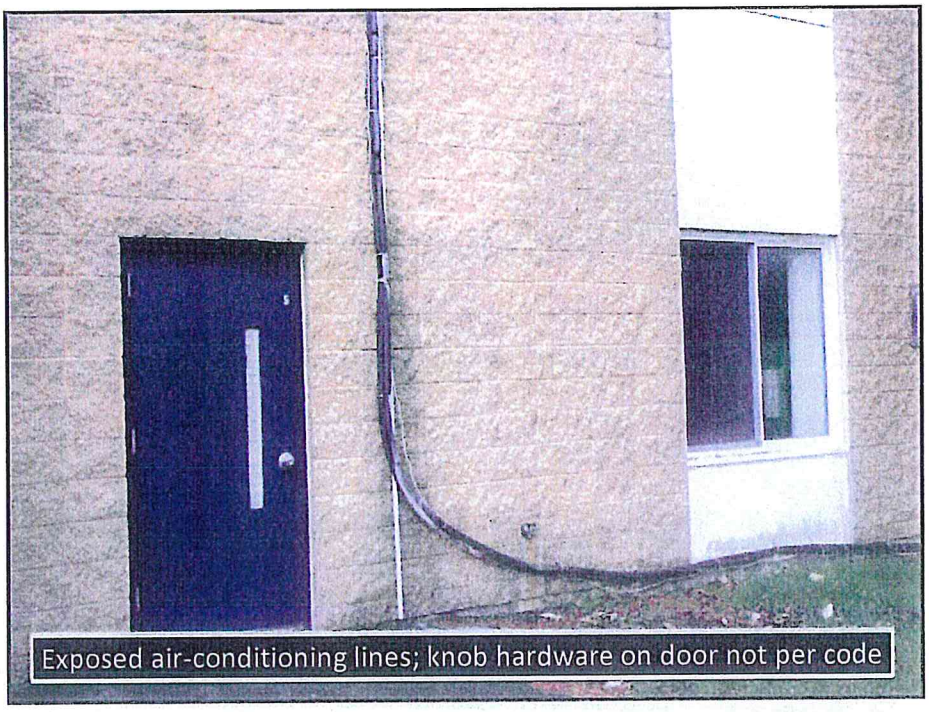


Windows are alum. sliders with 3/8" insulating glass. Fair condition.



Air-conditioning units have been cut into exterior walls.

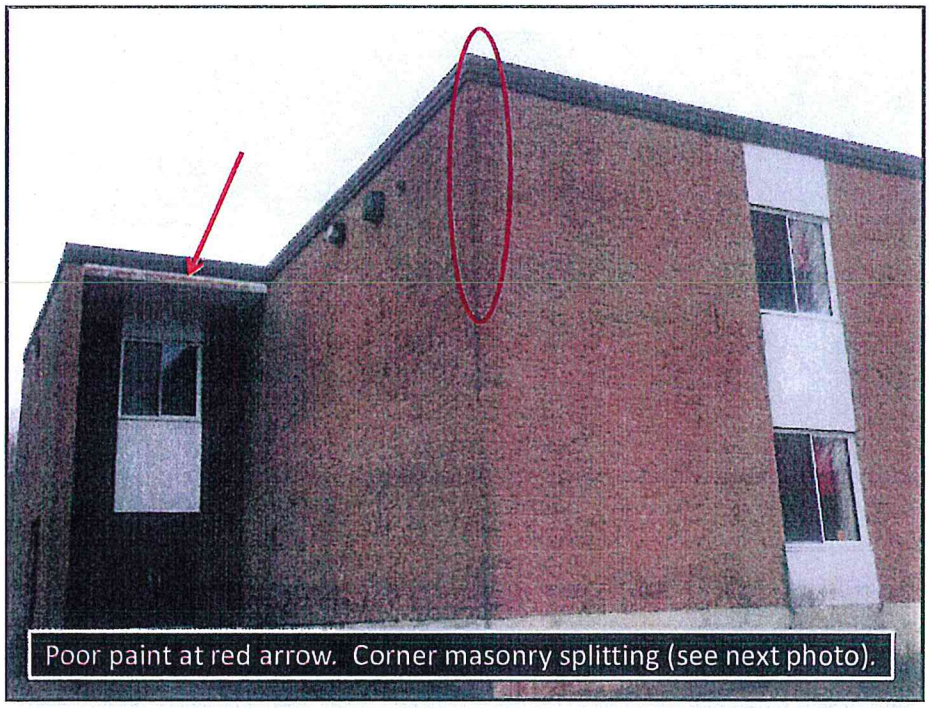
Play equipment in very poor condition.



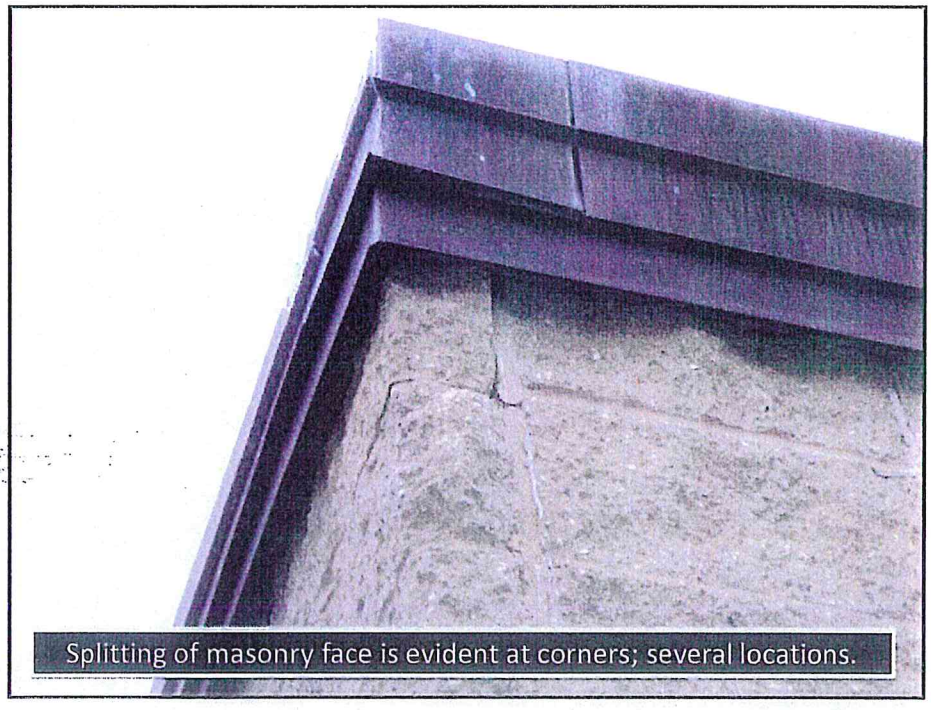
Exposed air-conditioning lines; knob hardware on door not per code

Damaged stucco finish at a few areas above and below windows

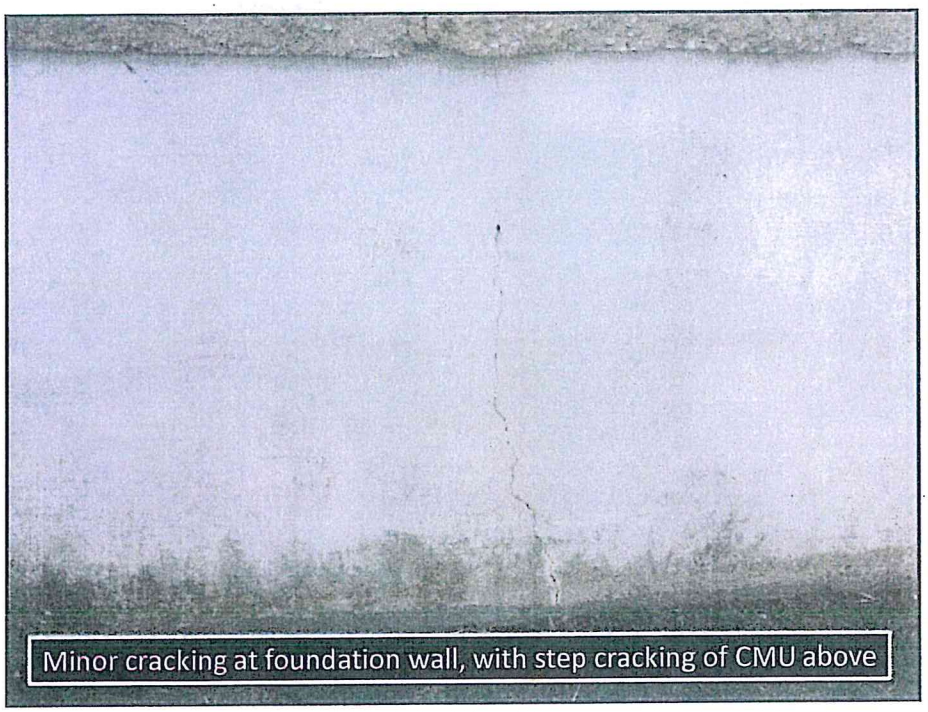
No accessible path for disabled children to play equipment.



Poor paint at red arrow. Corner masonry splitting (see next photo).

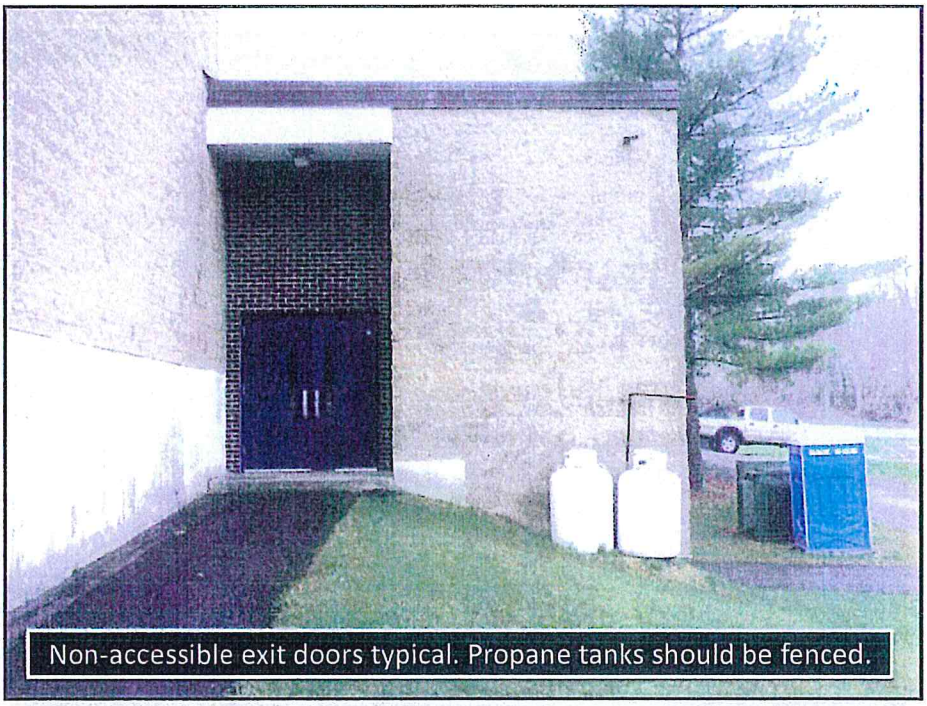


Splitting of masonry face is evident at corners; several locations.



Minor cracking at foundation wall, with step cracking of CMU above

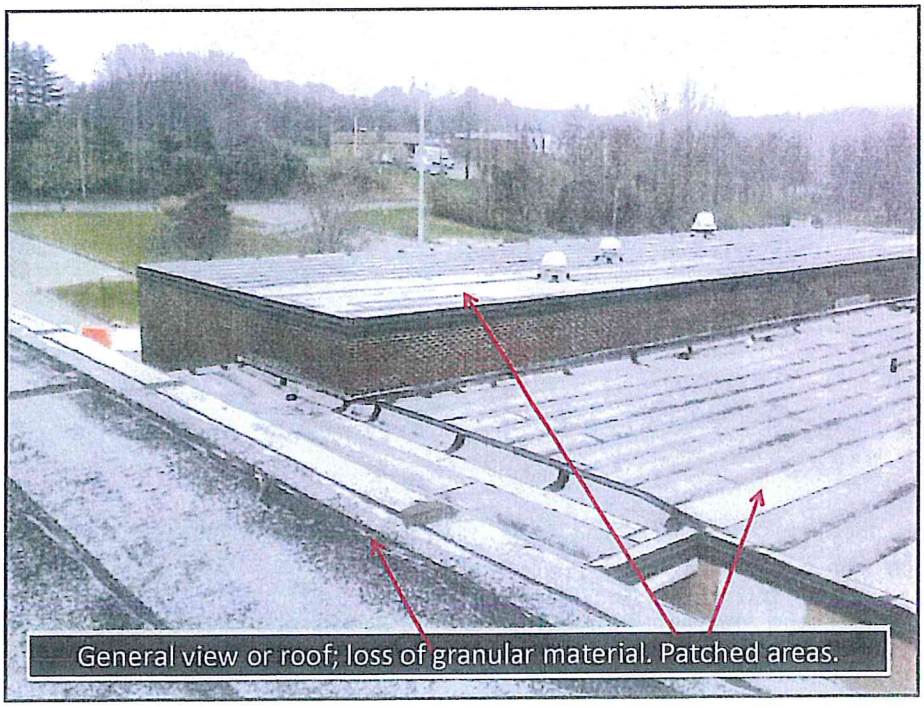
Step crack at CMU extends for several courses of block. Minor.



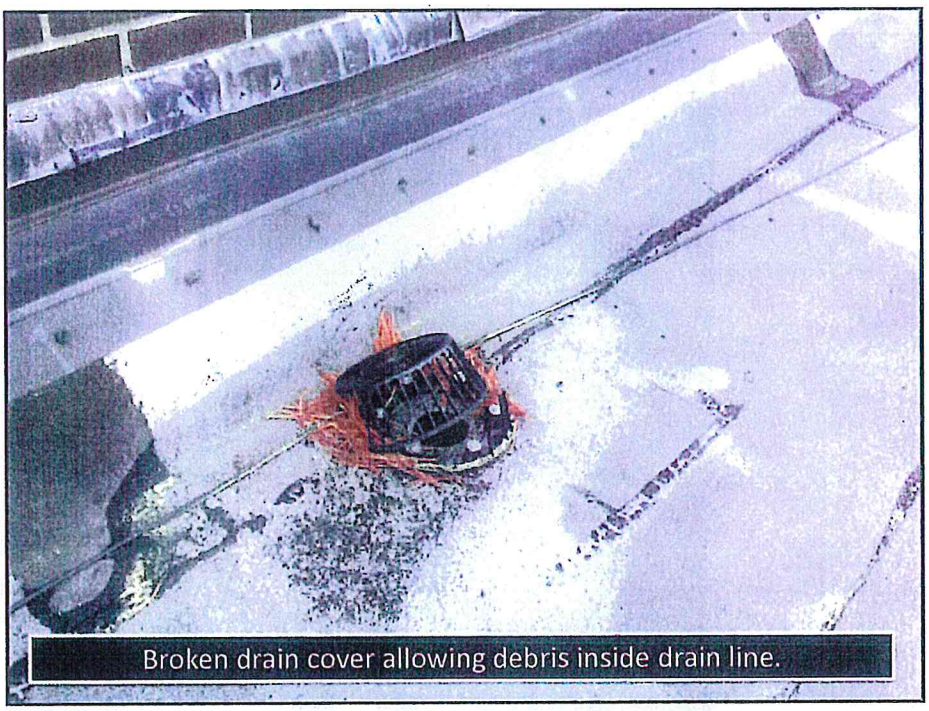
Non-accessible exit doors typical. Propane tanks should be fenced.

Long propane line subject to vandalism. Poor paint on service door.

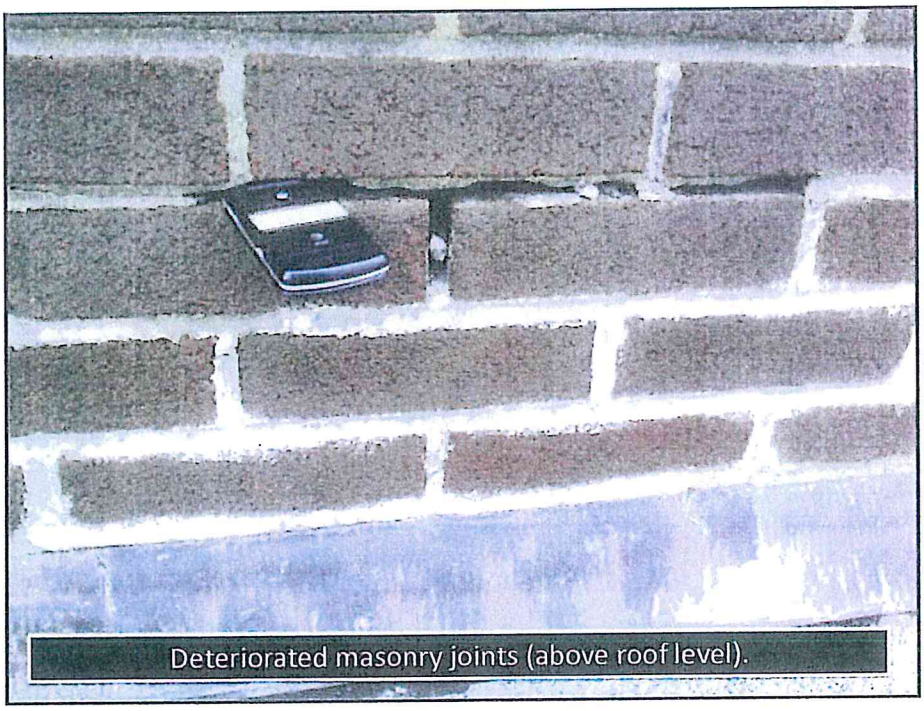
Exposed wiring and open conduit.



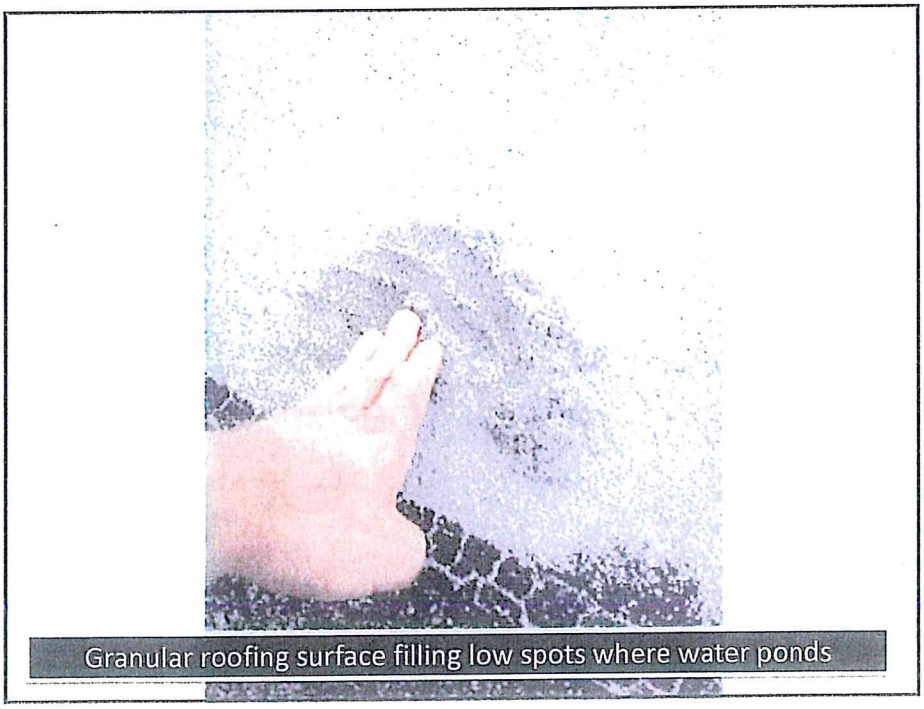
General view or roof; loss of granular material. Patched areas.


Broken drain cover allowing debris inside drain line.


Split and bent counter-flashing. Deteriorated masonry joints.



Deteriorated masonry joints (above roof level).



Granular roofing surface filling low spots where water ponds

Mechanical and Electrical Systems
Existing Conditions Narrative

Ralph M. T. Johnson School
Bethel, Connecticut

June 27, 2011

Prepared By
Consulting Engineering Services, Inc.
811 Middle Street, Middletown, Connecticut 06457
CES Project No. 2011079.00

APPLICABLE CODES AND STANDARDS

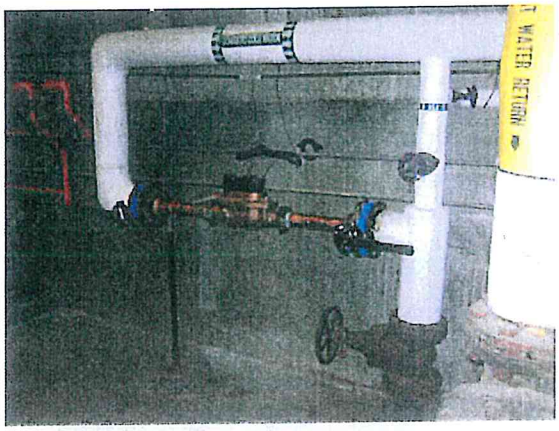
The mechanical, plumbing, fire protection and electrical power, interior lighting, and fire alarm systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements, including the Bureau of School Facilities.

1. 2005 Connecticut State Building Code
2. 2005 Connecticut State Fire Safety Code
3. 2003 International Building Code(IBC)
4. 2003 International Energy Conservation Code
5. 2005 National Electrical Code, NFPA 70 (NEC)
6. Illuminating Engineering Society Lighting Handbook (IESNA), 9th Edition
7. ASHRAE 90.1
8. State of Connecticut High Performance Building Standards

PLUMBING NARRATIVE

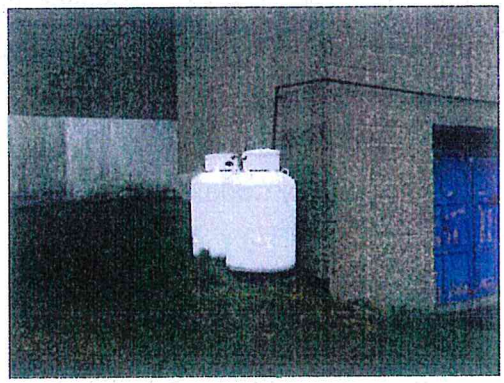
PLUMBING UTILITIES

1. Domestic Water:
   a. Existing Domestic Water Service: The existing building is currently served by a 2 ½-inch domestic water service. The domestic water service equipment includes a 2 ½-inch water meter and isolation valves which have recently been replaced. This water service currently serves all of the Schools domestic water needs and has high pressure. The custodian has adjusted within the building to accommodate the building needs. The water distribution system is original to the building.



2. Natural Gas:
   a. Existing Natural Gas Service: There is currently no natural gas service to the building.
3. Propane Gas:

a. There are existing 100lb propane tanks that serve the in the kitchen. These tanks are located on the exterior of the building. Additional protection, such as fencing, should be installed.



4. Sanitary:
   a. Existing Sanitary Service: The School's sanitary sewer system provides sanitary waste drainage for plumbing fixtures located throughout the School. The piping material above grade is primarily cast iron. The Plumbing fixtures drain to buried sanitary waste piping to the buildings exterior and to the municipal sewer system. The sanitary system is original to the facility. Condition appears to be fair with no reported problems.
5. Storm:
   a. Existing Storm Service: The storm piping is primarily cast iron with roof drains that drain to the municipal storm water system. The roof drains are in good condition however, there are a number of the drains that are missing the dome strainers. These dome strainers should be replaced.
   b. There are no reports of problems with the storm water piping below grade.

PLUMBING FIXTURES AND SPECIALTIES

1. Existing plumbing fixtures are as follows:[3]
   - Water closets are floor mounted; flush valve, vitreous china. These fixtures are non-water conserving type in fair condition. Most of these fixtures are non-ADA compliant, even with the rails installed.

- Urinals are wall mounted, vitreous china, with flush valves. These fixtures are non-water conserving and non-ADA compliant. These fixtures are in fair condition.

- Lavatories are wall hung vitreous china. Faucets are two lever handle faucets. The lavatories are in fair condition. The faucets and drains are non-ADA compliant.

- Drinking fountains are surface mounted stainless steel units or vitreous china, non-ADA compliant. These fixtures are in fair condition.

- Stainless steel sinks with kitchen type faucets are used in various locations, such as faculty work rooms, etc. These sinks are non-ADA compliant and in fair condition.
- Classroom sinks are stainless steel sink/bubbler combination units. These units are non-ADA compliant and in fair condition.

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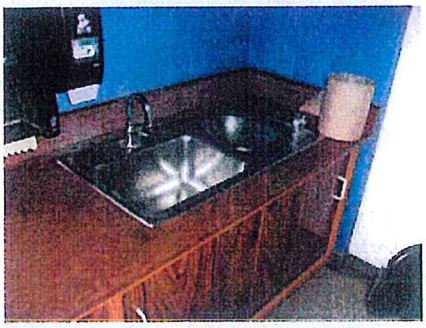


- There are showers at the school that are no longer in use. There are single stall showers and gang showers. These areas are currently used for storage.

DOMESTIC HOT WATER SYSTEMS

1. Existing Domestic Hot Water System: The Schools domestic hot water is generated by a single, Burnham Model MPO-1Q oil fired boiler. This equipment is recently installed and in very good condition.

FIRE PROTECTION NARRATIVE

FIRE PROTECTION SERVICE

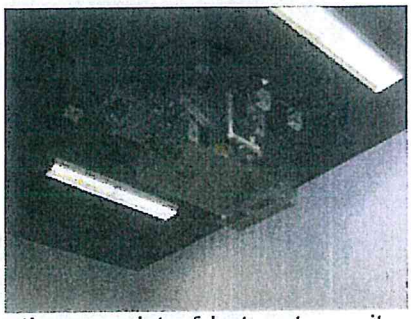
1. There is no fire protection system (sprinklers) currently at the facility.

MECHANICAL SYSTEMS:

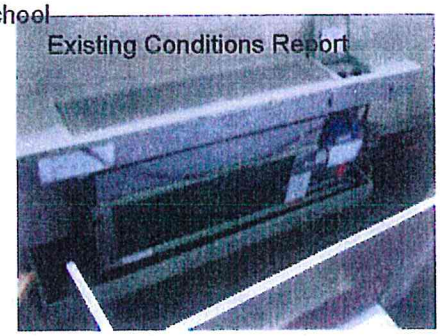
EXISTING SYSTEMS

1. The existing building is heated by (2) Burnham MPC13C oil fired hot water boilers. Boilers, pumps and hot water specialties in the boiler room were replaced in 2011 and are in very good condition.

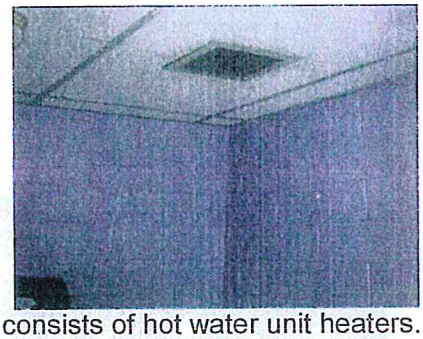
2. The present Heating and Ventilating system consist of hot water finned tube radiation, hot water convectors, unit ventilators, window unit air conditioning units and exhaust systems.
3. The Gymnasium consists of air-handling units with hot water heating coils with fresh air intake louvers and roof mounted exhaust fans for ventilation. This equipment is original to the facility and in fair condition.
4. Lobby heating consists of hot water convectors and unit ventilators.



5. Administrative offices heating consist of hot water unit ventilators with air conditioning supplied by individual window units. There have been reported problems with the unit ventilators, such as water leaks, etc. This equipment is original to the facility.

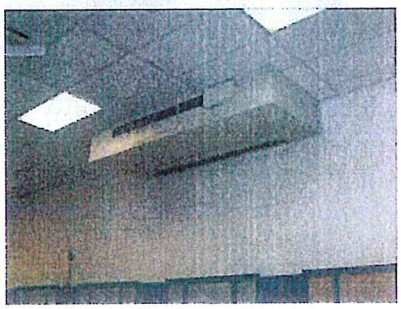


Ventilation for other interior offices consists of a single exhaust grille located at the ceiling.

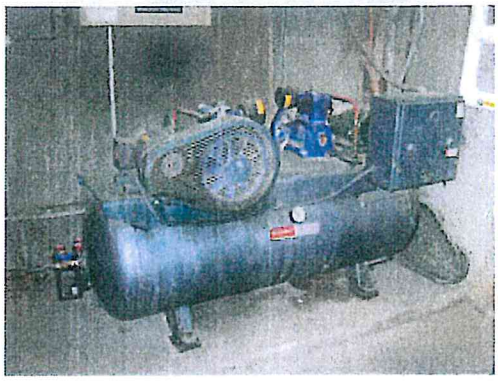


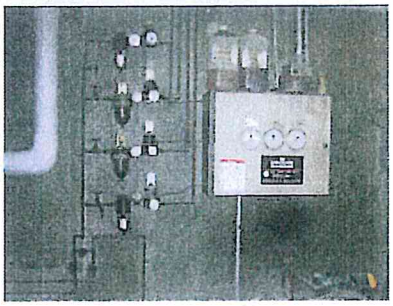
6. General storage heating consists of hot water unit heaters.
7. 1st and 2nd floor Classroom heating and ventilating systems consist of finned tube radiation and general exhaust systems.
8. Media Center consists of roof top mounted air conditioning units with hot water coils for heating. Individual wall mounted ductless split air conditioning systems have been added as the demand for air conditioning has increased.

9. Kitchen/Cafeteria heating consists of hot water unit ventilators with fresh air intake louvers. Ventilation consists of roof mounted exhaust fans.



10. The existing temperature controls in the school are pneumatic. The temperature control system air compressor is located near the loading dock and includes a dryer. The building also has an Invensys control system with a graphical interface that is web based. There have been numerous problems reported with the pneumatic control system. During the site visit, air leaks were apparent throughout the building.





11. With the exception of the boilers, domestic water heaters, and other equipment within the boiler room, the existing HVAC equipment is original to the facility and in poor condition.

ELECTRICAL NARRATIVE

EXISTING SYSTEMS

1. The building is served by a single electrical service rated 1,200amperes, 208Y/120volts, 3-phase, 4-wire and is located near the loading dock. This service equipment consists of a utility company transformer, 1,200amp main disconnect switch, distribution section and metering per utility company requirements. The service equipment is original to the building and is in fair condition.

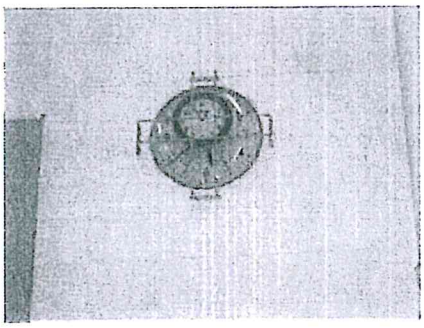
2. There are a number of electrical panels located throughout the facility. These panelboards are original to the facility. The condition of these panelboards is fair. The majority of the panelboards do not have spare circuit breakers available for new circuits to be added, or have space to add new circuit breakers.
3. The lighting throughout the facility consists primarily of recessed acrylic lensed fluorescent fixtures in the classrooms and corridors. The lighting throughout the facility has been upgraded to energy efficient lamps and ballasts through a utility company

rebate program. The lighting is in fair to good condition and the light levels are within recommended levels.

4. Site lighting is limited and consists of pole mounted flood lights. There are no exterior emergency lights that are required to guide people to the public way. The lighting does not appear to be adequate for current codes.
5. The fire alarm system is manufactured by FCI/Silent Knight. The system includes manual pull stations, horn strobes, and ceiling mounted smoke of heat detectors. This system is in good condition, however, additional devices are required to meet current ADA requirements.

6. The emergency lighting needs are handled by older 2-head emergency lighting units with integral battery packs. These units are in fair condition are in need of replacement.
7. Exit signs are LED or compact fluorescent type with plastic or metal housings. This equipment is in fair condition.

8. The existing master clock system is a Simplex system. This system is not fully operational and individual battery operated clocks have been installed in many locations.



9. There are a number of data outlets, computers, etc. that have been installed at the facility. The quantity of available outlets does not appear to be sufficient for current school needs.

MEP SYSTEMS CONCLUSION

In general, the heating plant in this building was updated in 2011. The systems are original to the building and are 40+ years old, thus have met their useful life expectancy. The system components are very inefficient. The ventilation system does not meet current code requirements. If this building is kept as an educational facility, we recommend that most of the systems be replaced with new. The following capitol needs survey form highlights the major systems in need of replacement and their respective capitol costs to implement.