Existing Conditions Survey & Feasibility Study

Gates Middle School
327 First Parish Road
Scituate, MA

DRAFT

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Executive Summary

Durkee, Brown, Viveiros & Werenfels Architects (DBVW) was hired by the Town of Scituate, MA to provide architectural services for the Facility Analysis and Assessment Plan of the Gates Middle School in January of 2012. This report is comprised of three major components and includes both an Existing Conditions Survey, a Feasibility Study, and Recommendations for repair and/or reuse.

The first part of the Existing Conditions Survey was performed in January 2012 and included the original building constructed in 1917, and its early east and west wing additions from 1930. These portions of the building are known as “B” wing. The survey was expanded in July 2012 to include the remaining building components, including the gymnasium and locker room areas, as well as “A” and “C” wings built in 1952 and 1959 respectively.

Since the first part of this Existing Conditions Survey was commissioned with funds from the State of Massachusetts Historic Commission, this report will include additional information, descriptions, and references for the “B” wing portions of the building. The “A” and “C” wings were not deemed historically significant by the Town and therefore limited to condition and functional assessments only as part of this report.

Building history

Constructed in response to a growing population in the early twentieth century, the Gates School was established in the Scituate Center in 1917 to serve as the Scituate High School. Located on approximately 11 acres of the land, the original, rectangular shape, 14,500 SF school was built to accommodate 130 students. In 1930, wings were added at the east and west sides totaling 20,800 SF to provide six new classrooms and auditorium space for up to 850 people. In 1952, a large addition known as “A” wing including a library, lab space, science rooms, family sciences, art, shop, a gymnasium and locker areas was built to the east. Soon after in 1959, a one-story classroom building, dubbed “C” wing, was building on the site of the former town hall. C wing included art, music, and science rooms in addition to general classrooms.

The last facility-wide renovation was performed in 1974, prompted in part by a flood. During that renovation, the auditorium was infilled for additional classrooms and a library. Although additional repairs and alterations have taken place since 1974, the building essentially remains as configured nearly 40 years ago. Most recent repair work included masonry repairs, wood trim replacement on B wing, roof replacement on the original building, and cupola restoration.

Views of the Site

The original building constructed in 1917 with a flat roof. Currently this is the center of B wing.

The pitched roof, portico ornament, east wing, and west wings were constructed in 1930.

Project Team

Architects:

Durkee, Brown, Viveiros & Werenfels	Principal in Charge, Doug Brown, AIA
111 Chestnut Street	Project Manager, Ashley Prester, AIA, MCPPO, CEFPI
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	Code Advisor, Ed Cifune, AIA

Structural Engineer:

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M/E/P/FP Engineers:

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	Electrical, Mark Rattenbury, PE

Cost Estimators:

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Project Scope

The following scope of services is included in the project:

A. Review of the existing building documentation provided by the Town.
B. Performance of a visual inspection of the entire facilty
C. Preparation of an Existing Conditions Report that includes architectural, structural, mechanical, electrical, plumbing, fire protection and code observations. This report includes recommendations, prioritizations and associated “replace in kind” cost estimates for observed deficiencies.
D. Preparation of a Feasibility Study for a combined Community Center / Town Hall facility. The Feasibility Study includes architectural, structural, mechanical, electrical, plumbing, fire protection and code commentary for the required renovations, additions, and/or demolition, if any.
E. Prepare recommendations, prioritizations, and associated “replace in kind” cost estimate for observed deficiencies, where applicable. In addition, a cost estimate will be prepared for the feasibility study portion of work.
F. Attendance at public meetings to report on findings.
G. Advise on the recommended next steps.

The work performed by DBVW as part of this project is limited to that which is listed above and excludes services related to, hazardous materials, computer modeling, civil and site surveys, measuring or drafting of existing conditions drawings, detailed programming and enrollment projections, developing Construction Documents, and submitting MAAB requirements.

Part One – Architectural

PART ONE – EXISTING CONDITIONS

A. Exterior – Roof

Roof – A Wing

Both the gymnasium flat and low roof portions over the lobby connector have EPDM, aka “rubber” membrane roof systems. The flat roof areas have built-up roof edges and slope towards internal roof drains. Based on ponding observed, it appears that the insulation has formed low spots, often before water reaches the drain itself. The age of the roof was not evident but is assumed to match the “B” wing roof. The seams appear to have been resealed over the years but seam failures were observed in many locations, especially on the high gymnasium roof.

A wing membrane roof showing low pitch and ponding

The flashings throughout the roof assembly are extensively weathered. Corrosion and damage was observed around the roof scuttle and along the bottom of the glass block wall panels. The roof flashing was bent and malformed from the last roof installation. The flashing no longer sits flush and tight to the building. This could allow wind-driven rain to enter the substrate. Also, the transitions from the flat roof to the glass block and slope classroom roof are less than the recommended minimum dimension due to a re-roof adding insulation thickness to the lower flat roof. These low transitions may allow water infiltration from snow build-up, which might already be occurring as indicated by the multiple applications of sealant over the entire assembly.

Extensive sealant & missing pilaster at gym

The roofs over the classroom wing and connection to B wing are finished with light grey 3-tab asphalt shingles. Although the time of installation is unknown, the shingles appear to be in good condition and have some serviceable life left in them with regular preventative maintenance.

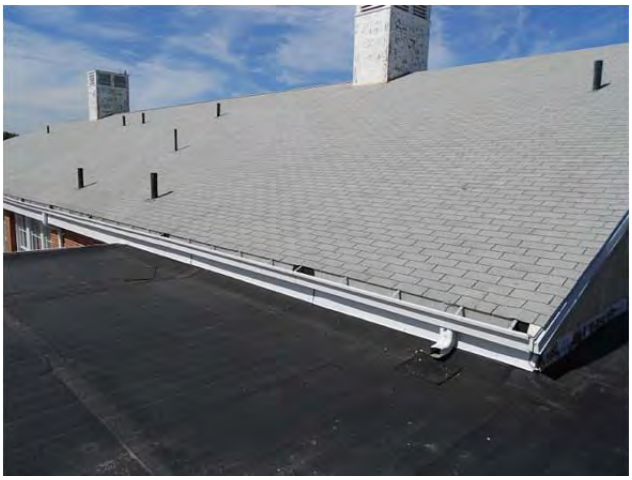
The transition from the asphalt shingle roof to the flat membrane is another area of concern. The gutter is suspended only a few inches above the flat roof. A more seamless transition would be to simply membrane the transition and allow the water to flow directly from one roof to another without the gutter, eliminating additional penetrations from attachments.

Failing roof curb and hatch adjacent to gym

The two ventilation cupolas were not renovated at the same time as the roof replacement. Although there was no evidence of recent leaks or structural deficiencies, the finishes are worn and beyond their useful life. The cupolas should be cleaned and repainted in their entirety. The flat seam copper roofs should be replaced

Extensive sealant & missing pilaster at gym

Bent flashing @ mechanical gym mechanical



A wing transition to classroom wing shingled roof

Classroom wing ventilation cupolas

Flat roof at east, south, and west of B wing.

Shed at south side of original building houses HVAC equipment

Roof – B Wing

Installed in 2007, the roof features synthetic slate shingles with snow guards. A gutter system with downspouts exists along the northern eave. An octagonal louvered cupola constructed of GFRP (glass fiber reinforced polymer), extends from the ridge and terminates in a gilded finial. Historic photos demonstrate that the original portion of the school once had a flat roof. In 1930, the roof was changed to the current pitched shape and was finished in slate shingles with copper flashings. The original cupola was of wood in the same configuration visible today. From Town records it is known that the original slate roof and wood cupola were replaced in 2007. At that time, the original gilded finial was retained, restored and reinstalled on top of the new cupola.

Coping at the flat roof with EPDM seam on top of metal coping and demonstrating past maintenance

The roof of the wings flanking the original building and a section of roofing to the south are all flat with an EPDM membrane. This roof is date stamped for 1995, indicating that it is 17 years old. Access to this roof is via a scuttle in the west wing. Additional roof features include a chimney, an elevator over-run and mechanical sheds at the south side of the original building. The flat roof has drains that lead to internal piping.

The synthetic slate roof, cupola, gutter and downspouts are in good condition. The downspouts do not connect to an underground storm water system and do not have effective splash blocks. This means that roof run-off from the pitched roof, outlets directly at the building foundation wall. At the south of the slate roof are two metal clad sheds that house equipment for the HVAC system. The flat seam copper roofing is rusted and the sidewall panels are bent.

Ponding of water on the EPDM roof on B wing

The flat EPDM roof is not in good condition. It has significant ponding at the west wing due to improper pitch towards roof drains. Also, lifting seams and deteriorated sealants in the EPDM appear widespread. Around the perimeter of the roof, there is an existing curb, and the EPDM is not installed in a manner recommended for water tightness. This curb has a metal coping on it, but the EPDM roofing runs over the top of it and terminates in a sealant joint. A more effective detail for water tightness is for the EPDM to extend underneath it. The existing sealant joint is difficult to maintain and may permit water into the masonry wall and ceiling below if it fails.

Downspout at B wing with no connection to an underground system or splash block

At other locations of the EPDM roof, there are isolated areas of wet insulation and decking, particularly near the over-run for the elevator. There are also lifted flashings around the roof of the elevator. In general, counter

Torn roof flashing at the top of the elevator shaft

Remaining original copper flashing at area near elevator where spongy insulation was noted

Corroded rooftop equipment dating back to the 1974 renovation

Corroded roof top equipment beyond its useful life

C wing roof showing missing ballast at roof edges

Roof hatch in B wing

flashings remaining from original and past roofing campaigns are beyond their life expectancies.

Roof – C Wing

The pitched roof over the classrooms is a very unorthodoxed installation of loose-laid stone ballast over a pitched membrane (EPDM) roof. Normally, ballasted roofs are left to non-coastal flat roofs. In this installation, the ballast is nearly non-existent for a width of approximately three feet along the eave. The ballast is normally present to protect the membrane from UV exposure and hold it down for better wind resistance. The missing ballast is due to removal by sliding snow, coastal winds, or by efforts to mitigate leaks.

The presence of a loose-laid ballasted roof suggests that an original or earlier roof remains beneath the current roof. The earlier roof(s) could possibly contain hazardous materials and should be tested by a licensed testing agency.

Gutters are limited to the two masonry walls along the southern end of the east and west ends. These downspouts feed into boots, assuming to a subsurface system. The gutters themselves are extensively warped, and dented. The finish of the whole system is faded and chalking.

The remainder of the roof edge consists of varying ages of painted metal and copper gravel stops. Without gutters in the areas with windows, the bottom of the building and surrounding site suffers the effects of uncontrolled water during a rain event. Evidence of this will be cited later in the Exterior Envelope – Windows section.

C wing roof edge is bent and failing in many locations

C wing gutters, where they exist at all, have been damaged by ice and snow

B. Exterior – Walls

Walls – A Wing

The walls of “A” wing can be split into three categories, brick, stucco, and glass block. Each will be discussed individually as follows.

The brick walls consist of veneer face brick with concrete masonry unit (“CMU”) backup wall and glazed block face units on the interior side at corridors and other public areas. Much of the brick areas were repointed as part of the 2006 exterior repairs. Although the color match of the mortar is not identical, the repointing is generally intact and does not appear to be compromised due to any latent or new deficiencies.

A wing brick walls showing recent repointing

The masonry openings for the punched windows are spanned by steel lintels. These lintels, while intact, are showing signs of paint failure and rust. The steel lintels throughout require prep, treatment, and repainting before rusting becomes extensive and possibly damages the surrounding materials.

The stucco is located at the gable ends of the gym and classrooms wings, as well as on the solid panels between windows. The stucco on the gable ends does not appear to be original to the building due to its projection. It appears to have been installed directly over the original gable cladding material that failed to begin with. Old water staining on the board sheathing in the attic was visible. The condition of the sheathing is suspect due to that former water infiltration and should be inspected if/when the stucco is replaced.

In addition to its substrate, the stucco is extremely dirty and showing its age. Although the field of stucco is not cracked, the sealant joints around the stucco areas have failed. The sealant remains pliable but has pulled away from the stucco, opening the joint to water and air infiltration. This could be due to improper sealant joint backup preparation, water infiltration into the stucco itself, or an improper width-to-depth ratio of the sealant.

The glass block is located around the entire upper perimeter of the gymnasium. Although subject to damage from projectiles from both inside and out, the glass block is actually failing from other causes. The portland cement mortar joints between the glass block have failed, allowing water penetration to the surrounding steel frames as well as into the glass block units themselves. Years of moisture-induced freeze-thaw, as well as crumbling mortar have caused several blocks in each panel to crack, split, shift, and/or shatter. The glass block in its entirety is beyond repair. Left alone, the mortar joints and glass blocks will experience rapid acceleration of decay and failure. The further the panels decay, the more susceptible the adjacent structural steel components will be to damage.

<u>Walls – B Wing</u>

The building exterior is designed in the Neoclassical style, featuring two stories of red brick with contrasting white trim elements. The walls extend from raised brick and concrete foundation walls. The central, original building has a symmetrical façade, with two story monumental white pilasters and a triangular pediment. A semicircular opening exists in the center bay where the main door and fanlight are located. Wings of two stories exist at each end of the original building to the east and west; these are also on a raised base. The raised first

Lintels in A wing are rusting and require prep and repaint before deterioration accelerates

Sealant joints at the stucco are dirty and failing

Stucco along the gable ends may conceal the original gable end

Failed glass block wall through crumbling mortar joints, rusting reinforcing, and shattered glass units

Water intrusion is possible through failed sealant joints at aluminum panning

Exterior face of glass block shattered from freeze-thaw exposure.

Failed glass block at southwest corner of gym

floor adds value to the basement space as it allows the opportunity for natural light into below grade areas. The grade surrounding the basement areas varies and is particularly high near basement windows at the west wing and at the base of the original building.

The masonry openings for all windows are spanned by steel lintels. The window heads at the first floor of the north elevation feature jack arches, while the basement and second floor window heads are spanned by flat soldier courses. At the east, south and west elevations, the majority of window heads are also of flat soldier courses. Exceptions to this are the second floor windows of the original building, and the second floor west elevation windows at the west wing; where several rounded arch top masonry openings exist. The stringcourses, sills and keystones (where they occur) are of terra cotta at the original building and are of cast concrete at the east and west wings. Several of the original terra cotta keystones were replaced in 2007 with cast concrete replicas.

Of the three sections of B wing, the one most heavily altered in terms of masonry openings is the west wing. Since the west wing was constructed as an auditorium addition, it had large spandrel style windows between the first and second floors on the north and south elevations. It also had two, one and a half story entry porticos flanking pilasters on the west elevation. When the auditorium space was converted for new uses, a floor was inserted between the first and second levels. In order to conceal the floor on the building exterior, the spandrel windows were removed and punched window openings were added. When this change was made, windows were also added in between pilasters at the west elevation to provide light to new classrooms. Finally, the addition of C wing to the west elevation caused the removal of a 1930's historic northwest portico. This modification leaves only the southwest portico remaining.

It is evident from field observations and from Town documentation that a masonry repair campaign occurred in 2007. Therefore, the exterior bricks and mortar joints appear to be in good condition. There is one obvious crack at the southwest corner of the west wing, which was repointed in 2007. It was likely caused by water infiltration at the top of the wall, which resulted in rust-jacking at the window head. In the last five years, the joint has not re-opened and appears sound, indicating that there is no active movement in the wall.

During the 2007 work, many of the steel lintels at window openings were replaced; however 25 of them were not. The remaining steel lintels do exhibit signs of rust. During this work, original terra cotta keystones were

North and east elevations of B Wing

Corroded steel lintels at B wing require cleaning and repainting.

Broken piece of terracotta stone on B wing.

replaced with cast concrete replicas; these appear to be in good condition. There is one piece of original terra cotta at the west side of the original building that is broken.

Walls – C Wing

The exterior walls on select portions of this one-story building are 12" thick 3-wythe brick masonry. Given the era of construction, this type of masonry construction can be assumed to be unreinforced. The brick, although dirty, appears to be weathering well with little to no cracking or other issues.

The balance of exterior wall on this portion of the building consists of wood curtain wall windows and louvers. Later sections on the exterior address the remainder of the envelope of "C" Wing.

South and west elevations of B wing

C. Exterior – Trim

Trim – A Wing

The wood trim not replaced by GFRP (see B wing in this section) has been clad with prefinished aluminum brake metal panning secured with brad nails. Although visually this is marginally acceptable when viewed from ground level, the panning is a thin gauge of metal and in many locations has little or no direct substrate or backup. This allows the panning to move and flex with temperature and weather conditions, working the brad nails loose. This cycle will continue to occur and in some cases, as already led to missing pieces that have fallen off or been removed, exposing the very substrate they were installed to originally protect. The sealant joints for the panning, like those with the stucco, have failed and separated from the adjacent construction.

North elevation of C wing

Trim – B Wing

Originally, all trim elements at all three sections of the building were of wood; however these were replaced in their entirety in 2007 with GFRP. Elements replaced include: pilasters, porticos, pediments, cupola components and roof cornices.

Overall, the GFRP appears to be in good condition. The sealants in between the joints of this product need maintenance however due to joint size. The north elevation in particular exhibits mold accumulating in the joints. It also appears that when the GFRP was installed at the raking eave edges, butt joints were used as opposed to overlapped joints. Some of these butt joints are greater than ½", establishing gaps in the material that are relying solely on sealant for water tightness.

Loose panning around original trim at A wing can compromise existing substrate(s)

Cupola fabricated of GFRP with restored gilded finial

Band course fabricated of GFRP at B wing

Main entry elements fabricated of GFRP such as pilasters and pediment

Sealant joints at GFRP pilasters with vegetation and staining.

Portico elements of B wing's west side fabricated from GFRP

Large sealant joint at butt seam of GFRP raking eave

These larger butt joints may be more susceptible to failure.

Trim – C Wing

Trim not associated with the window / wall system is limited to fascia boards, running trim molding, and soffits. The general condition of the painted finish is poor with extensive chipping paint, exposing the underlying material to possible moisture damage.

In addition, along the gable wall rakes, areas of the structural roof deck are exposed as soffits. These areas show signs of water infiltration, wood shrinkage, and end-grain rot from exposure.

It can be assumed that some wood elements related to trim will need to be replaced and/or patched when the entire wing is repainted.

Exposed structural deck at the gable end of C wing is showing signs of exposure to moisture

D. Exterior – Windows

Windows – A Wing

The classroom glazing system was originally of wood windows within a wood frame system similar to curtainwall, spanning both the first and second floor. Within the last 40 years, the wood double-hung sashes were removed and replaced with single glazed metal replacement windows with applied mullion grids. The wood frame system, sills, and exterior trim have been left in place and covered with aluminum panning.

In the connector portion between the gymnasium and the classroom areas, there are punched openings within the masonry walls, as well as a horizontal ribbon window system on the second floor. Both types of windows have received replacement double-hung sashes and aluminum panning.

The gymnasium consists of horizontal ribbon windows on the first floor and punched openings within both brick and glass block masonry walls. The panning on the first floor ribbon windows appears to be in worse shape than other areas, possible due to exposure and/or proximity to grade. Sealant throughout all systems and locations has failed.

Solid panels, located mostly below windows in the classroom wing and first floor gymnasium horizontal ribbon windows are stucco. The condition of the stucco is equal to or worse than the stucco elsewhere on the building, including failing sealant joints, staining, and possible mold growth.

Connector wing from the gymnasium to A and B wings

Original wood “curtainwall” covered with aluminum panning. Solid panels are coated with stucco.

Windows – B Wing

In general, most of the windows are large and provide very good natural light throughout rooms and corridors, a benefit to occupants. The original windows throughout the three building sections were wood, double hung, true divided light sash in wood frames. As with A Wing, the wood sash were removed and replaced with single glazed metal replacement windows with applied mullion grids. The original wood window frames remain, with the original wood trim visible on the building interior. On the exterior, the wood sills and brick molds have panned over with aluminum.

Most window openings remain true to their original configurations except for the west wing. At the west wing, where the spandrel windows previously existed, punched masonry openings have been made, greatly altering the original appearance. Many windows were also added at the west elevation of the west wing when the auditorium was infilled, with proportions and mullion grids unsympathetic to the original design of the façade.

Window configurations at the original building include: paired 2/2, paired 4/4, single 3/3 and single 6/6 sash. Window configurations at the east wing include paired 4/4, single 2/2, single 3/3 and triple windows with a 4/4, 6/6, 4/4 pattern. Window arrangements at the west wing include paired 4/4, paired 6/6, single 4/4 and single 6/6 sash.

At each gable end of the original building in the attic, there are round acrylic windows with an applied grid to create 8 divisions. These were installed in 2007 when the original wood windows were removed from these locations.

All existing metal replacement windows are in very poor condition due to heavy weight, improper balancing, difficult operation, air leakage and water leakage. Many of the windows that can be opened do not remain in the open state and fall shut when not supported by alternate means.

On the exterior, sealants were poorly installed and are covered in mold. On the interior, wood casings, trims and moldings demonstrate signs of peeling paint, water damage and ultra violet degradation.

In the original building and east wing, historic interior trims and moldings remain. Some historic interior casings remain in the west wing, but most of the windows there are not original and therefore the interior trim is insignificant.

Typical metal replacement window for A and B wings

Typical room interior with large windows providing natural light

North elevation of B wing with the center bay modified where original spandrel windows were removed

Wood window trim in B wing with water damage

Wood window trim in B wing with water damage

West elevation of B wing heavily modified with non-original windows

Inappropriate window grid proportions for the style of this building

Poor sealant installation, mold accumulation, and staining at sealant joints

Paint failure at window frame interior in B wing

Windows – C Wing

A majority of the classroom walls consist of original grade-to-eave wood curtain wall. The bottom solid wood panel conceals some built-in casework. In addition, the panels below the windows contain wood louvers at the unit ventilator location, as described later in the report.

The glazed areas are expansive single fixed-pane untempered plate glass windows with narrow transom windows above and operable casement windows to one side. The windows, although some are operable, are too few in number to provide good natural ventilation to the classrooms. The system, given its age and overall system thickness, does not comply with current energy codes.

The direct connection of a wood window system to a concrete slab on grade is not beneficial to the longevity of the system, nor is the level of exterior grade which is barely a few inches lower than the interior floor slab. Unmanaged water pouring off the roof hits the asphalt / concrete apron and splashes against the building, especially the window system. In general, water has the opportunity to infiltrate and compromise the window system in several ways. The window system should be replaced.

Original wood window system at C wing with non-tempered plate glass facing ball fields

Original wood window system at C wing

E. Exterior – Doors

All exterior metal doors and metal frames are in poor condition due to wearing paint, rust and age. Door widths vary throughout the different building eras. A large percentage of double doors are too narrow (+/- 5'-0"), meaning they are not compliant with minimum handicapped accessibility widths.

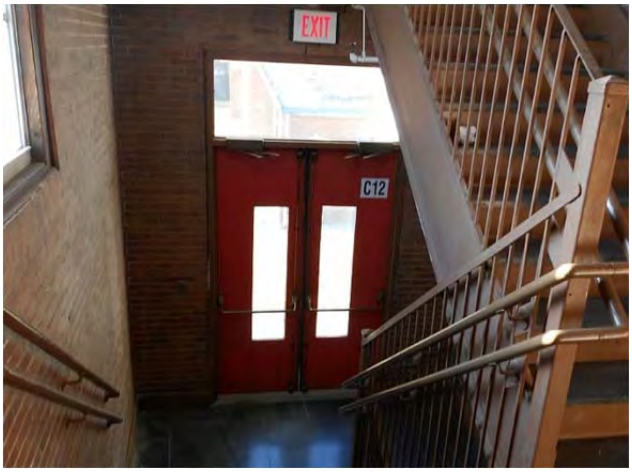
Egress door hardware typically consists of older style exit devices with vertical rods or non-latching push-pull hardware. On the date of inspection, numerous security devices were seen, effectively locking the exterior doors and rendering them inoperable in the event of an emergency. Interior doors typically have knob latchsets. The thresholds are aluminum and in poor condition.

In addition to general information provided above, please see the following paragraphs for deficiencies at specific openings.

The paired doors at the center of the south elevation of "B" wing are located at the base of ramp utilized for basement deliveries and loading. The location of this

Main entrance located in B wing with original fanlight remaining

Rusted metal frames are typical conditions at all exterior doors



Exterior doors throughout have antiquated hardware

The kitchen loading door has an extreme pitch outside that promotes water infiltration

Antiquated hardware and plate glass mean the doors should be replaced

Interior locking bars at egress doors are against Code

door nearly at grade, at the bottom of a ramp is an opportunity for water to enter the building.

The north end paired doors at the “C” wing has broken glass in several locations and needs repair. Given the proximity to the street, this could possibly be due to vandalism.

F. Exterior – Louvers

A number of metal louvers exist around the building perimeter on all elevations. Most are of fairly thin metal and not fabricated with storm-resistant blades. Although the louvers themselves are in good condition, the lack of storm-resistant blades could allow wind driven rain to enter the building walls.

In addition, original wood louvers are still present in “C” wing, including under the classroom windows. These louvers display extensive wear, countless coats of paint, and evidence of warping and rot. These louvers should be replaced.

G. Exterior – Ramps and Stairs

Exterior Ramps & Stairs - A-Wing:

The classroom wing has four sets of exterior stairs handling the egress load from both “A” Wing as well as portions of “B” wing where the two connect. Three of the four stairs have appropriately-sized flush landings outside the door. Only two of the stairs have handrails at all but neither complies as the required guardrail.

The stairs and ramp exiting the gymnasium lobby are generally in compliance except for missing ramp edge protection and missing stair handrails. The egress stairs from the locker rooms also mostly compliant, missing guardrails in lieu of just handrails.

The two elevated gymnasium stairs are in very poor condition. The elevated concrete platform, open grate metal stairs, and handrails are extremely corroded and in some locations, rusted completely through. The lower transitional landing, constructed of concrete and brick, is extensively cracked. The concrete stairs exhibit spalling at corners and edges of the platforms and treads. The handrails do not comply as guardrails for height nor baluster spacing.

Thin metal thru-wall louvers for unit ventilators are not stormproof and could allow water infiltration.

Wood louvers are straight bladed with no provisions to stop water infiltration.

Egress stairs are close to compliant. This stair in A wing only lacks compliant guardrails.

Gymnasium exterior egress stairs are beyond repair

Some exterior stairs have no guard or hand rails.

Gymnasium egress stair stringers have rusted completely through and in danger of failure.

Main entrance stair and ramp at B wing has significant compliance issues.

Gymnasium lobby entrance is generally Code compliant except for handrails at the stairs.

Some exterior stairs have no guard or hand rails.

Exterior Ramps & Stairs - B-Wing:

At the main entrance, the concrete ramp and stairs with metal railings are in poor condition due to age and water damage. The concrete is heavily degraded and metal components such as railings and treads have caused rust jacking. The concrete has been patched several times to repair the spalled concrete, but these repairs are also now failing. The ramp is the required 48" wide, with a slope of greater than 1:12 but still is not fully compliant with the Massachusetts Architectural Access Board ("MAAB"). It has a vertical rise of greater than 30 inches between landings, lacks edge protection and does not have the required 60 inch turning radius at the area in front of the main entry doors. Also, the guardrails do not meet current building code requirements. The top of the guard is only 2'-9" high where 3'-6" high is required.

Main entrance stairs and ramp at B wing have rust jack and patch failures.

Excluding the main entrance, there are two other locations of exterior stairs connected to egress stairs and/or corridors. At the top of each stair, there is a step down at the door, as well as an insufficiently sized landing, both of which are not compliant with code. In addition, the existing handrails and guardrails lack proper height, balusters, handrail extensions, or are missing altogether.

Even on-grade C-wing isn't handicapped compliant with a step down at the egress door.

Exterior Ramps & Stairs - C-Wing:

Although the building sits nearly flush with grade, there are still deficiencies with vertical access. The north egress doors have a single step down immediately upon exiting the building. This is a tripping hazard and a non-accessible doorway, neither of which are permissible by code.

The connector corridor between "C" wing and "B" has two sets of double doors, both of which have flush transitions to sidewalks. However, the sidewalk leading away to the north egress to the handicapped parking is in poor condition. Some concrete sections have heaved while others are severely crumbling. Both conditions have a cumulative effect of making it extremely difficult to traverse the area with a wheelchair.

Although handicapped compliant, the sloped walk is cracked and heaved in several locations.

H. Interior – Attic

Interior Attic - A-Wing:

The attic space is located above the classroom wing and accessed via a ships ladder located off the southern egress stair. A 6" thick concrete floor transitions to a wood framed roof and attic space. The wood "walls" form a center bay and two eave spaces. Even with the roof slope, there is an expansive amount of space available for storage and mechanical units.

MEP systems are typically run 3'-0" above the floor slab, with some conduits and other equipment located on or close to slab level, creating tripping hazards to those unaware of their existence.

The existing ventilation louver on the north side was boarded up. The southern half-round louver was open at the time of inspection but did have an adjacent panel sitting on the slab that could close the louver off entirely. The center portion of the ridge between the two cupolas has been cut back for a ridge vent but is only a portion of the whole roof assembly. There also is no soffit ventilation. Although the attic appeared to have decent ventilation at the time of inspection, both the north and south louvers should remain open.

New hollow metal doors have been installed recently to provide access to the gymnasium roof areas. Given their recent age, the condition of the doors, frame, and hardware were all excellent.

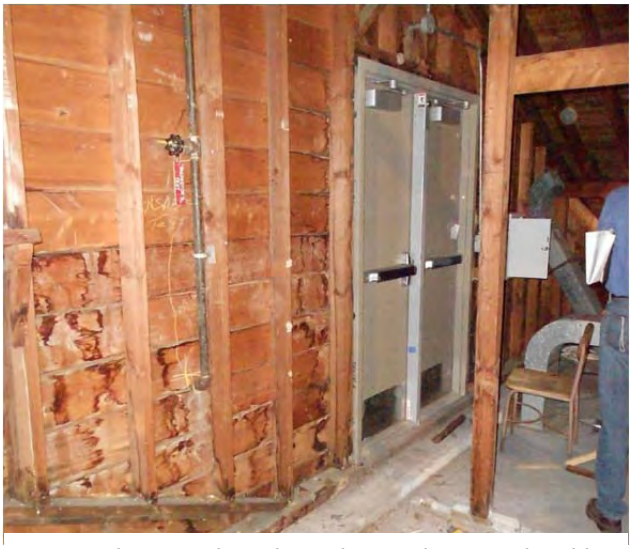
Interior Attic - B-Wing:

The attic area above the original building was created in 1930 when the roof was changed from flat to a gable shape. The original tar and gravel from the flat roof is still visible in the attic space today, as it was encapsulated when the roof shape was changed. This degraded roof is now the walking surface for those that enter the attic. The function of the attic is to house ductwork for the HVAC system. Most of the system is mounted from roof framing members and on brick flue piers that extend the full height of the building. The walls and ceilings of the attic are insulated in between framing members with batt insulation. The insulation is covered over with a vapor barrier.

Access to the attic area is by ladder through a ceiling panel in the second floor corridor, directly outside of a classroom door. This access creates an unsafe condition / hazard for maintenance technicians in the attic, technicians on the ladder and occupants of the classroom. The actual scuttle into the attic is small and

The expansive attic over the A wing classrooms is used for storage and mechanical.

Even the eave space in A wing's attic has plenty of height.



New roof access doors in A wing's attic. Note the old water staining to the left.

B wing's attic, while well insulated, is heavily compromised by moisture and possible mold.

The original tar and gravel roof remains in place in the B wing attic.

Ladder access to B wing's attic is dangerous for both workers and building occupants.

Access to the attic in B wing is located at in the eave space, limiting ease of access.

The above-ceiling space in C wing.

difficult for those carrying tools. Within the attic, there is widespread staining on batt insulation in both the attic walls and roof rafters.

Please note, the staining on the insulation and framing may be mold. Also, the existing tar and gravel roof may contain hazardous materials. Both should be tested by a licensed testing agency.

Interior Attic - C-Wing:

Although there is no occupiable attic space in this area of the building, the roof trusses form an area several feet in height over the corridor that is used for ductwork, electrical, and technology wiring distribution. Covered with a combustible wood deck and considered a concealed space, this area is not sprinklered. Sprinklers are recommended.

Existing ceilings throughout the building are stained from roof and steam pipe leaks.

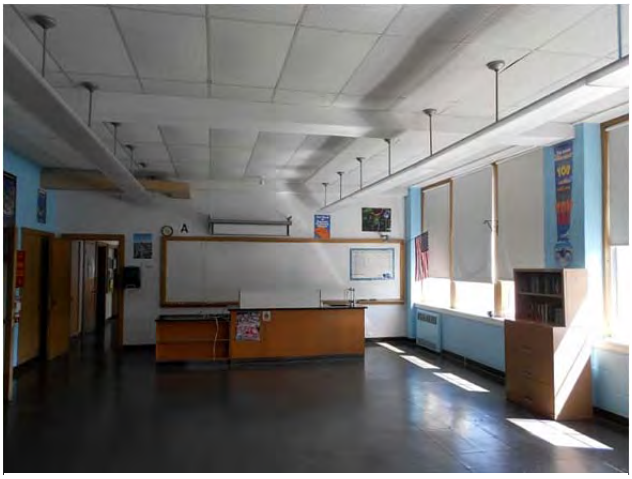
I. Interior – Ceilings

There are two basic ceiling types that exist throughout the building. These include exposed original plaster and a suspended ceiling with 2'x4' lay-in panels. Much of "B" Wing originally had exposed plaster ceilings throughout; these ceilings remain exposed in basement utility spaces only. The original ceilings were quite high and ranged from 10 feet to 14 feet, depending upon location within the building. Today, ceilings are much lower due to the suspended grid. It is unknown to what extent original plaster ceilings exist underneath the present day suspended ceiling and in what condition they might be in. If they do exist, it is likely that they are heavily damaged from the installation of the later suspended ceiling and later MEP infrastructure.

Original plaster ceilings in B wing are covered with suspended acoustic tile ceilings.

Within the existing suspended ceiling grid, there are several types of lay-in panels. These types include a standard mineral fiber acoustic tile, a textured fiber (tectum) tile and a perforated metal panel. For the most part, the suspended ceilings throughout are of the standard acoustic type in rooms and in corridors. The metal perforated panels exist in the kitchen area of the basement only. The mineral fiber tiles are sagging throughout, due to humidity, age, and thicknesss.

The average life of suspended acoustic ceilings is 50 years, metal is 20 years and plaster is 75 years. These lifespans may be less due to the building use; a school is considered to be heavy/high use and it is expected that finishes will wear more rapidly. To that end, all ceilings have reached the end of their useful life. Additionally, many ceiling panels show signs of water stains from roof, steam pipe or plumbing leaks. The kitchen ceiling



2x4 ceiling tiles are sagging between the grid, showing signs of humidity and age.

panels are coated with grease, especially around the ventilation hood.

J. Interior – Walls

Interior Walls – A-Wing:

A majority of the wall of this building are masonry construction utilizing 5" high glazed block in corridors and stairways and concrete masonry units ("CMU") in classrooms and other spaces.

The CMU is general in good shape with sporadic cracks and areas requiring repair. The glazed block, however, is not holding up as well. Linear cracks along the mortar joints were observed in many locations, as well as subsidence of the block from the ceiling or along floor lines. Also, spalling of the glazed masonry face was evident throughout the interior.

The linear cracking is often limited to door or window openings or in many cases, below lintels supporting multiple courses of block above an opening. Those lintels only have a few inches of bearing onto unreinforced glazed block, thus causing the cracking.

The subsidence of the block is where the glazed block wall has sagged or lowered away from another immovable object like a ceiling or doorway. In the classroom wing, this is evident in the toilet rooms. In other places like the staircases, some mortar joints are wider than others, indicating this could have been a problem early on in construction. It's suspected that the concrete floor assembly was loaded prematurely during initial construction. In some cases, the effect was immediate and corrected with wider joints. In other cases, the entire wall has settled, pulling away from the ceiling like in the classroom wing's girl's toilet room.

The spalled face of the glazed block is most likely associated with ancillary loading conditions. The unreinforced glazed block is carrying the weight of the non-structural wall above. Those loads have caused minor latent flaws in the glazed block to be revealed by separation of the glazed face from the rest of the block material, also known as the bisque. Given the random appearance of the spalling, this is a much more likely scenario that any possible deficiency of the structural frame itself.

Interior Walls – B-Wing:

The walls of the building are mainly of masonry and were constructed to be quite durable. The basement walls are the most utilitarian in appearance and feature

Cracking of the glazed block walls in A wing

Subsidence of the glazed block walls in A wing

Spalling of the glazed block face appears throughout A wing, although the locations and extent are random.

exposed brick, painted brick and painted CMU. The upper floors have slightly more refined finishes with painted plaster and gypsum wall board. The basement kitchen and some restroom areas feature ceramic wall tile.

The masonry walls are generally in good condition and are very solid, but there are two conditions that need immediate attention. These conditions are in the egress stairs at the northwest and southwest corners of the west wing, and involve masonry cracks and efflorescence.

At the southwest egress stair, masonry cracks exist above the exterior door head, at the intersection of a CMU and brick wall, and at a brick intersection in the southeast corner. At the northwest stair, significant efflorescence exists behind the paint. Efflorescence indicates that there is or once was water in the masonry wall. The paint is peeling off the wall in these areas and the efflorescence sheds piles of white dust on the floor on a continuous basis.

In other areas, paint on masonry walls is in a variety of conditions. In the basement, areas such as corridors and the cafeteria are in fair condition. In basement utility areas, paint is in poor condition.

The plaster and GWB walls in the upper floors, are in fair condition. Paint on these walls is also in fair condition with many layers built-up on the plaster walls.

Ceramic walls tiles in the basement kitchen are in good condition. Ceramic walls tiles in the restrooms areas are in fair condition.

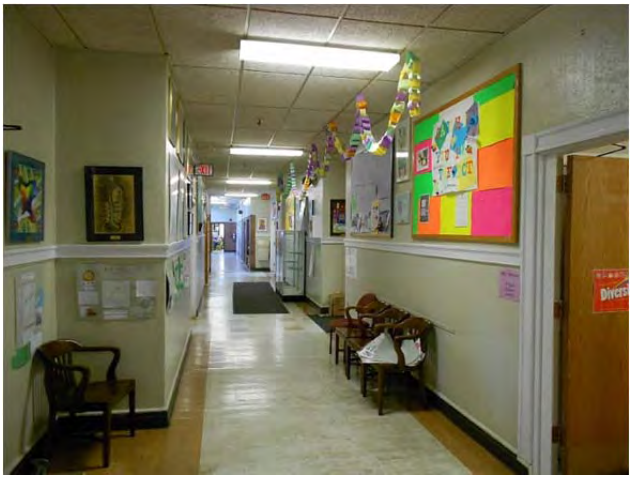
<u>Interior Walls – C-Wing:</u>

The interior walls of this wing are all masonry construction, 12” thick 3-wythe brick masonry exposed on the end walls with the remaining interior walls constructed of 8” unreinforced CMU. Nearly all of the CMU walls within the building, including the wing walls enclosing the door niches and the walls behind the lockers and casework, are structural load bearing. Even so, the walls show no deficiencies at the time of inspection.

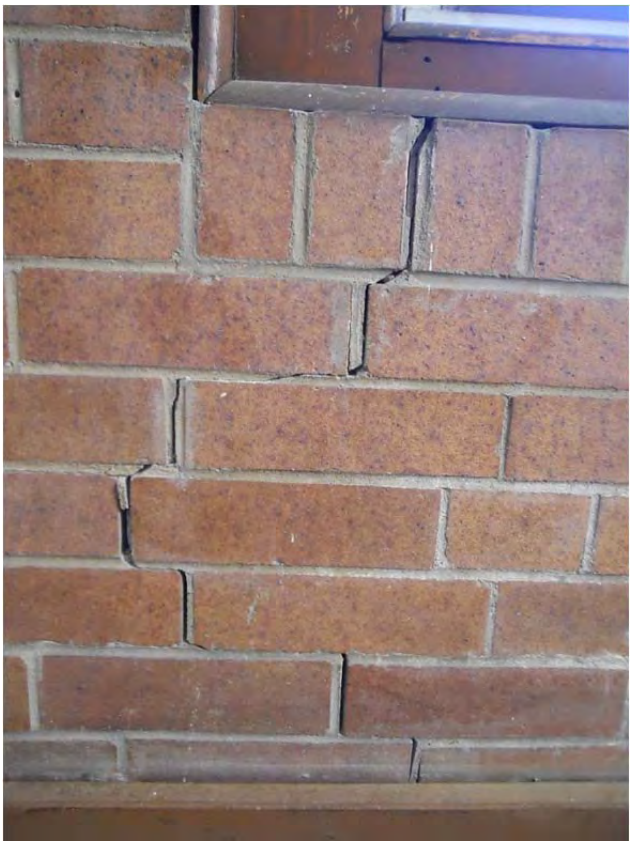
CMU walls in the basement of B wing

Painted exterior masonry surfaces throughout the building typically have peeling paint.

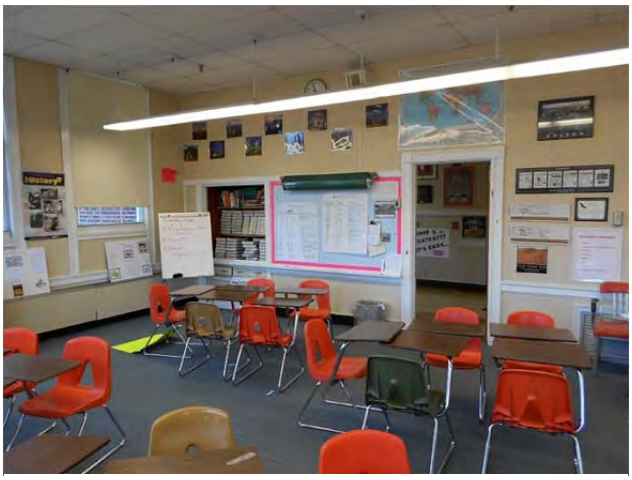
Painted masonry walls in B wing's utility areas.



Interior walls of B wing are plaster



Crack above the door head, west elevation of the southwest stair in B wing.



Interior walls of B wing are plaster

Ceramic tile wall finish in kitchen.

K. Interior – Basements/Crawlspaces

Interior Basement / Crawlspaces – A-wing:

Below the classroom wing, the concrete columns, beams, and floor slab form a modest crawlspace area with a dirt floor. The area was extremely humid at the time of inspection and had some standing water in the sump pit despite there being no rain for days. Ventilation was not perceivable from the small perimeter brick vents.

The extreme moisture and lack of mechanical ventilation have caused pipes, conduits, and other MEP devices to rust on the outside. Also, open electrical boxes were observed. Both conditions should be dealt with promptly to avoid potential damage.

Insulation and pipe elbows that may contain hazardous materials were observed in the crawlspace. Those items should be compared to the existing hazardous material report. Any items not documented in the existing report, including but not limited to the dirt floor of the crawlspace, should be tested by a licensed testing agency

Interior Basement / Crawlspaces – B-wing:

Basement areas are included in other portions of this report for this wing.

Interior Basement / Crawlspaces – C-wing:

A pipe crawlspace runs from under the west stair in B wing and continues under the corridor of C-wing. The crawlspace is constructed with concrete foundation walls, a concrete rat slab on grade, and galvanized metal deck with concrete.

Although the access hatch was open to the B wing environment, the crawlspace was humid. The MEP devices showed similar, if slightly less, rust to those in A wing. As with A wing, insulation and pipe elbows that may contain hazardous materials were observed and should be tested.

A wing crawlspace

Mechanicals in A wing crawlspace

C wing crawlspace

L. Interior – Floors

Interior Floors – A-Wing:

Since the substrate of A wing is almost exclusively concrete, a majority of the spaces have vinyl tile that vary in age and condition. Some rooms have 12x12 vinyl tile while a select few have a commercial-grade low-pile carpet. Areas with 9x9 tiles have sporadic

12x12 vinyl patches. Most floors show significant wear across major student circulation paths like doorways and aisles. The condition of the tile is poor at best. The first floor areas show signs of moisture migration around the tile joints from the humid crawlspace below.

Given the extent of 9x9 tile observed, the extent of possible hazardous material should be coordinated with the existing hazardous material report. Any missing items or locations should be tested by a licensed testing agency.

Toilet and janitor areas have ceramic mosaic tile. The tile grout is severely stained and most areas have had non-matching patches at some time.

The gymnasium has a strip-wood athletic floor on sleepers with a ventilated metal angle perimeter base. The wood is in good condition with no visible signs of excess movement, wear, or damage.

Below the gymnasium, the former vocational shop areas have been renovated into a phys ed exercise room and a modular technology lab. The original wood strip floor from the shop was covered over with new low-pile commercial carpet. The wood floor was not accessible for inspection but given its age and location below grade, the entire area should be inspected for possible rot.

The carpet itself is in good condition. However, in the mod tech room, several technology wires were run along the surface of the carpet, covered with duct tape. This will both accelerate the wear of the carpet as well as create a potential trip hazard.

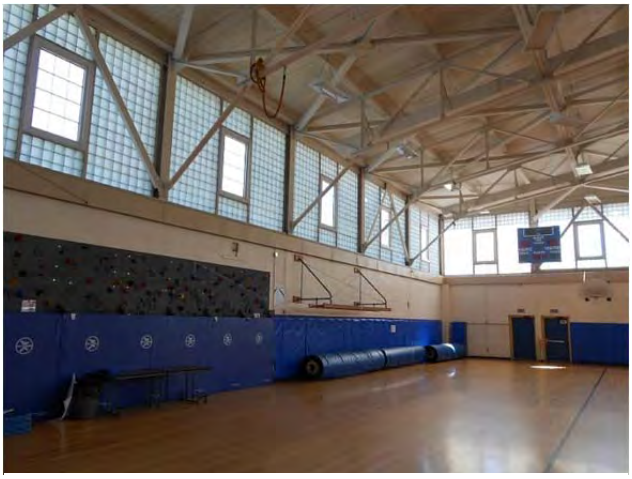
Given the age of the building, it should be assumed that the wood floors in the gymnasium, mod tech classroom, and exercise room will be replaced in the future. Exploratory demolition and testing should be performed to determine if any material under the wood floor exists like tar paper or asphaltic coatings that could test positive for hazardous materials.

<u>Interior Floors – B-Wing:</u>

The two main structural floor types of the building are concrete and wood; these floors are covered over with several different finishes. The basement floor features painted concrete in utility areas, vinyl tile in main student areas, and ceramic tile in kitchen/ restroom facilities. There is evidence of a wood floor in the east wing of the basement, which means that the concrete slab there is at a lower depth. It is not known how many layers of flooring exist over the existing concrete floor.

Patched vinyl tile floors are present in all wings

Patched ceramic tile in a rest room



Gymnasium wood floor appears to be in good shape

At the first and second floors, the original floors were exposed wood. These have been covered over by a variety of carpets and vinyl tile. It is not known how many layers of flooring exist over the original wood floors. It is also likely that there are plywood subfloors under some vinyl tile and carpet areas. Ceramic tile exists throughout first and second floor restrooms.

Floor levels align fairly well between the original building and the east wing, but do not align exactly between the original building and the west wing. To accommodate the floor changes, a ramp was used to bridge the levels in the west wing.

Floor finishes throughout the building are worn and are beyond their life expectancies, with the exception of newer carpet in the administrative area of the first floor.

In the west wing, there is a noticeable deflective movement in the floor inserted between the first and second floors.

Interior Floors – C-Wing:

Similar to A wing, the flooring in this classroom wing is primarily vinyl tile with a few rooms covered in low-pile commercial-grade carpet. The 9x9 tile areas have 12x12 tile patches. The floors exhibit extensive wear along aisles and circulation paths. In general, the floors are in poor condition. The corridor floors, since they're located on elevated concrete slabs over the crawlspace, are in very poor condition, showing signs of moisture migration around the tile joints from the humidity below.

Vinyl tile floors are heavily worn and far beyond their useful lives

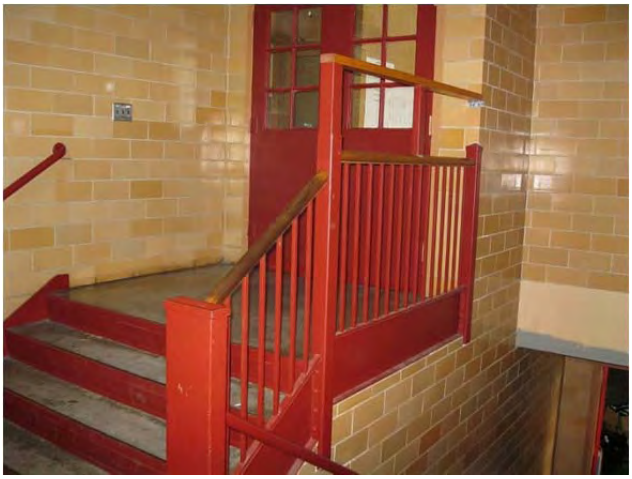
Classroom carpets are stretched, causing ripples, tears, pulls, and tripping hazards.

M. Interior – Vertical Circulation

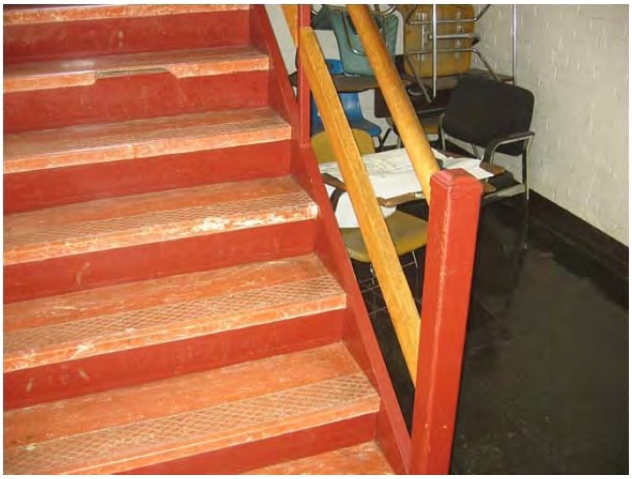
Interior – Stairs:

There are approximately nine multi-story stairs throughout the facility along with a few stars that connect varying elevations within the floors themselves. All stairs are constructed of metal with metal or resilient treads, with the exception of the southwest star in B wing which has stone treads. All stairs are constructed of non-combustible materials. Treads and riser dimensions appear to be code compliant.

Handrails and guardrails at most stairs are typically painted metal. A wood handrails and guardrails exist sporadically on a few stairs. In general, the stairs do not have compliant guardrails. Most of the existing handrails are non-compliant for cross-section, mounting height and continuity. Please refer to the code plans for additional information.



Non-compliant stair guardrails and handrails



Non-compliant guardrails

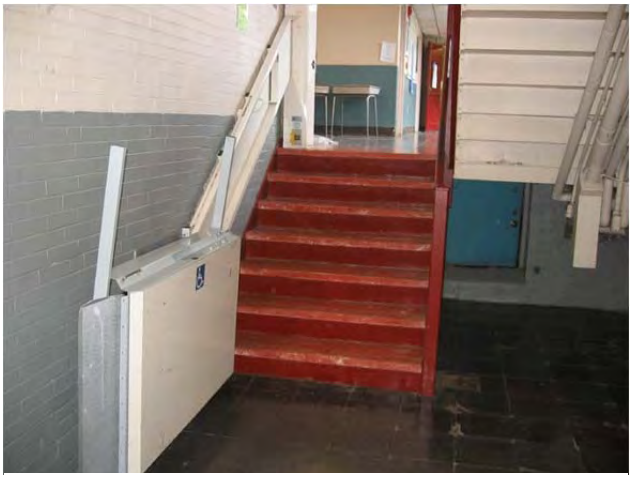
Some wall-mounted handrails are compliant, albeit sporadic. The lower rail is not required nor compliant.

Some existing guardrails have few or no balusters

Some stairs are closer to compliance than others. Still, the handrails do not have the proper extensions.

The handicapped lift impedes the stair width

The multi-story stair enclosures appear to be constructed of 2-hour fire rated equivalent masonry. An unrated opening was observed above the doors in the stair on the lower level of B wing nearest the main mechanical room. Utilities not serving the stairs were observed passing through the stair enclosures. This is not allowable by code. Also, penetrations into the stair enclosures were not firestopped. Refer to the interior door section for comments on the doors, sidelights and transoms into the stairs.



The handicapped lift impedes the stair width

Interior – Handicapped Lifts:

A handicapped lift is present in two of the stair enclosures, both in B wing. Technically, these lifts are MAAB compliant. However, they impeded the clear width required in each stair. Also, they are impractical due to the parameters of use. A handicapped person must utilize the lifts when no one else in on the stairs.

Interior – Ramps:

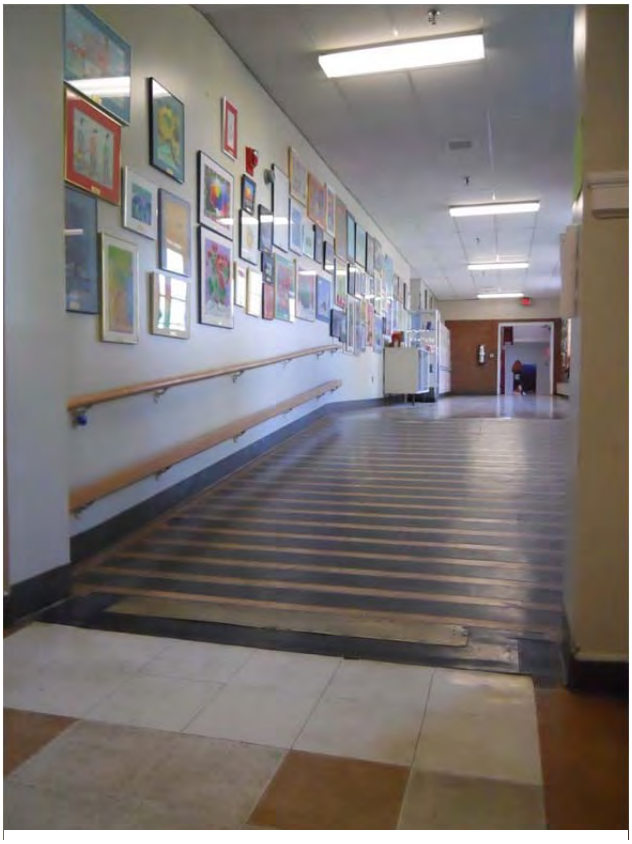
In A wing, original concrete ramps occur between the classroom wing and the gymnasium corridors, in addition to the ramp connecting the main level gymnasium lobby to the mod tech and exercise classrooms. All three ramps have painted metal handrails and abrasive floor strips. Deficiencies for these ramps include insufficient landings at one or both ends of the ramps adjacent to doors, non-compliant handrails without extensions, and exceeding the maximum 1:12 slope.

Ramp connection between B and A wings

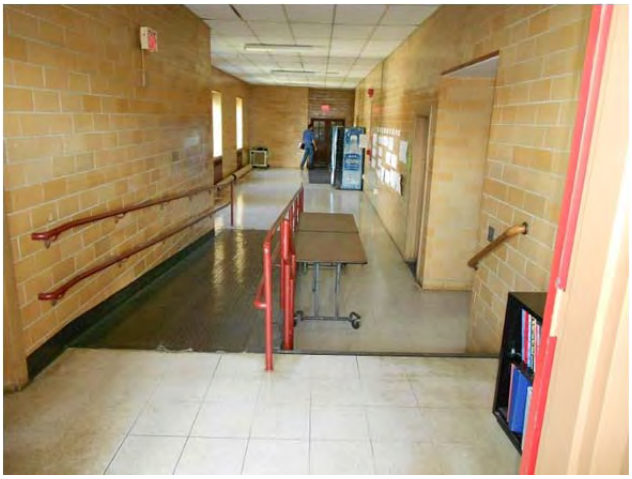
Also in A wing are two newer ramps constructed of plywood and wood framing , one connecting the two levels of the upper level gymnasium lobby and another connecting A wing to B wing on the second floor. The gymnasium ramp appears fully compliant with code. The classroom ramp lacks the proper 60” square landing at a 90 degree turn as required by MAAB.

The floors between the original building and the west wing in B wing are connected with ramps on both the main and upper levels. These ramps are not MAAB compliant. The ramps exceed the maximum 1:12 slope and do not have compliant handrails. Also, the ramps extend the full width of the corridor. This presents a problem where the ramp ends abruptly at the adjacent wall thus posing a problem with handicapped individuals.

Ramp in A wing without a landing before the door



B wing ramp added in the 1970s is not handicapped compliant



The upper gymnasium lobby ramp appears to be a more recent renovation and is generally compliant

Elevator added to B wing in the 1970s

Many ramps are missing one or both required landings

Elevator controls are compliant

Interior – Elevator:

The existing elevator is located in what was an original stair tower of the 1917 building in B wing. This was converted during the 1974 renovations. This elevator currently serves the three floors located in the 1917 building and the 1930 additions. The elevator cab and controls appear to have been recently renovated. The elevator entrance is 34 inches wide. The inside cab measures 47 1/2" by 49 1/2". It is not MAAB compliant. However, the controls appear to be MAAB compliant. The elevator is currently operated via key switch. It is unknown if any variances exist for the present installation.

Elevator added to B wing in the 1970s

N. Interior – Doors

Interior doors consist of wood doors in wood and metal frames, and painted hollow metal doors in metal frames. The wood doors in A and B wings typically have un-tempered glass panels at classrooms. Solid doors are present at janitorial, toilet rooms and administrative areas. Interior solid wood doors with wire glass sidelights are typical into the classrooms of C wing.

Corridor doors in A wing are consistently pairs of 2'-6" doors. If closed, the single leaf is not wide enough for MAAB clearances. The doors into classrooms, while typically 3'-0" wide, are often located in deep niches that prohibit proper MAAB clearances for approach.

On the east side of B wing at the exit stair, there is one historic door surround with sidelights and transoms remaining separating the corridor from the stair well. This frame is not fire rated and has standard wired glazing. Also, while wood historic door frames remain in B wing, there are no original doors remaining in any of the three building sections.

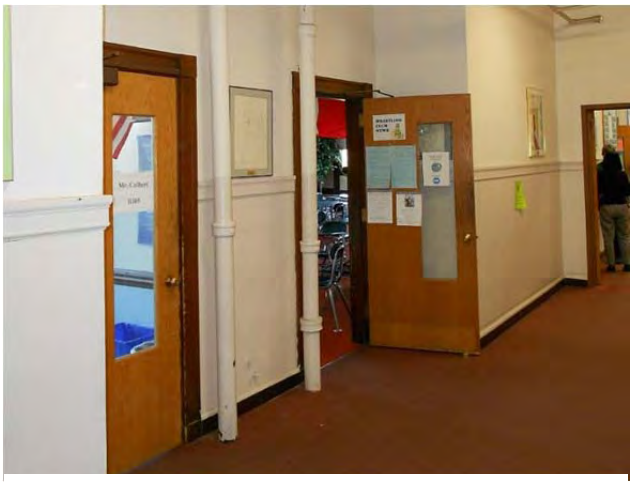
The majority of the metal doors are located at egress stairs and to the exterior. In general, the stair doors replaced in the 1970's bear the required UL labels. However, the glazing is not code compliant.

All existing door hardware throughout the entire facility consists of knobs which are not MAAB compliant. Classroom doors in C wing do not have required door closers. Classroom doors in other areas, while fitted with closers, are held open with wood chocks, preventing the closers from functioning as intended.

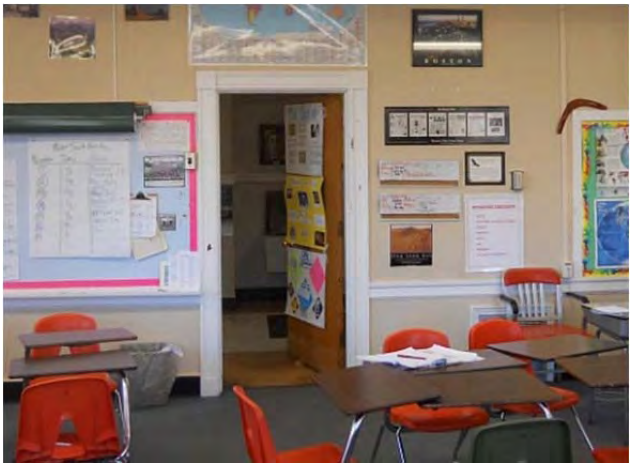
All doors (wood and metal) and hardware are beyond their life expectancies.

Original unrated stairway frame and glass in B wing

Most double doors are 5’-0” with pairs of 2’-6” doors.



Original casing in B wing with 1970s doors.



Original casing in B wing

3’-0” classroom doors in A wing in deep wall niches

C wing doors, frames, and glass are antiquated

O. Interior – Wood Trim & Casework

Interior Trim & Casework – A-Wing:

This wing appears to have retained a majority of the casework shown and/or modified on the 1974 renovation drawings. The classrooms each have built-in bookcases, cabinetry, and in some cases original fume hoods along the corridor walls behind the lockers. Glass doors are glazed with untempered plate glass. The casework remains serviceable and functional but is showing its age. Painted and/or stained wood is worn in places. Wood veneer is split, chipped or missing. The glass doors can be hazardous if broken.

Built-in science casework in classrooms and prep spaces are clear stained oak with black epoxy chemical-resistant countertops. Like the rest of the casework in the wing, the wood veneers are showing their age where split, missing, or chipped. Glass doors are glazed with untempered plate glass.

In family and consumer sciences, the casework is 1950s era painted wood cabinets with metal-edged plastic laminate countertops. Neither surface is ideal for cleanliness. The condition of the casework is fair, assumingly due to layers of white paint. The countertops are fair to poor depending on the location.

Interior Trim & Casework – B-Wing:

Despite the number of renovations that have occurred over the years, remarkably, the original built-in bookcases, shelving, chalkboard trim, bulletin board trim and even a historic fume hood remain in the original classrooms of the original building. Additionally, original wood bases, door casings, windows casings and chair rails remain. On the first floor, this trim has been painted many times with an opaque finish. On the second floor, the woodwork is both stained and painted.

In the east wing of B wing, historic wood trim remains in some classrooms surrounding windows, chalkboards and bulletin boards. The trim is in good condition.

The west wing of B wing does not retain any interior trim or casework that is historically noteworthy. The wood trim that does exist is modern wood stock from the 1970s renovations and is in fair condition.

The original wood trim and casework in the original building is worn, but original profiles are discernible throughout. Paint and stained finishes are scuffed. Vinyl base has been installed over original wood base and

A wing casework is still serviceable but is nearing the end of its useful life

Family and Consumer Sciences casework is old and not handicapped accessible

An original fume hood located in B wing

door casings, but the original material remains beneath the modern modification.

Interior Trim & Casework – C-Wing:

Similar to A wing, C wing appears to have retained a majority of the casework shown and/or modified on the 1974 renovation drawings. The classrooms each have built-in bookcases and cabinetry along the corridor walls behind the lockers. The casework remains serviceable and functional but is showing its age. Painted and/or stained wood is worn in places. Wood veneer is split, chipped or missing. The Art classrooms have additional laminate-faced casework along the walls for sinks. The casework in Art and Music are showing more wear than regular classrooms due to art supplies and musical instruments storage.

The doorway entries into the classrooms have wood frames that are in very poor condition. Years of students have worn away door jambs, finishes, etc. in their entirety.

C wing casework is still serviceable but is nearing the end of its useful life

P. Interior – Equipment

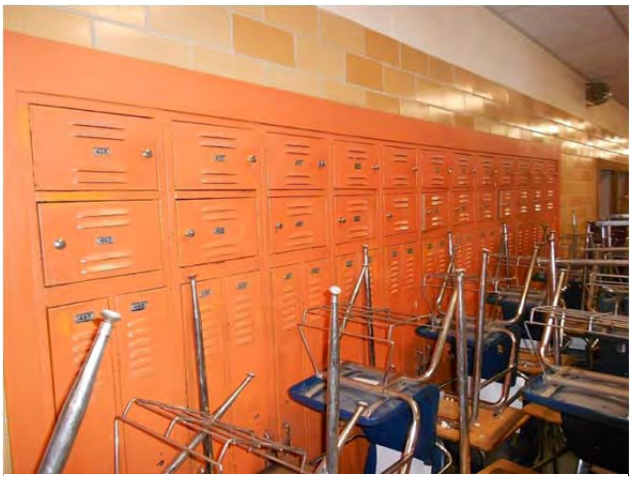
Lockers:

The existing corridor lockers are of painted sheet metal and banked together. The typical configuration is two vertical cabinets topped by two tiers of smaller compartments. All doors have vents. The lockers originally had integral locking mechanisms, but they have been removed and the lockers have been retrofitted to accept personal padlocks. Lockers in A and C wings are built into wall niches with plaster soffits above. Lockers in B wing have sloped tops and are against the corridor walls. The corridor lockers are bent, rusty and generally in poor condition due to heavy use. No ADA-compliant lockers were observed.

The locker room lockers vary in age and condition. In general, given the potential for abuse, the lockers are in fair to good condition, both in the boys and girls locker rooms. The latch / lock mechanisms vary from built-in to slide-hasp type on different locker banks, suggesting the locker rooms are used as sports team storage / changing as well. No ADA-compliant lockers were observed.

Display Boards:

There are two types of wall mounted teaching boards that exist throughout the building. These include traditional chalkboards and newer white boards. Many of the chalkboards appear to be original to the school and



Recess lockers are located in C and A wings. The narrow style lockers do not suit modern needs.

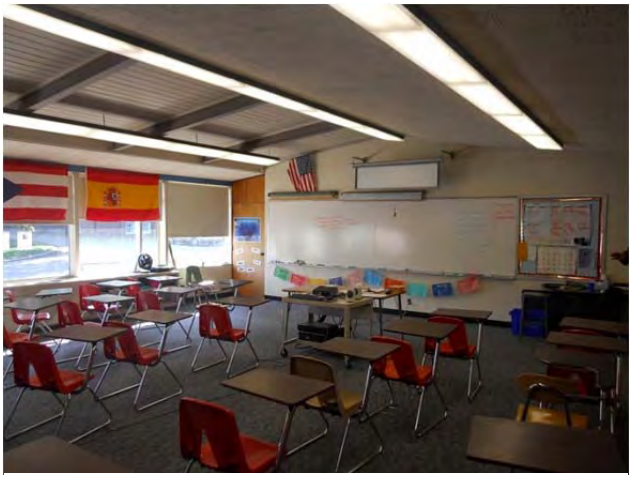
Sloped top lockers are used in B wing but retain the same narrow style as the rest of the facility.

still remain within their original hardwood trim. Chalkboards and whiteboards are in fair condition.

Tackboards vary in age from those cased in original hardwood trim to more recent metal-framed tackboard. The condition of all tackboards could not be determined due to paper, artwork, and teaching aids covering most of them. It can be assume that the newer metal-frames tackboards are in fair to good condition. Given the age of the building, the wood-framed tackboards may be original cork and in need of replacing.

Signage:

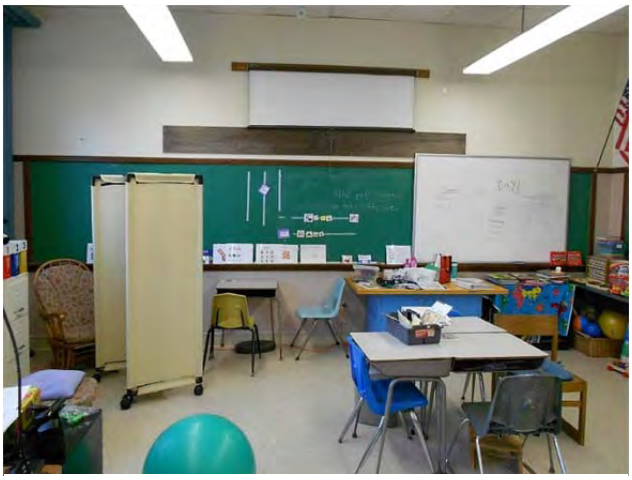
Interior signage is almost non-existent. Doors in some areas have painted room designations. Other rooms have paper mounted identification in plastic sleeves on the corridor walls outside classrooms. The existing "signage" is not MAAB compliant.



Markerboards are fairly typical for most classrooms

Q. Interior – Restrooms

There are two main types of restroom facilities; these include multi-stall and individual restrooms. The multi-stall restrooms are fit out with painted metal partitions of doors. The floors are typically ceramic tile. The walls are painted CMU, ceramic wall tile, or glazed block. Soap dispensers, toilet paper holders, and paper towel dispensers are vendor-supplied wall-mounted plastic units. Each restroom has at least one sheet mirror. Most of the existing layouts, door swings, fixture and accessory locations, and clearances do not meet current Code. Refer to the Code Analysis sheet for additional information.



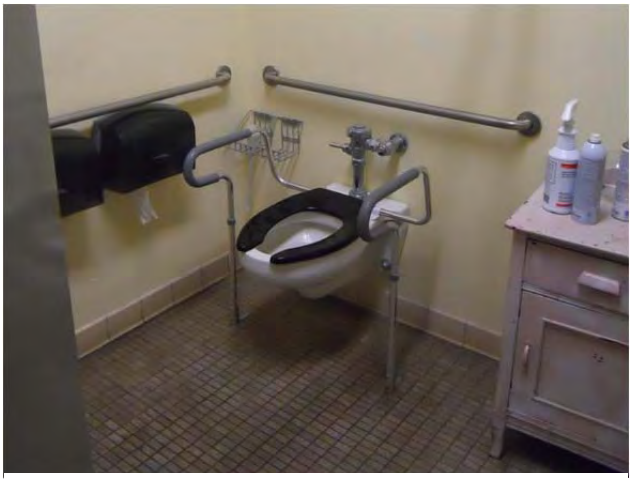
Chalkboards still exist and are in use in some areas of B wing.

Most restrooms have each undergone some adaptations to meet MAAB, with each obtaining varying levels of success. Urinals have been lowered to the proper height. Handicapped toilet stalls have been created. Sinks have been raised. However, some sinks don't have proper paddle or sensor faucets. In most cases, the mirrors and accessories are mounted too high for MAAB compliance. In general, the MAAB compliance of the restrooms does not meet current Code.

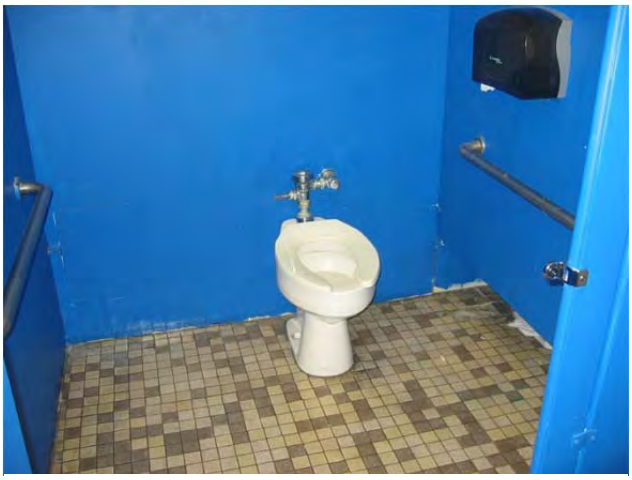
At most restrooms, security locks ranging from dead bolts to padlocks are installed on the doors and frames. Both types of devices are not code compliant because they allow someone to be locked in a room with no means to leave. This style locking must be replaced with one that has an interior thumb turn.

Single-user toilets are spread throughout the facility and often serve staff and administration. These toilets typically have little to no MAAB compliance.

Restrooms have varying levels of handicapped compliance.

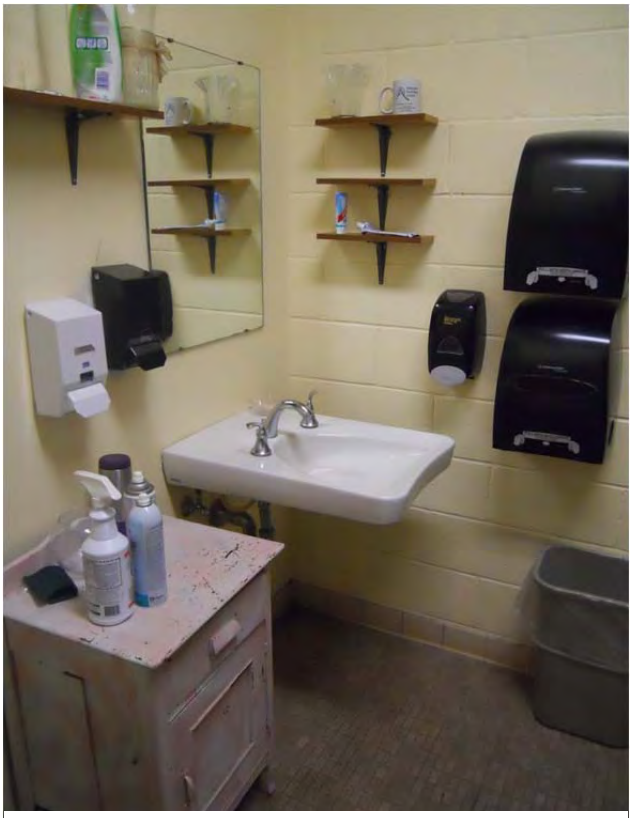


Handicapped compliance has been attempted to be met in non-compliant ways



Missing grab bars and too much distance from fixture to the side grab bar make this non-compliant

A restroom in A wing that has not been modified to meet handicapped codes.



The sink is handicapped compliant but the excess furniture and accessories restrict clear areas.

Modified restrooms are not in good condition and need to be renovated in their entirety.

Finishes, partitions, fixtures and accessories in all restrooms are beyond their life expectancies.

R. Spaces – Classrooms

The non-specialized classroom spaces are located in B and C wings. The classrooms in B wing average between 650 and 750 square feet. Although smaller than the 850 square foot minimum designated by current MSBA regulations, the classrooms appear to function adequately for traditional lecture delivery.

Despite the smaller-than-standard size, the classrooms have many good qualities that are the goal of a modern classroom, including operable windows allowing lots of light, high ceilings, adequate built-in storage, and multiple chalk/marker board areas. Although beyond the scope of this report, the furniture and technology amenities also help the rooms to function at their smaller size, including attached tablet desk-chairs for students and overhead projectors for the teachers.

Although addressed in other areas of this report, it must be noted that some existing finishes and equipment are detriments to the current classrooms including the carpets which are thread bare, wrinkled, and could harbor allergens; the lights which current provide 100% direct downlight which can lead to eye strain; existing chalkboards still in use which could aggravate dust allergies and asthma in extreme cases with students; and the unit ventilators which create noise in excess of the ambient noise allowed under current MA-CHPS and LEED for Schools standards.

The classrooms in C wing are approximately 950 square feet, meeting the maximum recommended size of a middle school classroom by current MSBA regulations. Although the classrooms benefit from ample floor space and high ceilings, the low ceilings, direct lighting, carpets, chalkboards, unit ventilators, and low non-operable ribbon windows are all detriments that should be changed should this area continue its use as educational space.

Typical B wing classroom

Typical A wing classroom

S. Spaces – Specialty Classrooms

Science Labs:

Located in A wing, the science classrooms are typically arranged with a permanent casework demo station for the teacher, movable epoxy countertop tables for the students, an end wall of casework for MEP services for lab experiments, and built-in storage along the corridor wall. The condition of the casework and built-ins has been addressed in other areas of this report.

An A wing science lab

Each floor also has one science prep room located between the two east-side classrooms. The galley-style casework consists of base cabinets with shelves above on one side and wardobes with sliding glass doors on the other side. The epoxy sinks are extensively stained and scoured from years of exposure and use.

Typical science equipment like emergency deluge showers, fire blankets, fire extinguishers, and goggle cabinets are all present but are antiquated.

The room is not large enough for a traditional clab arrangement with separate lecture and lab space but appears to function adequately despite the smaller size and age of the infrastructure. The moveable student tables mean services like water, gas, and electric are not available at the student lab stations.

As with any science classroom, storage space is always a need. Storage bins are placed on top of casework and wardrobes up to the ceiling. This is unsafe should the material shift and fall. It is also a potential fire hazard. Even if the building were sprinklered, which it is not, items must stay a minimum of 18" below the ceiling.

Although many classrooms have existing "fume hoods", there was only one modern fume hood that seemed functional. However, upon exterior inspection, the fume hood vent was sealed off.

Science Prep Room casework with storage to the ceiling

Computer Labs:

The main computer lab is laid out for instruction "in-the-round", allowing for efficient viewing of all student computers by the instructors but is a very inefficient use of space, leaving a large unused area in the center of the room. The resource room is organized with separate lecture and computer areas. The room appears to be bigger than required.

Large computer lab

Family and Consumer Sciences:

The family and consumer sciences classroom, formerly known as home economics, is a very large classroom with kitchen arrangements lining the long wall common with the corridor. The condition of the casework and countertops was discussed in other areas of this report.

The current arrangement lacks provisions for the handicapped, including a roll-under sink and cooktop, wall oven, and roll-under counter workstation. All are required by MAAB.

Although a mechanical issue, it must be noted here that there were no provisions for over-the-stove ventilation of

Large computer lab

cooking stations as required by Code. The lights and ceiling directly above the stoves showed signs of grease and dirt build up due to the lack of ventilation.

Modular Technology Labs:

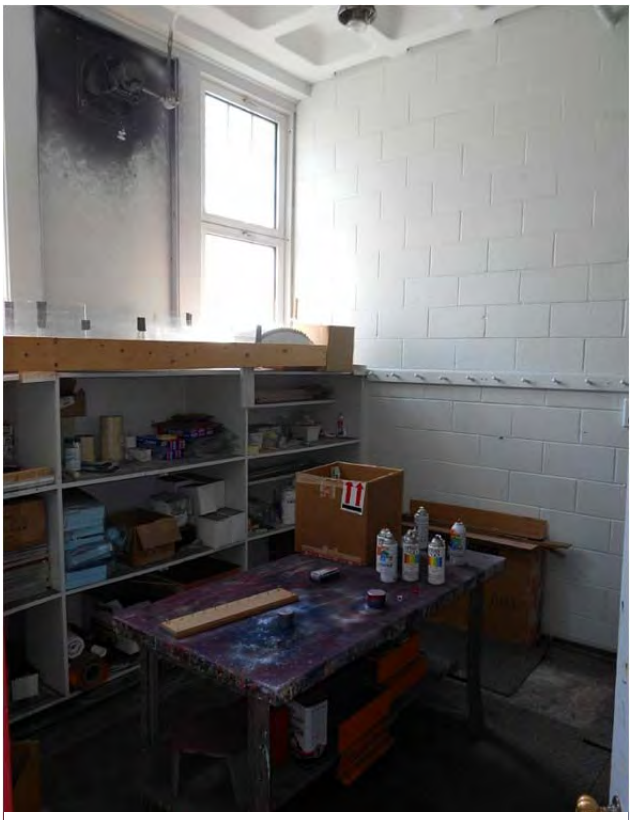
The “mod tech” lab is located in a converted vocational shop classroom under the gymnasium. Although located in an expansive and open room, the program is located in only one room. Typical modular technology programs are two rooms, one designated for “clean” work and one for “dirty” work. This classroom attempts to perform both functions. Some debris-producing stationary shop tools, including a drill press, we located mere feet from computer stations. The drill press did not have any designated “safety zone” identified on the floor or around the equipment. It is also unclear if the drill is still connected to the emergency shut-off circuit from the former shop use, which it is required to be.

The room is arranged with computer work stations, team conference tables, and separate work tables. The layout is not ideal because wires were strung along the floor to suit the furniture arrangement and concealed by duct tape.

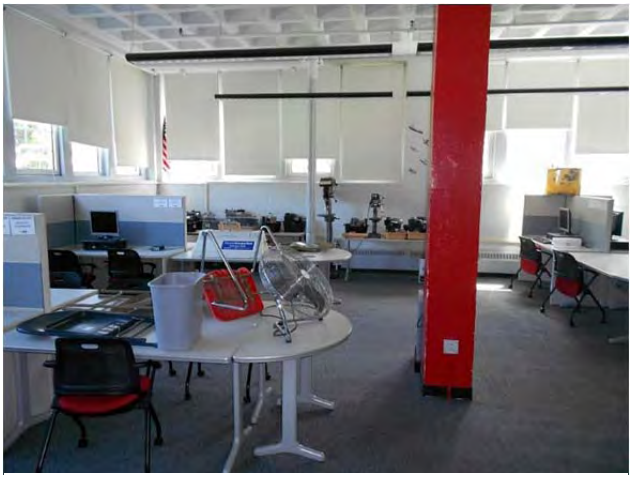
Small engines were observed being stored in one area of the classroom. It did not appear that special provisions for ventilation and fluid containment were in place within the classroom for the small engines. If these engines are run within the space, carpet over wood floors is the worst possible floor finish for fire safety.

An adjacent storage room is being used as a makeshift spray booth without adequate ventilation. A thru-wall fan located high on the wall was stained with paint spray, along with the floor and equipment around a table in the center of the room. The spray paint cans were stored in an unlabeled cabinet adjacent to combustible materials.

No ventilation hoods over cooking appliances



Spray painting without ventilation hood at work area.



Modular Technology Lab

Paint storage should be away from combustibles and stored in approved cabinets.

Small engine repair within the building adds many specific Code requirements like ventilation.

Smaller art classroom in C wing

Technology wiring taped across floor in the Mod Tech Lab.

Smaller art classroom in C wing

Visual Arts:

Art is located in C wing near the south end of the building in two classrooms, one at 1800 square feet and one at 1300 square feet. Although the rooms appear adequate in size, the smaller of the two rooms had eight tables that use up a large amount of floor space. Circulation through the classroom would be difficult or nearly impossible if someone was in a wheelchair. Storage cabinets lining the corridor wall appear adequately sized and appropriately used.

Since the classroom shares the shape of the rest of C wing, the west-facing windows in the small room, south-facing windows in the large room, and sloped roof do not provide the best natural light possible for an art program.

Band room in C wing

Performing Arts:

The music program lives in two separate areas of the building. The chorus program is located on the first floor of A Wing while the band is located on the south side of C wing.

The chorus room is approximately 1300 square feet. Even with that space, the amount of chairs arranged in a semi-circle and a small teaching area with desks located on the south side of the room both indicate a lack of adequate space. Existing built-in casework along the corridor wall is used for music storage. Acoustically, the room does not appear to be specially treated at all. Standard classroom carpet and acoustic ceiling systems are located throughout.

Chorus room in A wing

At approximately 2100 square feet including storage and practice areas, the band room appears to be large enough to handle the school's need. The long east wall of the classroom contained the only deliberate acoustic treatment in the room. It is unknown what the acoustic quality of the space is with the carpet floors and exposed sloped wood roof. The southern windows had most of the shades drawn to block out the blinding sun.

The two major deficiencies with the performing arts program are lack of adjacency to each other and their adjacency to non-music program. Typically music programs are some of the loudest spaces in a school, which can be disruptive to neighboring classrooms. There does not appear to be many, if any provisions for acoustic isolation in either of the performing arts classrooms.

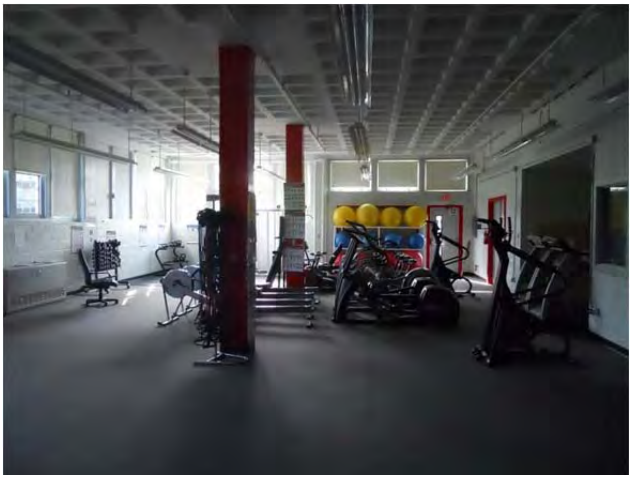
Chorus room in A wing

Exercise Room:

Like the modular technology classroom, the exercise room is located in a renovated vocational shop room. Equipment includes rowing machines, exercise bikes, treadmills, stretching and strength equipment, and exercise balls.

Since the room was not originally designed as an exercise room and is located below the gymnasium, there are several columns located in the middle of the room. Although these columns help define activity areas, the remaining clear space for the exercise balls or other activities does not appear to be adequate for an entire class.

The use of carpeting in the space is also questionable. Some exercise activities like yoga and aerobics require hard floor surfaces. Other activities may require soft, forgiving athletic flooring. Carpet can harbor sweat and germs from those working out, making floor activities and exercises far less desirable.



Exercise Room was a former vocational shop room.

T. Spaces - Corridors

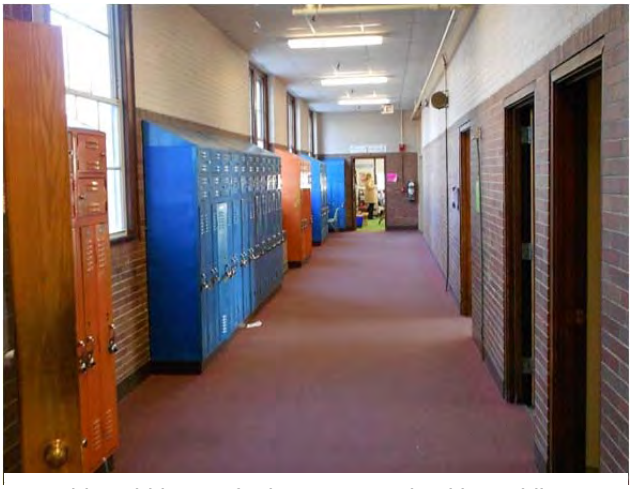
Although the code compliance of corridors, stairs, and ramps is addressed elsewhere in this report, the functionality of these components for an educational use must also be addressed, specifically in terms of student flow.

The stair connecting B wing to A wing is the most congested area of the school during class changes. Due to the stair width, student flow is constricted to single-file flow up and down. It is further complicated by the socialization and group-type of travel prevalent in this age group.

To compound the issue, the corridor within the east wing of B wing is too narrow for the volume of students encountered during class changes. The corridors are nearly 8'-6" wide with 12" deep lockers located along one side. When students are at those lockers, the effective width of the corridor is reduced to around 6'-0", thus limiting circulation to single-file flow in each direction.

Corridors in the original portion of B wing, although roughly the same width as the east wing, are better for student flow since there are less classrooms and no lockers. Removal of furniture and display cases the impede width will even increase and improve student flow. The west side of B wing, which include ramps on the main and upper floors, are wider where the lockers are.

There is limited free space in the exercise room for activities like yoga or aerobics.



Corridor widths are further compromised by adding lockers to one side.

The corridors in A wing and C wing are approximately 9'-6" and 9'-0" wide respectively. Both have lockers that are recessed into the wall. Even so, with lockers located on both sides of the corridor, the effective width of each corridor is reduced to around 6'-0" when students are at their lockers. Like B wing, this reduces circulation to a single file line in each direction. However, unlike B wing, A wing and C wing are dead-end wings so pass-thru circulation is not a critical concern.

U. Spaces – Offices

The main administration area is located on the main level of the original portion of B wing. Although the space itself looks adequate on paper, once furniture, copiers, waiting area chairs, file storage, speaker / telephone systems, computers, etc. are all added to the spaces, the entire administration area is extremely cramped and most likely not wheelchair accessible.

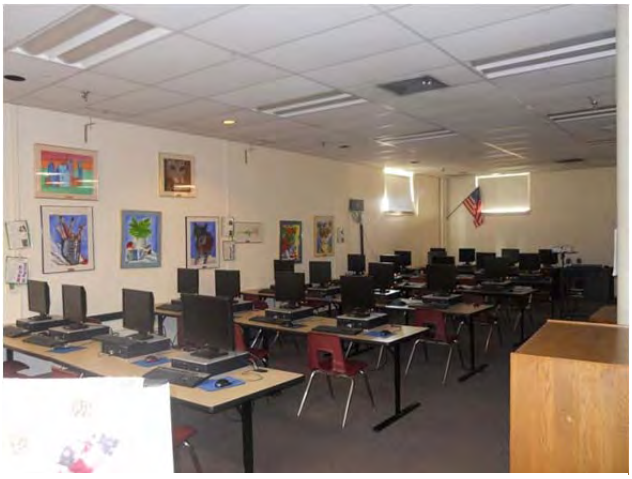
In addition to the main office area in the original building, there are a few offices scattered throughout the remaining facility. Former teacher dining and teacher prep rooms appear to have been converted to dual-purpose office and special education spaces. These spaces are cramped, full of too much furniture, and in the case of the upper level room in the original building, not handicapped-accessible due to a deep door niche created by an original staff toilet room.

V. Spaces – Library / Resource Room

The library and resource rooms were created by infilling the former auditorium space located in B wing in the mid- 1970s. The library space itself contains a dedicated computer lab, stack areas, and an area for tables and chairs. The computer lab is organized for lecture instruction. The area with tables and chairs does not appear to function as a second teaching space. Resource rooms off the library have been repurposed to a teacher planning room. Stacks appear to have sufficient room for expansion. The desk area for the librarian is very modest and isolated on one side of the room. The student research computers are not visible from the librarian's desk. There is no soft seating for individual reading.

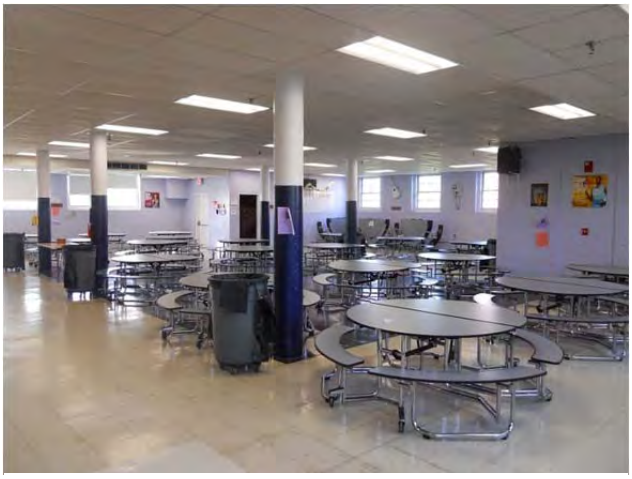
W.Spaces – Kitchen / Cafeteria

The cafeteria is located a half-story below grade in the west wing. Ceiling height is not ideal, creating a very flat space for its size. In addition, the ceiling is lower than the windows, requiring box-outs at each window.



Media Center's computer lab

Media Center



Cafeteria

Aesthetically, this is not very appealing. Although adequate for illumination, the 2x4 lay-in fluorescent light fixtures do not help the aesthetics.

The cafeteria appears has enough space for the round tables provided. During the lunch periods observed, there did not appear to be any overcrowding.

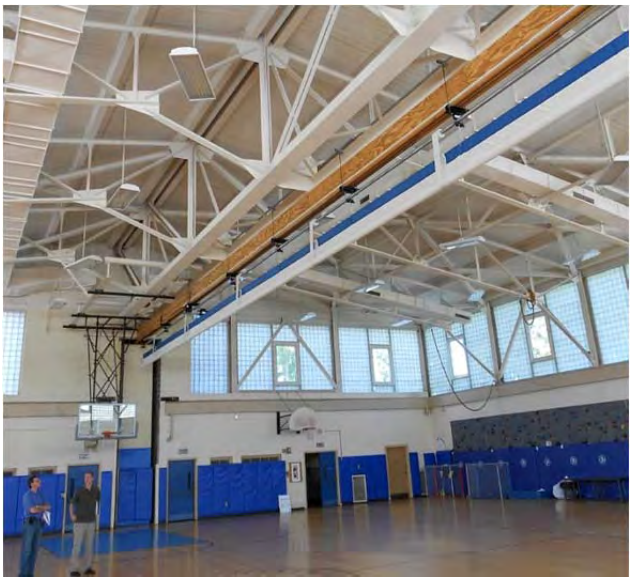
The serving lines are located in the cafeteria space itself. While not an ideal location to protect the equipment from damage, the layout appears to function well. The equipment is clean and appears maintained, as does the kitchen. The kitchen area itself also appeared clean and maintained, even when food prep was occurring during the walk through. Ceramic tile walls and quarry tile floors were well kept.

One deficiency to note was rusting and grease-covered ceiling tile near the cooking hood. Another is the severe inclined ramp for deliveries from outside down to the kitchen level, which could be extremely dangerous in wet or icy conditions, or when traversed with large or heavy loads.

The serving area is located within the cafeteria space

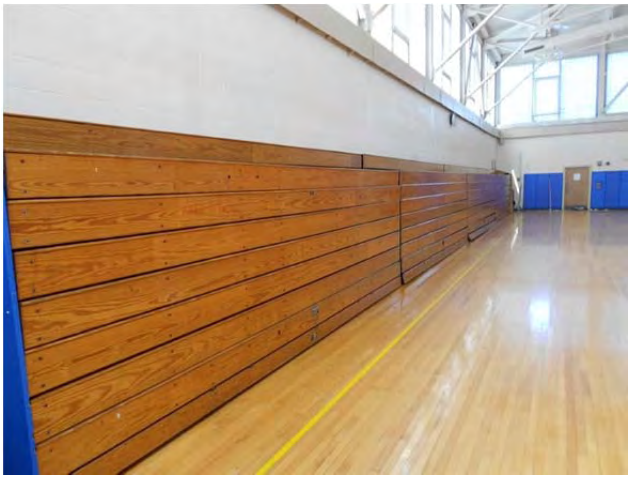
X. Spaces – Gymnasium / Lockers

The gymnasium space is approximately 9,200 square feet, dividable into two teaching stations by a roll-down curtain. The original operable wall partition is no longer functional but is still stored in a niche on the west side of the space. The center steel that original carried the operable wall, and now has the retractable curtain mount, does impede the clear height at center court. The curtain was not lowered for closer inspection but appears relatively new. In general however, the space is well-suited for a middle school gymnasium.



The original gymnasium operable wall has been replaced with a roll up divider curtain.

The main basketball backstops are square retractable glass and are in good condition. The secondary backstops are solid fan-style, dirty, and in fair condition. The gymnasium also features a horizontal “climbing” wall, climbing ropes, and various wall-mounted monkey bars and pull-up bars. The wall pads are in good shape, suggesting that they’ve been recently replaced. Original wood bleachers appear to be in good alignment and condition, although none were expanded for further inspection. The bleachers do not contain handicapped seating, designated aisle spaces with stairs, nor modern safety rail systems on the ends and aisles.



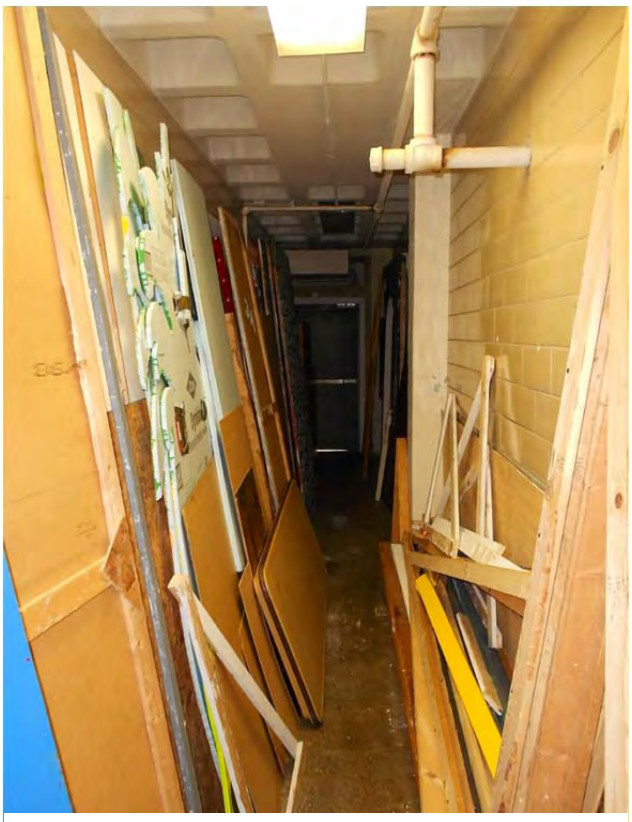
The gymnasium bleachers are in good shape but lack proper aisles, handrails, and guardrails.

The locker rooms are located directly below the gymnasium. Handicapped access from the locker room to the gymnasium is possible, but extremely circuitous and prohibitive. Both locker rooms have exposed concrete ceilings, sealed concrete floors, and painted

The men's locker room has plenty of room for circulation

The men's shower area is being used for storage.

The women's changing booths are dated but serviceable.



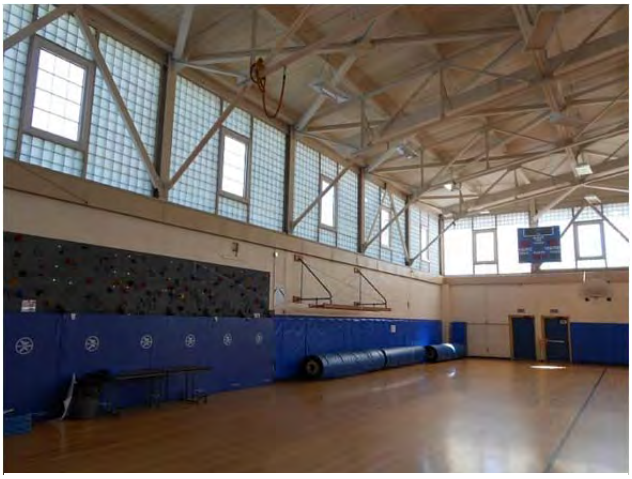
The second means of egress from the men's locker room is nearly blocked with storage.

The women's lockers consist of many different styles and eras.

CMU walls. The concrete floors in the boys room exhibited extensive hairline cracking from an unknown source. The layout for the boys room allows ample room for circulation and handicapped accessibility. The girls room, due to the changing stalls and showers, is not accessible.

The boys shower room does not appear to be in use and is not handicapped accessible due to step-over curb at its entrance. Currently, the shower is being used to store phys ed equipment. The girls showers are scattered around the locker rooms area. Some are located in the center with the changing stalls. Others are located in two rooms to the side of the locker room. All shower areas are extremely cramped and are not handicapped accessible. Neither the boys nor the girls toilet rooms within the locker rooms are accessible.

The visitor's team room is currently being used for storage, as well as the corridor leading to the exterior and the fields. This is a fire code issue since the secondary exit from the boys locker room is through this storage corridor. Even more critical is that the girls room does not have two remote exits. Occupancy for the girls room should be limited to 49 occupants.



The gymnasium includes a rock wall, climbing apparatus, and a scoreboard.

Y. Furniture

Although not specifically included in the study, the lack of a fire suppression system through the entire building means that all furniture, curtains, carpeting, and similar products must meet the requirements of California Technical Bulletin CAL 133 for flame spread and smoke produced. If sprinklers were to be installed, the requirements diminish to CAL 117 but are not eliminated. The school must verify compliance of the furniture with these national standards.

All furniture must comply with flame spread and smoke generated Code requirements.

Z. Site

Although specifically excluded from the scope of work for this report, a few site-related items are worthy of mention and further investigation.

Behind the gymnasium, a wood storage shed has been installed. This shed is too close to the school building and does not provide the proper fire-separation between the two buildings.

On the south side of the site, in order to have a level play field, fill was used to raise the grade. This causes the grades to slope towards the building, most severely in the corner connection between A and B wings.

Grade slopes towards the building

Part Two – Structural

PART ONE – EXISTING CONDITIONS (STRUCTURAL)

A. GENERAL STRUCTURAL OBSERVATIONS

A-Wing – Gymnasium:

The existing gymnasium at the east end of the school was constructed in 1952 along with the adjacent southern two story classroom wing and connector. The gymnasium is a two story structure with the first floor level (lower level) consisting of a concrete slab on grade. The first floor consists primarily of locker/shower rooms, with the actual gymnasium space occurring on the second floor. The second floor structure consists of a two-way reinforced concrete waffle slab system supported by reinforced concrete columns and spandrel beams. The gymnasium roof structure consists of open web steel trusses supported at the perimeter by a braced steel beam and column frame. The steel roof trusses are supported at the ridge line by a clear spanning steel girder truss. Heavy timber wood purlins support the structural wood roof decking and span between the main steel roof trusses. The exterior walls at the first floor level and the lower portion of the second floor gymnasium are brick veneer with concrete masonry unit (CMU) backup. The exterior walls for the upper portion of the gymnasium are glass block.

A-Wing – Classroom and Connector:

The southern classroom wing and connector portion of the A-wing was constructed at the same time as the adjacent gymnasium. Both the classroom wing and connector portion of this building are two story structures. The classroom wing has a gable roof while the connector to the gymnasium has a flat roof. There is a shallow crawl space with a dirt floor below the classroom portion at this wing of the building. There is also a large attic space above the classroom wing. The first and second floor structures (including the attic floor and presumably the roof of the connector) are one way reinforced concrete slabs supported by reinforced concrete beams and columns (or possibly steel beams and columns encased in concrete). The gable roof of the classroom area consists of conventionally framed 2x8 rafters supported at the exterior walls, and by four interior wood beam and columns lines that run the long axis of the building. The exterior walls for both the first

Two-way, reinforced concrete waffle slab system at second floor (gymnasium).

Structural wood decking, wood purlins, and clear span steel roof structure at gymnasium roof.

Conventionally framed gable roof above attic of classroom wing (A-Wing).

and second floors consist of brick veneer with concrete masonry unit (CMU) backup.

B-Wing – Original 1917 Building:

The original building constructed in 1917 is a three story structure. The lowest level is partially below grade (referred to as the ground level) leaving just two and a half stories of building exposed above grade. Nearly all of the structural framing is concealed behind finish materials. However, from my site visit and review of available drawings, it is clear that the structural framing consists of wood framed joists that span in the north/south direction. The joists are supported at the exterior walls and by the two interior bearing walls between the corridor and classrooms. The exterior walls appear to be 12" solid brick masonry and the interior bearing walls are a combination of wood stud in some locations, and solid brick masonry in others. The interior walls that are of brick masonry appear to occur at the locations of the original brick chases, probably for heating and ventilation.

The typical floor joists appear to be approximately 2"x12" and clear span from the corridor wall to the exterior wall. The exception to this is at the first floor level where an additional beam line was added in the boiler room/storage room to reduce the span of the joists. This was probably done to support the loads of the Library which was originally located directly above. Subsequently, the Library was moved and this location is the area of the current administration offices.

The roof of the original 1917 building was a flat roof which still remains and can be seen from the attic. The original roof framing was similar to the floors consisting of 2x12 joists spanning from the north and south exterior walls to the same two interior bearing lines. In the 1931 renovation, a gable roof was placed over a portion of the original flat roof. The gable roof extends from the front north wall to the second interior bearing wall on the south side of the corridor. The original flat roof and rafters remain from this wall over to the south exterior wall.

B-Wing – East Classroom Wing (1931):

This wing of the building was constructed in 1931 and is a three story structure similar to the original building. Nearly all of the structural framing is concealed behind finish materials. However, from my review of the 1930 drawings, the structural framing consists of structural wood decking spanning between 4x12 wood joists spaced at approximately four feet on center. The joists are supported by the exterior masonry walls and by two interior masonry bearing walls. In some areas the joists

Wood joists supported on wood studs -typical floor framing at B-Wing (1917 Building).

Conventionally framed gable roof over original flat roof (1931 renovation).

are supported by steel beams that clear span the classroom spaces. The steel beams are also supported by the exterior and interior masonry bearing walls therefore there are no steel columns in this wing of the building. The exterior walls, along with the interior bearing walls appear to be 12" solid masonry. The type of backup masonry for the face brick (brick, block, or hollow clay tile) is not indicated on the drawings.

B-Wing – West Wing (1931 Gymnasium/Auditorium):

This wing of the building was constructed in 1931 with the east classroom wing and originally was a two story structure with a Kitchen/Cafeteria on the ground floor and a Gymnasium/Auditorium on the first floor. In 1974, this wing was renovated and the first floor gymnasium/auditorium was changed to the current Resource Center. The balconies and stage were removed and another floor was added to create the current second floor classrooms and Learning Center. Nearly all of the existing structural framing is concealed behind finish materials. However, from my review of the 1930 and 1974 drawings, the structural framing consists of structural wood decking spanning between 4x12 wood joists spaced at approximately 3'-6" on center. The joists are supported by the exterior masonry walls and interior steel beams. The steel beams are also supported at the exterior by masonry bearing walls and at the interior by several steel columns. The first floor originally had only four interior columns and the roof beams clear spanned over the gymnasium/auditorium space. When the second floor Learning Center was added, additional columns were added on the first floor to support the new second floor. The roof continues to clear span as before allowing the Learning Center to be mostly column free. The exterior walls, along with the interior bearing walls appear to be 12" solid masonry, except for the original two story auditorium/gymnasium space which has 16" thick walls. The type of backup masonry for the face brick (brick, block, or hollow clay tile) is not indicated on the drawings.

C-Wing:

This classroom wing was the most recent addition and was added in 1959. It is a one story structure with a small one story connector that joins into the west end of B-Wing. The roof structure consists of an interior cantilevered steel truss supported at the interior corridor by CMU walls and piers. The cantilevered truss supports light steel beams that span from the end of the truss out to the exterior walls where they are supported by 3x3 steel tube columns. With the majority of the loads being supported at the interior walls via the cantilevered truss, the exterior columns were able to be very slender. Structural wood decking spans the 6'-0"

Columns added in Resource Center to support new second floor infill (1974 renovation).

Clear span steel girders over original gymnasium (currently the Learning Center).

Structural wood decking on typical cantilevered roof trusses at C-Wing.

spacing between the steel building frames. The majority of the first floor appears to be slab on grade, but there is a portion of the first floor at the center of the building (appears to be below the corridors) where there is a crawl space for mechanical equipment. The floor over this area is a concrete slab supported on metal decking.

B. OBSERVED STRUCTURAL DEFICIENCIES

Because almost all of the structural elements are concealed by finish materials, the number of structural deficiencies that were observed during my site visit are very limited. The deficiencies listed below do not include those items that may be required for any potential future renovation or change of use to the building. Those structural issues will be identified in a separate study and report. The deficiencies listed below are those items that in my opinion will eventually require repair for the continued use of the building regardless of any major renovation or change of use.

A-Wing – Deteriorating steel in Gym glass block wall:

The structural steel that supports the glass block wall construction in the gymnasium is deteriorating. The rust jacking of the steel is beginning to cause localized spalling of the mortar between blocks and will eventually cause damage to the glass block units. The existing glass block needs to be removed and replaced with new glass block and new steel wall framing members, or with a new translucent wall panel system.

A-Wing – Deteriorated egress stairs:

Both exterior egress stairs on the east end of the gymnasium are in very poor condition. The steel stringers, treads, and railings are not galvanized and are deteriorated. In some areas, the deterioration is so severe that it extends through the full thickness of the steel. The existing stairs need to be removed and rebuilt in their entirety.

A-Wing – Rusting Lintels:

The existing exterior window and door lintels at the gymnasium, classroom wing, and connector are not galvanized and are starting to rust. There were no signs of significant rust jacking and therefore, it is assumed based on visual assessment alone that these lintels can just be cleaned and painted. The existing lintel conditions do not represent an immediate structural deficiency, but something that should be addressed within the next few years.

Rusting steel supports in glass block mortar joints at upper gymnasium wall (A-Wing)

Deteriorated steel stringers and treads at gymnasium east egress exterior stairs.

Peeling paint and rusting lintel at A-Wing.

A-Wing – Cracks in Interior Walls:

There are numerous areas where there are cracks and spalling of the interior glazed block wall. These walls are not load bearing. The locations observed with spalling at the interior face do not appear to be related to any structural or moisture issue. The spalling occurs randomly and even occurs in areas with very little structural loading (such as under a window). It is my opinion that the spalling is not a structural issue and may be caused by a material flaw.

The cracks in the glazed block appear to be caused by several factors. The first is building movement. At locations where there are connections between two larger building masses, there does not appear to have been any allowance made for building movement. The building movement can be caused by changes due to thermal stresses or by small differential movements caused by lateral forces. There are also some cracks that appear to be caused by floor deflections. The observed deflections do not appear to be out of the range of normal behavior for floor structures, but was probably caused by the initial floor deflections when loads were added to the structure for the first time.

None of the cracks that I observed were significant structurally. The spalled areas can be replaced with new units to match the existing. The areas with cracks can be repointed and cracked units replaced with new units to match the existing. In some areas that are the result of thermal stresses, it may be more suitable to repoint with a flexible material between adjacent units.

B-Wing - Snow Drifting on Existing 1917 Roof Joists:

When the gable roof was constructed over the existing flat roof in 1931, it created a significant potential increase for drifting snow load on the adjacent existing flat roof joists on the south side of the building. Along the west edge of this roof there is also a vertical projection created by the elevator mechanical room that was added with the 1974 renovation. This vertical wall also creates the potential for significant localized drifting snow. Based on my observation of existing conditions and my review of the structural drawings for the 1931 and 1974 renovations, the additional drifting caused by these two conditions does not appear to have been addressed. In many cases, older codes did not address drifting conditions at all. Based on the current code, the additional drift potential is approximately 50 pounds per square foot above and beyond the base design snow load requirement of 35 pounds per square foot. This creates an increase in stress on the existing flat roof

Random spalling of interior face of glazed block.

Cracks in glazed block caused by building movement (floor deflection).

Vertical roof projection – added snow drifting.

rafters of nearly twice the allowable in the area immediately adjacent to the mechanical room projection.

This condition is very significant structurally and so it is my recommendation that this portion of the roof framing be reinforced by sistering each of the existing rafters with 2x12 LVL's. This work should be done regardless of any future renovation to the building. Until this work has been completed, the snow should be removed from the lower roof during the winter so that the depth of snow on the existing flat roof never exceeds 12 inches.

In-plane cracks over door in southwest stair (B-Wing).

B-Wing - Cracks in Southwest Stair Walls of West Wing:

Several significant cracks were observed in the interior masonry walls of the southwest stair. The cracks varied in thickness from hairline to approximately ¼" in thickness. In some areas, there has been out of plane movement on opposite sides of the crack. There are a couple of possible causes for these types of cracks. The diagonal cracking could be the sign of differential settlement. However, there do not appear to be any other typical indicators that settlement is a problem in the building. Also, settlement typically occurs early in the life of the building and these cracks appear to be much more recent. Settlement cracks also are not typically out of plane. Based on this, it is my opinion that the more likely cause of these cracks is that they are result of water infiltration into the wall. With this type of solid masonry wall, water infiltration can cause severe damage. If the water gets trapped and freezes, it causes the walls to crack and push out resulting in out of plane movement. It appears that the most likely entry point for water getting into the walls was with the original belt course detail near the top of the wall. This was removed and replaced during the most recent façade renovation and so it is likely that previously deteriorated belt course was allowing water into the wall. The cracks above the entry door are most likely related to failure of the flashing over the entry canopy roof which was also repaired during the 2006 façade renovation.

Out of plane cracks adjacent to southwest stair (B-Wing).

It is my recommendation that the masonry walls in this stair be repaired by removing localized portions of the cracked interior face and reconstructing. These existing conditions do not represent a severe structural deficiency, but something that should be addressed within the next couple of years.

B-Wing - Deteriorating Lintels:

During the 2006 exterior renovations that were made to the building, many of the original exterior lintels over windows were replaced with new galvanized lintels. However, it was noted during my site visit that there were many existing lintels that were not replaced as part

Deteriorating lintel at B-Wing.

of this work. The original lintels are not galvanized nor painted (See photo 2.3). The lintels over these windows are currently exposed bare steel and will deteriorate over time if left unattended.

It is my recommendation that these lintels at the very least be cleaned and painted. Eventually, they will need to be replaced with galvanized steel angles. The existing lintel conditions do not represent an immediate structural deficiency, but something that should be addressed within the next couple of years.

C-Wing – Inadequate roof ballast at edges of roof:

The ballast for the roof membrane has been removed from the edges of the existing roof. The roof edges are the areas with the highest amount of wind uplift. Ballast roof systems are not recommended in high wind areas. The existing roof system should be replaced with a new adhered or mechanically fastened roof system.

Missing roof ballast along roof edges (C-Wing).

Part Three – MEP/FP Systems

WB&A Wozny/Barbar & Associates, Inc.
CONSULTING ENGINEERS

July 20, 2012

Ashley C. Prester, AIA, CEFPI, MCPPO
Project Manager
Durkee, Brown, Viveiros & Werenfels Architects
111 Chestnut Street, Providence, RI 02903

Reference: Gates School
Scituate, MA

Dear Sir:

As requested, we visited the Gates School on January 13, 2012 and February 10, 2012 as well as on July 9, 2012 to gather information on the existing MEP/FP systems.

This report is addressing the following issues:

1. Identify all issues associated with the building re-configuration and the disposition of the existing HVAC, Electrical and Plumbing systems.
2. Address the issue of the change of use of the Building.
3. Generally describe the scope of work for budgetary estimating.

GENERAL

The following reference standards were used for the system evaluation:

- International Mechanical Code
- National Fire Protection Association
- Eighth Edition, Massachusetts Building Code (780 CMR)
- National Electrical Code with Massachusetts Amendments (2011 NEC)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- National Electrical Manufacturers Association (NEMA)
- Americans with Disabilities Act (ADA)
- National Electric Safety Code (NESC)
- Massachusetts Fuel Gas and Plumbing Code (248 CMR)
- International Energy Conservation Code (2009 IECC)

Assessments of the systems have been based on strictly visual observation and not dismantling and testing of equipment/systems. Engineering drawings showing mechanical and electrical systems were also reviewed and found to be accurate.

HVAC

Existing Conditions

The existing boiler room is in the original building A Wing and houses three (3) Burnham, low pressure steam boilers. Each boiler is as follows:

- Model number V 1118
- Gross output 3580 MBH
- Net IBR Rating: Steam - 11583 Sq. Ft., Steam 2780 MBH, Water 3113 MBH
- Oil firing rate: 31 GPH
- Boiler manufacturing date indicated on the nameplate: 2000

The burners are dual fuel, made by Gordon-Piatt Energy Group, model number R10.2-GO-50. Oil tank is located outside behind the building. Even though the burner is dual fuel the gas piping is not connected to the burners.

The boilers are connected to an insulated breeching.

Boilers

Oil tank behind the enclosure

The boiler combustion air is supplied through two ducts – one located near the ceiling and the other low, near the floor. The high duct is 24” x 84”, the low duct is 26” x 84”. The openings are provided with motorized dampers.

Boiler dual-fuel burner

High and low boiler combustion ducts

The boilers are connected to an insulated steam distribution piping system. The piping system supplies steam to the classroom unit ventilators, but also serves miscellaneous terminal units including attic unit heaters. The piping in some areas is not insulated.

Portion of the building complex, specifically the A Wing, is heated by hot water heating system. There is a steam to hot water converter serving the Original and West Buildings.

Steam-to-hot water heat exchanger

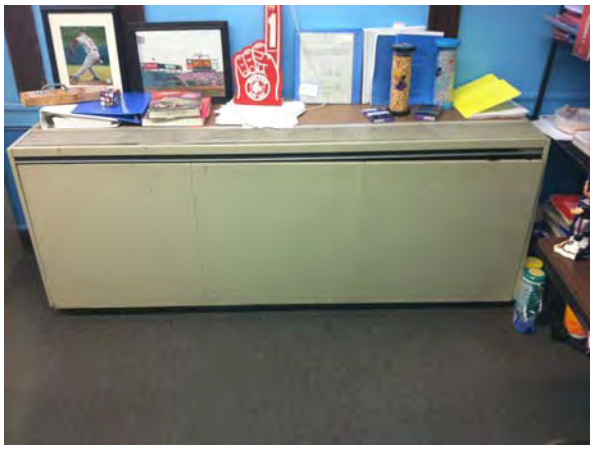
Hot water circulating pumps

The room housing steam to hot water heat exchanger is provided with a ventilation system. A compressor producing compressed air for the control system is located in the same room.

Air Compressor serving school pneumatic controls

Heat exchanger ventilation system

The classrooms heating and ventilation is provided by unit ventilators. Some of the units are floor-mounted and some are ceiling mounted. The units are made by AAF Herman Nelson.



Floor-mounted unit ventilator

Ceiling-mounted unit ventilator

A ventilation fan located in the attic of the original B building exhausts air through louvered tower to outside.

An exhaust fan located in the attic of the original building

An attic unit heater

A fan in the attic of the C wing provides exhaust through a gable end louver at the front of the Wing.

The A Wing gym heating and ventilation system is housed in a tower and the West end of the Gym. Multiple fans and heating coils provide heating ventilation and toilet/locker room exhaust. The ventilation tower has multiple levels and includes louvers and opposite sides for intake and exhaust.

Plumbing

Sanitary, Waste and Vent System

The sanitary, waste and vent systems installed throughout the building consists of a combination of hub and spigot cast iron and no hub cast iron piping. Galvanized piping was also noted on the venting systems. Piping appeared to be properly supported and appeared to be generally in good condition for the age. It was mentioned by the building staff that they have been experiencing leaks in areas.

Piping is run in crawl spaces and is also exposed in the lowest levels of the original building.

Cast iron kitchen waste piping extends from the kitchen fixtures and drains through an internal grease interceptor before extending to the sanitary system.

Sanitary piping connects to a municipal sewer system through underground piping on the south and west side of the site. It is possible that sanitary runs under the far west wing based on the drawings furnished by the Town of Scituate.

Storm System

The storm system consists of gutters and downspouts spilling to grade on most of the building sections. Some areas including the Gym and South wing include roof drains and interior rain leaders that extend down through the building and connect to the storm system.

Domestic Cold Water System

The domestic cold water system consists of a 4" main service in the gym wing fire service room. From there, water is piped throughout the building. Soldered fittings likely include a 50/50 combination of tin and lead. A limited number of wheel handle shut off valves were observed and given the age of the system the possibility exist that the valves will not operate properly.

Domestic Hot Water System

The domestic hot water system was provided to the building from a natural gas fired tank type domestic water heater located within a room adjacent the kitchen. The water heater is an AO smith model BC 670

892 manufactured in 1991. The heater burner is atmospheric and the flue connects directly to the exterior and extends up the outside of the building. There are two insulated storage tanks which store water at 140F for the kitchen and 120F for other use. It could not be determined if the storage tanks have the required ASME stamp. There is hot water recirculation on both systems. Copper distribution piping consisting of non insulated type "L" copper with soldered fittings extends from the boiler room and supplies fixtures throughout the building. Soldered fittings likely include a 50/50 combination of tin and lead.

Natural Gas System

Natural gas begins at the gas meter located outside the building. A black steel main extends into the kitchen and branches off to supply the domestic water heating plant. Although the boiler burners are dual fuel type, gas is not extended to these burners.

Fixtures

Fixtures throughout the building include the following:

Water closets

Water closets consist of a combination of floor outlet and wall hung vitreous china with open front seats and with what appears to be 3.5 gallon per flush type valve. Some of the staff water closets include accessible grab bars and appear to have been installed at accessible height. Student toilet rooms do not appear to meet the requirements for accessibility. The majorities of the water closets are dated and exceeds the code maximum of 1.6 gallons per flush.

Lavatories

Lavatories consist of wall hung vitreous china with a combination of two (2) handle and lever type faucets. With the exception of the wall hung slab type fixtures none of the remaining lavatories meet the requirement for accessibility. Faucets are not provided with low flow aerators or mixing valves and do not meet the requirements of water temperature 110 degrees Fahrenheit at the fixture and maximum flow of .5 gallons per minute.

Urinals

Urinals consist of wall hung vitreous china complete with flush valves. None of the fixtures have been mounted at accessible height and no partitions are provided between fixtures.

Showers

Male and female shower rooms located below the A Wing gymnasium are being used for storage areas. Fixtures are not operational.

Sinks

Science Room

Sinks located within the A Wing science rooms consists of a combination of epoxy resin and stainless steel. Piping from the sinks appears to be chemical resistant material. Sink faucets are not equipped with vacuum breakers and none of the science room fixtures are installed at accessible height. Each science room includes gas turrets that do not appear to be operational and an emergency shower. The emergency shower if operational is not equipped with a temperature control valve and is likely supplied only with cold water. Code requires the installation of emergency showers is rooms were gas burners or chemicals are being used. Emergency showers are required to be supplied with tempered water between 70 and 90 degrees Fahrenheit.

Art Rooms

Sinks located within the art rooms consists of stainless steel drop in style. Faucets are two handle style. Waste piping from the sink is piped through a point of use plaster trap mounted below the counter.

Janitor's Closets

Sinks located within the janitor's closets are service type sinks with trap standards. Faucets are two handle style with integral vacuum breaker. Some of the janitor's closets are equipped with detergent

dispensing equipment connected to the faucet. Dispensers when connected to the outlet of the faucet can contribute to possible cross contamination and must be monitored and insure the faucet is turned off when not in use.

Drinking Fountain / Water Cooler

Drinking fountains and water coolers are located throughout the building. Fixtures consist of vitreous china drinking fountains and stainless steel water coolers. The drinking fountains are recessed in walls and the electric water coolers are single level.

Fire Protection

The building is equipped with a fire suppression system in limited areas that include the original building, A Wing attic and locker rooms. The water and fire service room is in the A Wing below the gym. The fire service room includes a vertical fire pump and controller. A double check valve assembly is not installed on the incoming fire service.

The combustible attic space of the A Wing is protected with upright style sprinkler heads. Piping throughout the attic is schedule 40 black steel.

Electrical

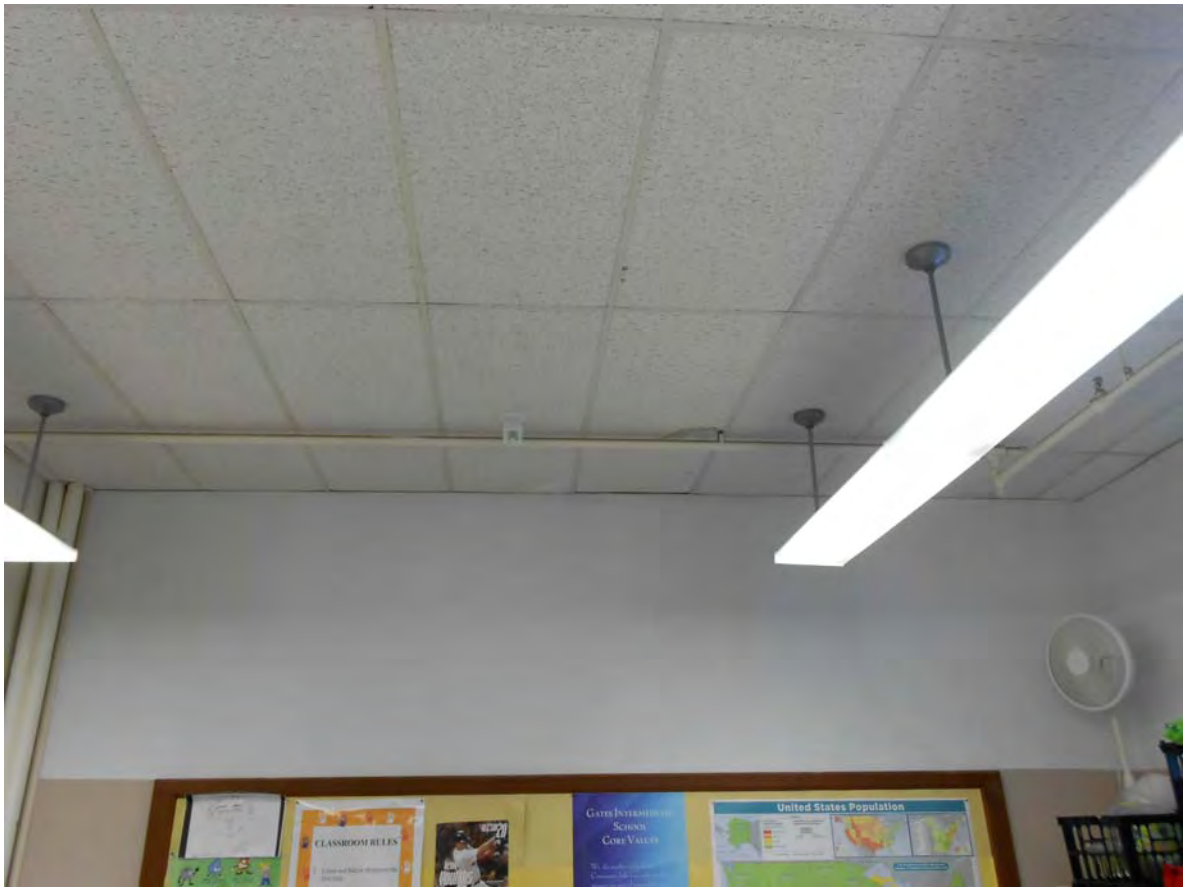
The existing electrical service for the building is located in the A Wing south end basement or crawl space. The service is fed from an adjacent transformer, vault under the building accessible only from and exterior areaway. The primary utility service extends underground from a utility pole on the east side of the site.

The existing electrical service is 1000A, 120/208V, 3 phase, 4 wire. This service feeds various panels in all other areas of the building. A tap ahead of the main service disconnect feeds the fire pump via the fire pump controller.

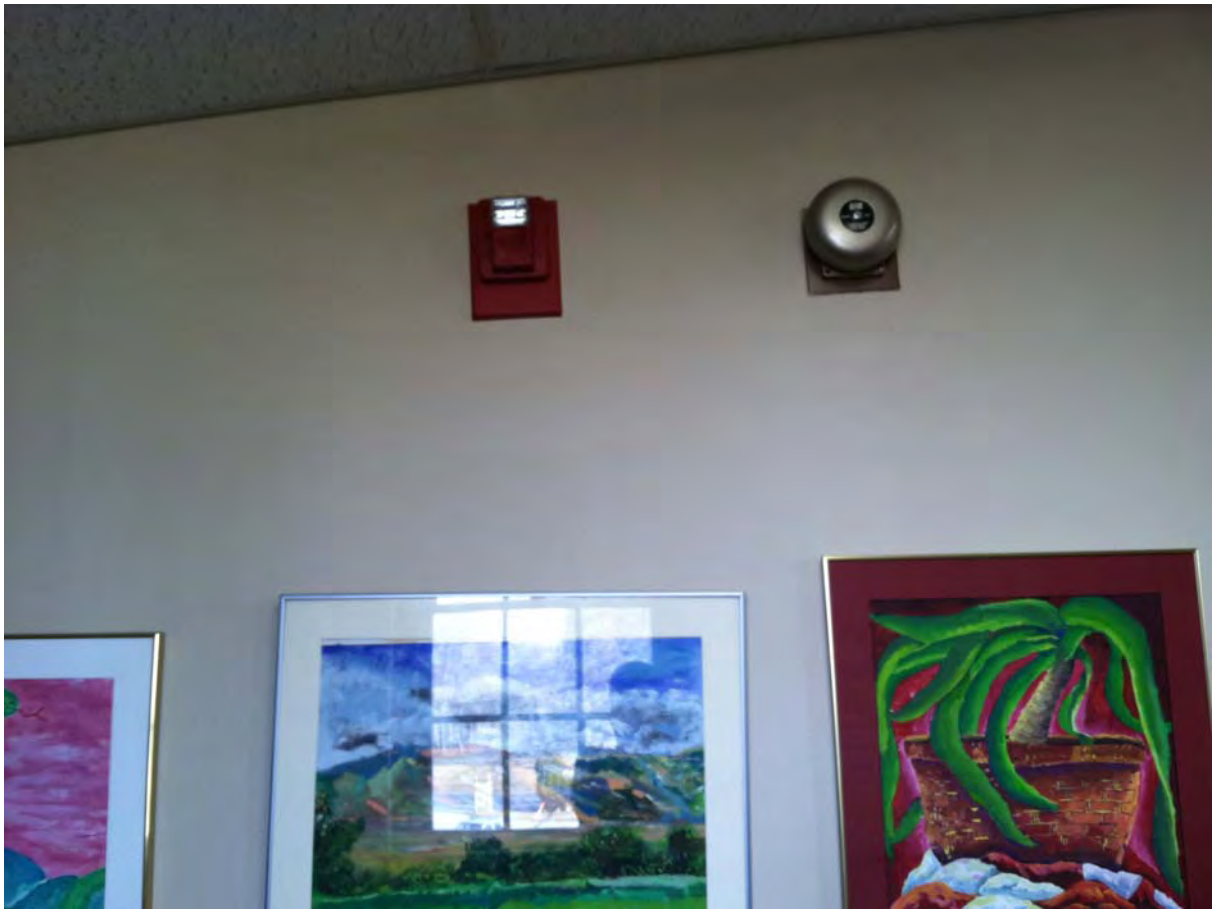

GEN SET
ATS BY KITCHEN
GENERAL ELECTRIC
GENERAL ELECTRIC
TENNIS COURT

A 125kW Emergency / Standby Generator is located at the rear of the original B Building in a dedicated room accessible from the building exterior. The engine generator is diesel fired and an above grade fuel tank is located adjacent the generator room. The engine generator transfer switch is located in the passage area behind the kitchen. Loads on the generator include kitchen equipment, heating, fire alarm, the elevator and lighting.

Lighting is generally suspended fluorescent fixtures with recently installed occupancy sensors in B and C Wings for automatic control. The lighting system in the Gym has been retrofitted with multiple T-5 or T-8 lamp fluorescent fixtures.



The building is equipped with a hard wired fire detection system. The control panel is located in the B Wing main office with annunciation and drill switches. Another annunciator and Master Box is at the front of the A Wing gym. Notification devices have been upgraded from the original bell system to horn strobe devices in most areas. Many area do not comply with MAAB mounting heights and strobe style. We also assume strobes are not synchronized given the different styles.



We did not see any evidence of a UL listed lightnng protection system on the building.

INITIAL FINDINGS

GENERAL

The majority of the building services enter, are adjacent to, or are underground passing below the gym wing or south wing. The removal of these wings will need to involve building water, fire, sanitary and electrical services.

HVAC

Based on our visual inspection and information obtained during the survey it appears that the boilers have not exceeded their service lives. They are 12 years old. Service life is a median time during which particular equipment remains in its original service application and then is replaced. Replacement may occur for any reason, including, but not limited to, failure, reduced reliability, excessive maintenance cost. According to a nation-wide survey conducted by American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) the average service life of HVAC equipment is approximately 20-25 years.

The boilers are just 12 years old but the piping, unit ventilators, radiators, cabinet unit heater exhaust fans are all well beyond their service lives.

Plumbing

The domestic water service is located in the A Wing (below gym) fire service room. Continued domestic water service will need to be taken into consideration if this wing is removed.

Fire Protection

The fire protection service is located in the A Wing (below gym) and includes a vertical electric fire pump. Continued fire protection service will need to be taken into consideration if this wing is removed.

Electrical

The electrical service is located in the A Wing south basement. The utility transformer vault is also located in this building space. Continued electrical service will need to be taken into consideration if this wing is removed.

Recommendations

HVAC

It has been indicated to us that the school maintenance contractor estimated that the majority of the unit ventilators shall be replaced. There are problems unit ventilator dampers operation, unit controls and heat output etc. Some of the units are noisy.

The control system is pneumatic type. It has been indicated to us that the pneumatic piping is leaky. Note that leaky piping does not allow the control system to function properly affecting the terminal unit performance.

Interior of an AAF Herman Nelson unit ventilator

Unit ventilator pneumatic controls (unit interior)

It has been reported to us that there are problems with the piping and radiator leakage.

We have noticed that the management has been making a serious effort to maintain the system operational regardless of its age. New boilers were installed in the year 2000. However, the piping is leaky, pneumatic control difficult to be managed due to the age of the compressor and leaky compressed air piping. Unit ventilators experience various operational problems.

Repairs of the system are possible and they may be expensive and disruptive to the building operation.

The boilers should remain. They are fairly new. The piping and the heating devices shall be replaced with new more efficient devices. The existing pneumatic control system shall be replaced with a digital system.

A possibility of converting the entire system to hot water heating system should be considered.

We realize that the above recommendation is difficult to implement in a fully occupied building but repairs to troublesome system may become too expensive to justify them.

The efficiency of the school ventilation system should also be addressed. For instance, based on our visual inspection, the exhaust system exceeded its service life and should be replaced with new more efficient system. A possibility of using energy recovery ventilators should be considered.

Plumbing

The domestic water service will need to be re-located into a new room if the gym wing is no longer part of the building. A new domestic water service would be sized to support the number of fixtures required for the new program.

New fixture counts will likely require the modification and addition to the existing toilet rooms. New toilet room layouts would include fully accessible fixtures as required.

Drinking fountains will also need replacement to comply with the current accessibility requirements.

Fire Protection

The fire protection service will need to be re-located into an area of the building's final configuration. A new fire pump will likely be required as well. All existing sprinkler heads need evaluation for replacement as well. It appears that some of the heads are of a style that is no longer compliant.

Electrical

A new electrical service will be required if only the original building and adjacent wings are to remain. The majority of the electrical distribution equipment is aged and should be replaced if a new electrical service is installed.

The existing fire alarm system does not meet the current building code requirements for Assembly use if community space is programmed. Current code requires emergency voice evacuation which the current system will not support. We recommend a new fire alarm system that provides code required notification.

Although the current lighting is in relatively good shape and has energy efficient controls in the classrooms the level of interior renovations may dictate new lighting throughout. Emergency egress lighting and signage also needs upgrading for full compliance with code requirements.

Should you have any questions, do not hesitate to call.

WOZNY/BARBAR & ASSOCIATES, INC.

Mark F. Rattenbury, PE

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Part Four – Code Plans

APPLICABLE CODE(S)

A. 780 CMR MA STATE BUILDING CODE - 8th EDITION (IBC 2009)
B. 521 CMR MA STATE ACCESSIBILITY CODE (MAAB)
C. 248 CMR UNIFORM STATE PLUMBING CODE
D. MA STATE MECHANICAL CODE
E. MA STATE ELECTRICAL CODE
F. 527 CMR 21, 23 AND 24 MA FIRE PREVENTION REGULATIONS
G. NFPA 10, STANDARD FOR PORTABLE FIRE EXTINGUISHERS

USE AND OCCUPANCY CLASSIFICATION

EXIST. EDUCATIONAL (E) AND ASSEMBLY (A-3) W/INCIDENTAL BUSINESS (B) AND STORAGE (S-1)

CONSTRUCTION TYPE

EXISTING CONSTRUCTION CLASSIFICATION: VARIES (TYPE 3B ASSUMED)
EACH ADDITION IS STRUCTURALLY TIED TO THE ADJACENT CONSTRUCTION. NO REAL SEPARATION OR FIRE WALL IS PRESENT BETWEEN THE ADDITIONS.

- ORIGINAL BLDG - 1917 AND EAST & WEST ADDITIONS - 1930 ("B-WING") THE ORIG. BLDG CONSISTS OF LOAD-BEARING EXTERIOR MASONRY WALLS AND WOOD FRAMED FLOORS, WALLS AND ROOF. (TYPE 3B)
- GYM/LOCKER RM AND SOUTH CLASSROOM ADDITION - 1952 ("A-WING") STRUCTURAL STEEL FRAME. THE CLASSROOM WING IS ENCASED IN CONCRETE. STRUCTURE IS EXPOSED IN THE GYM. FLOORS ARE REINF. CONCRETE. THE ROOF IS WOOD FRAMED. A CRAWLSPACE IS PRESENT UNDER THE CLASSROOM PORTION.
- NORTH CLASSROOM ADDITION - 1954 ("C-WING") STRUCTURAL STEEL FRAME AND LOAD-BEARING INTERIOR MASONRY. THE ROOF DECK IS WOOD. THE FIRST FLOOR IS SLAB-ON GRADE W/A UTILITY TUNNEL UNDER THE CORRIDOR.

NOTE: MAJOR RENOVATION WAS UNDERTAKEN IN 1974. MISC. EXTERIOR WORK WAS COMPLETED IN THE 1990's AND 2000's.

FIRE RESISTANCE RATED CONSTRUCTION

STRUCTURAL FRAME	(TABLE 601)
INCLUDING COLUMNS, GIRDERS, TRUSSES	0 HR
BEARING WALLS	
EXTERIOR	2 HR
INTERIOR	0 HR
NON-BEARING WALLS AND PARTITIONS	
EXTERIOR AND INTERIOR	0 HR
FLOOR CONSTRUCTION	
INCLUDING SUPPORTING BEAMS AND JOISTS	0 HR
ROOF CONSTRUCTION	
INCLUDING SUPPORTING BEAMS AND JOISTS (TABLE 601 & 1505.1)	0 HR/CLASS C
FIRE BARRIERS	
CORRIDORS (TABLE 1018.1):	1 HR W/OUT SPRINKLERS
EXIT ENCLOSURES (SECTION 1022):	1 HR (>4 STORIES)
SHAFTS:	1 HR
ELEVATOR HOSITWAY:	2 HR

BUILDING HEIGHT AND AREA

BUILDING HEIGHT ALLOWABLE (STORIES/FEET)	2/55'-0"
EXIST. BLDG HEIGHT	3 STORIES / 52'-0" (UNCHANGED)
EXIST. FLOOR AREA:	± 52,382 SF - LOWER LEVEL
ALLOWABLE AREA PER FLOOR	14,500 SF
(W/OUT FRONTAGE AND W/OUT SPRINKLER SYSTEM INCREASE)	
(TABLE 503 & SECTION 504.2)	

USE GROUP E, TYPE 3B CONSTRUCTION PERMITS THREE STORIES IN HEIGHT W/THE SPRINKLER HEIGHT INCREASE. A NEW SPRINKLER SYSTEM IS REQUIRED. THE FACILITY IS OVER IN ALLOWABLE AREA. HOWEVER, THESE CONDITIONS DATE TO 1974. IN CONJUNCTION WITH THE SPRINKLERS, THE FACILITY SHOULD BE COMPARTMENTALIZED INTO FIRE AREAS AS A COMPLIANCE ALTERNATIVE.

MEANS OF EGRESS

REFER TO CODE PLANS FOR ROOM OCCUPANT LOADS; NUMBER, LOCATION AND CAPACITY OF EXITS, AND MAX. TRAVEL DISTANCE - (TABLE 1004.4,1.1)

OCCUPANT LOAD FACTORS:	OCCUPANT/SQUARE FEET
CLASSROOMS:	1/20 GROSS
ASSEMBLY:	1/15 NET (TABLES & CHAIRS)
ACCESSORY BUSINESS	1/100 GROSS
ACCESSORY MECH & STORAGE:	1/300 GROSS
OCCUPANCY LOAD	REFER TO CODE PLANS
EXIT CAPACITY	REFER TO CODE PLANS

MIN. REQUIRED # OF EXITS/FLOOR (TABLE 1021.1):
OCCUPANT LOAD 1-500 - 2 EXITS REQ'D
OCCUPANT LOAD 501-1,000 - 3 EXIST REQ'D
OCCUPANT LOAD MORE THAN 1,000 - 4 EXISTS REQ'D
MAX. ALLOWABLE TRAVEL DISTANCE: 200' W/OUT SPRINKLERS (TABLE 1016.1)

DEAD END CORRIDOR	20'-0" W/OUT SPRINKLERS
EGRESS WIDTH:	INCHES/OCCUPANT
DOORS:	0.2 (1005.1)
STAIRS:	0.3
CORRIDORS:	0.2
OTHER EGRESS COMPONENTS:	0.2

FIRE PROTECTION SYSTEMS

1. SUPERVISED AUTOMATIC FIRE ALARM SYSTEM W/ AUTOMATIC DETECTION.
2. AN AUTOMATIC FIRE PROTECTION SYSTEM IS PRESENT IN ISOLATED AREAS OF THE FACILITY; PRESUMABLY TO PROTECT THE WOOD FRAMED ROOFS/ATTICS AND LAB AREAS. IT IS RECOMMENDED THAT A NEW SYSTEM BE INSTALLED TO PROTECT THE ENTIRE FACILITY.
3. PORTABLE FIRE EXTINGUISHERS.

INTERIOR FINISHES

MINIMUM FINISH CLASS (W/OUT SPRINKLERS) - (TABLE 803.9)

EXITS:	CLASS A
CORRIDORS:	CLASS B
ROOMS:	CLASS C

ACCESSIBILITY ANALYSIS

1. ACCESSIBLE ROUTE BETWEEN FLOORS IS INCOMPLETE.
   a. NON-COMPLIANT ELEVATOR IS PRESENT ONLY IN THE 1917 PORTION OF THE BUILDING. THE CAB MEASURES 47½" X 49½" AND HAS A 34" W. DOOR. THE CONTROLS ARE MAAB COMPLIANT. HOWEVER, ELEV OPERATED VIA KEY SWITCH.
   b. NON-COMPLIANT RAMPS ARE PRESENT IN THE BUILDING.
   c. EXISTING HC STAIR LIFTS ARE PRESENT IN TWO LOCATIONS. WHILE TECHNICALLY CODE COMPLIANT, THEY IMPEDE THE REQUIRED CLEAR WIDTH IN THE STAIRS. THEY ARE ALSO IMPRACTICAL DUE TO THE PARAMETERS OF USE. A HC PERSON MUST UTILIZE THE LIFTS WHEN NO ONE ELSE IS ON THE STAIRS.
2. TOILET ROOMS - THE EXIST. ROOMS ARE NON-MAAB COMPLIANT. THE ROOMS SHOULD BE RENOVATED AND RECONFIGURED.
3. DOOR HARDWARE - ALL EXISTING HARDWARE CONSISTS OF 1970'S VINTAGE KNOBS AND ARE NON-MAAB COMPLIANT. ALL DOOR HARDWARE SHOULD BE REPLACED W/LEVER STYLE HARDWARE.
4. DOOR CLEARANCES (PUSH/PULL) - EXIST. RECESSED DOOR NICHES DO NOT HAVE THE REQ'D PUSH/PULL DIM'S AS PER PARA 26.00. LOW ENERGY DOOR OPERATORS SHOULD BE CONSIDERED AS AN ALTERNATIVE TO RECONSTRUCTION OF THE NICHES.
5. STAIR HANDRAILS - EXIST. HANDRAILS ARE NOT CONTINUOUS OR ON BOTH SIDES OF THE STAIRS AS PER PARA 27.4.1. THEY DO NOT COMPLY W/CROSS-SECTION REQ. OF PARA 27.00. ALL HANDRAILS SHOULD BE REPLACED.
6. SIGNAGE - THE EXIST. ROOM SIGNS ARE NON-MAAB COMPLIANT. A NEW INTERIOR AND EXTERIOR SIGNAGE PACKAGE SHOULD BE PROVIDED THROUGHOUT THE FACILITY.
7. WATER FOUNTAINS - THE EXIST. FOUNTAINS ARE NON-MAAB COMPLIANT. THESE SHOULD BE REMOVED AND REPLACED.
8. ACCESSIBLE 2ND MEANS OF EGRESS - MOST EXTERIOR DOORS HAVE STAIRS OR STEPS WHICH ARE AN IMPEDIMENT TO THE REQ'D ACCESSIBLE ROUTE OUT TO A PUBLIC WAY. AREAS OF RESCUE ASSISTANCE OR RAMPS SHOULD BE PROVIDED.

PLUMBING FIXTURES

THE EXISTING BUILDING WAS REVIEWED FOR CONFORMANCE TO THE CODE REQUIREMENTS OF ITS CURRENT USE AS A SCHOOL. ANY RE-USE SCENARIO MUST BE REVIEWED FOR ITS PROPOSED NEW USE.

EDUCATION (E) USE GROUP ANALYSIS
MAXIMUM OCCUPANCY = 550 P (DESIGN TOTAL = 275 M & 275 W)

FIXTURES PROVIDED:	BOYS	GIRLS	BOYS	GIRLS
WATER CLOSETS:	1/60	1/30	5 REQ'D 14 EXIST.	9 REQ'D 18 EXIST.
URINALS:	1/60	-	5 REQ'D 13 EXIST.	- -
LAVATORIES:	1/60	1/60	5 REQ'D 13 EXIST.	5 REQ'D 17 EXIST.
DRINKING FOUNTAIN:	1/75		8 REQ'D 8 EXIST.	

NOTE: THE EXIST. TOILET ROOMS DO NOT MEET MAAB REQUIREMENTS AND MUST BE RENOVATED. WHILE THE ROOMS CURRENTLY HAVE ENOUGH FIXTURES; THEY ARE NOT PROPERLY LOCATED TO SERVE THE NEEDS OF THE FACILITY.

CAFETERIA (A-3) USE GROUP ANALYSIS
MAXIMUM OCCUPANCY = 280 P (DESIGN TOTAL = 140 M & 140 W)

MINIMUM FIXTURES REQUIRED:	MEN	WOMEN	MEN	WOMEN
WATER CLOSETS:	1/60	1/30	3 REQ'D 1 EXIST.	5 REQ'D 2 EXIST.
URINALS:	50%		1 EXIST.	
LAVATORIES:	1/200	1/200	1 REQ'D 1 EXIST.	1 REQ'D 2 EXIST.

NOTES:
1. THESE EXIST. TOILET ROOMS DO NOT HAVE ENOUGH FIXTURES.
2. THERE ARE NO SEPARATE FACILITIES FOR FOOD SERVICE STAFF.

GYMNASIUM (A-3) USE GROUP ANALYSIS
MAXIMUM OCCUPANCY = 720 P (DESIGN TOTAL = 360 M & 360 W)

MINIMUM FIXTURES REQUIRED:	MEN	WOMEN	MEN	WOMEN
WATER CLOSETS:	1/60	1/30	6 REQ'D 2 EXIST.	12 REQ'D 2 EXIST.
URINALS:	50%		0 EXIST.	
LAVATORIES:	1/200	1/200	2 REQ'D 2 EXIST.	2 REQ'D 2 EXIST.

NOTE: THESE EXIST. TOILET ROOMS DO NOT HAVE ENOUGH FIXTURES.

STAFF TOILETS ANALYSIS:
STAFF ARE SERVED CURRENTLY BY SIX SINGLE-USER TOILET ROOMS.
MAXIMUM OCCUPANCY = 76 P (DESIGN TOTAL = 38 M & 38 W)

MINIMUM FIXTURES REQUIRED:	MEN	WOMEN	MEN	WOMEN
WATER CLOSETS:	1/25	1/20	2 REQ'D	2 REQ'D
URINALS:	33%			
LAVATORIES:	1/40	1/40	2 REQ'D	2 REQ'D.

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CODE ANALYSIS

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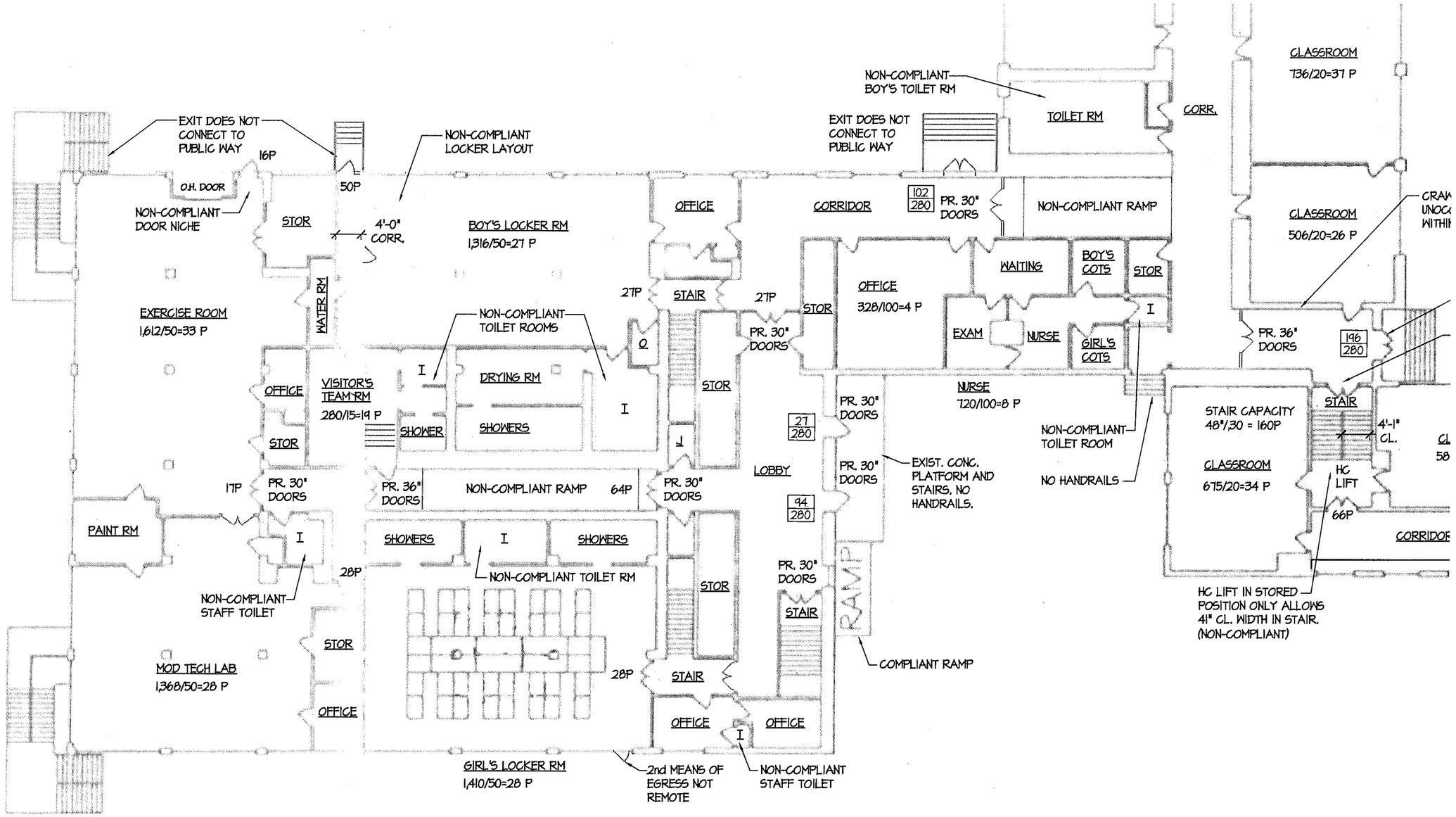

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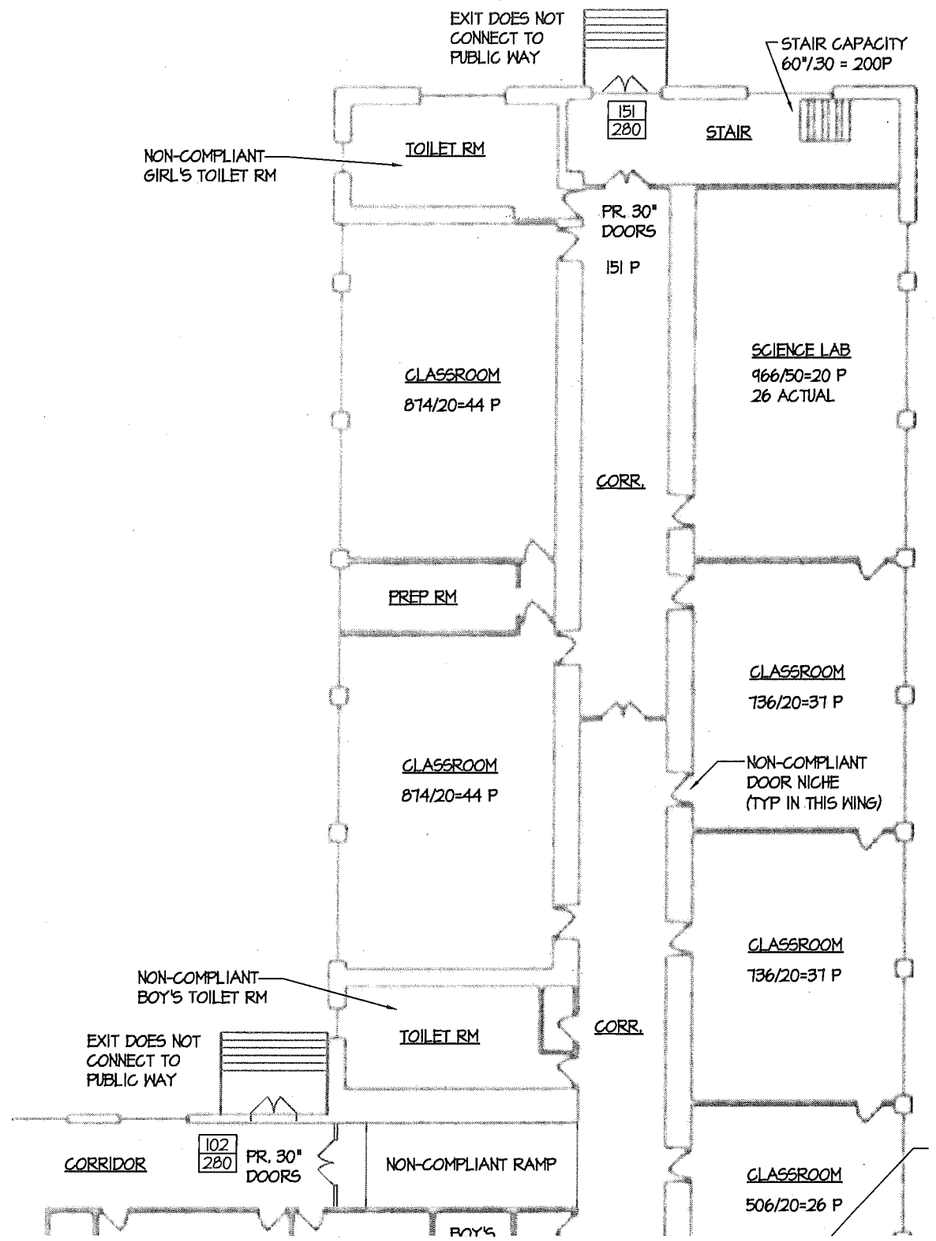

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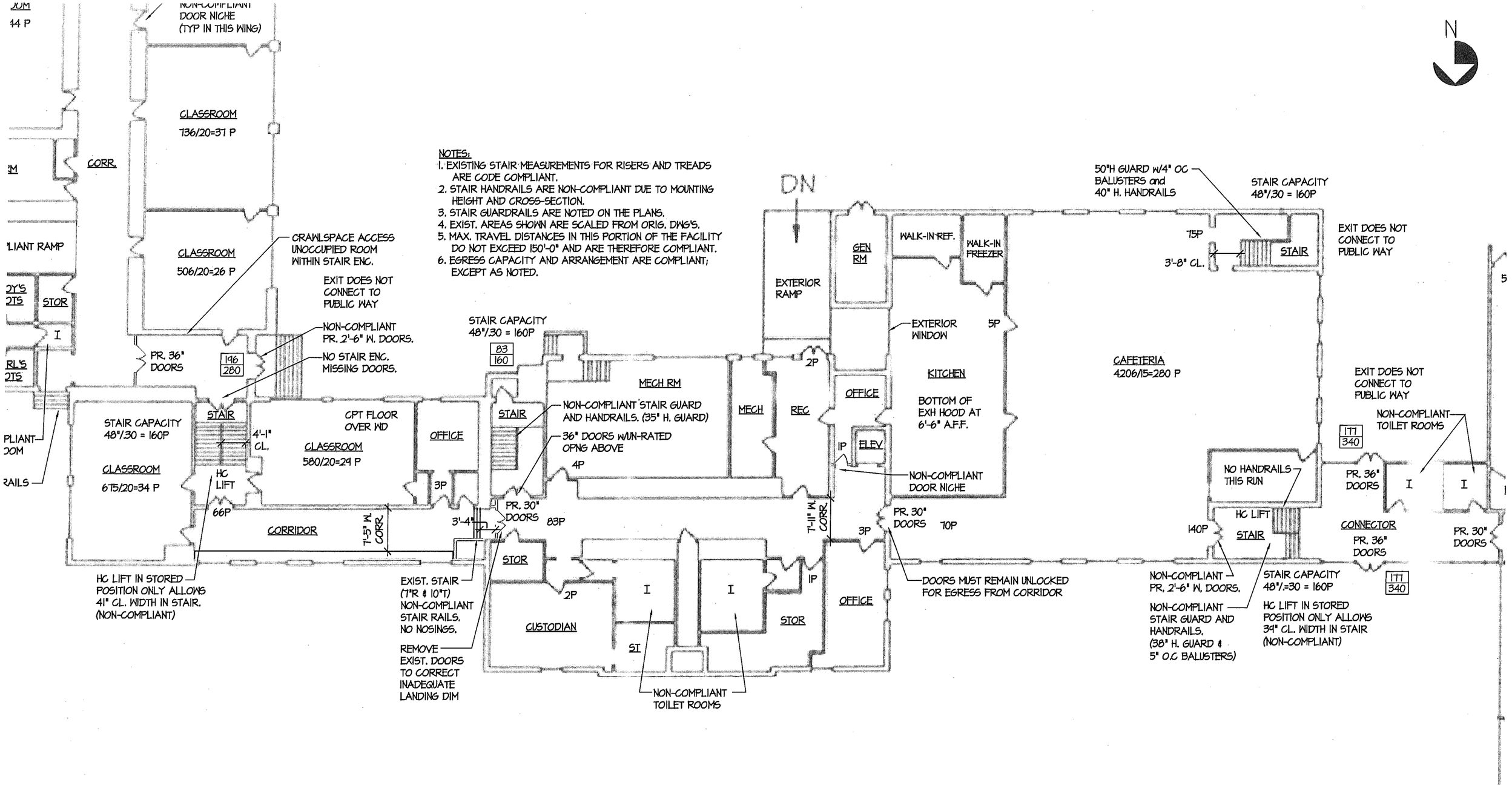

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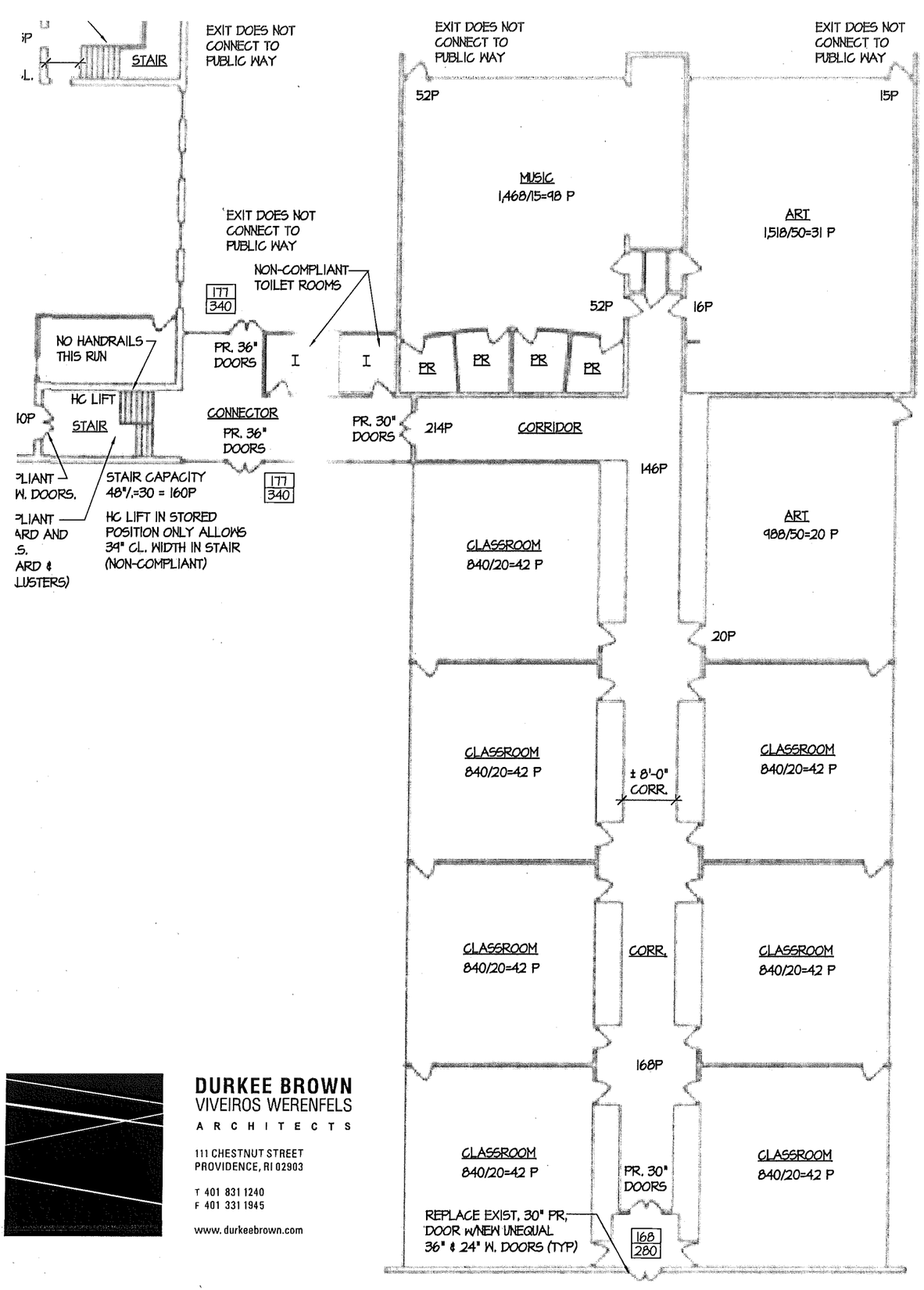

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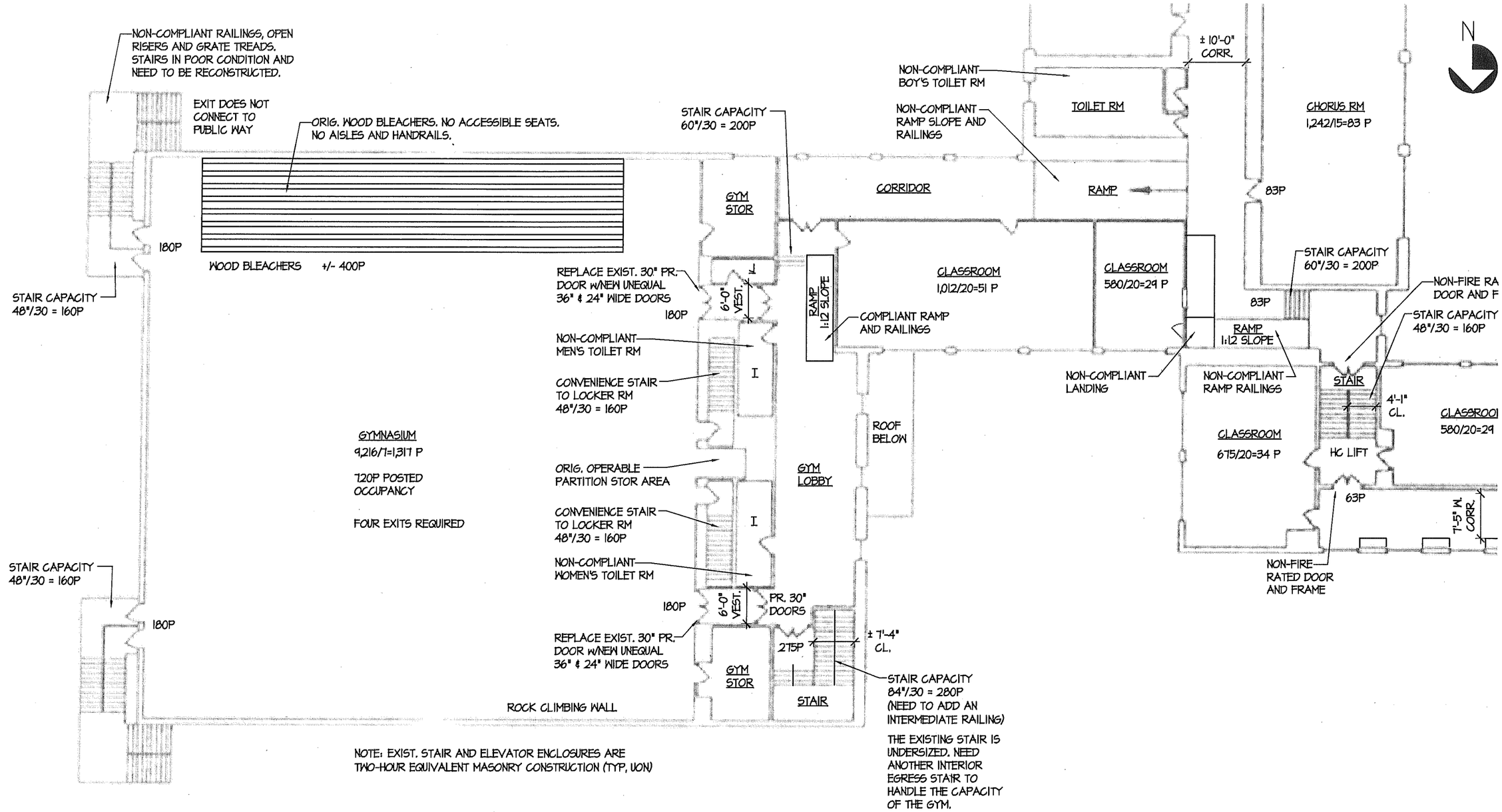

NOTE: EXIST. STAIR AND ELEVATOR ENCLOSURES ARE TWO-HOUR EQUIVALENT MASONRY CONSTRUCTION (TYP, UON)

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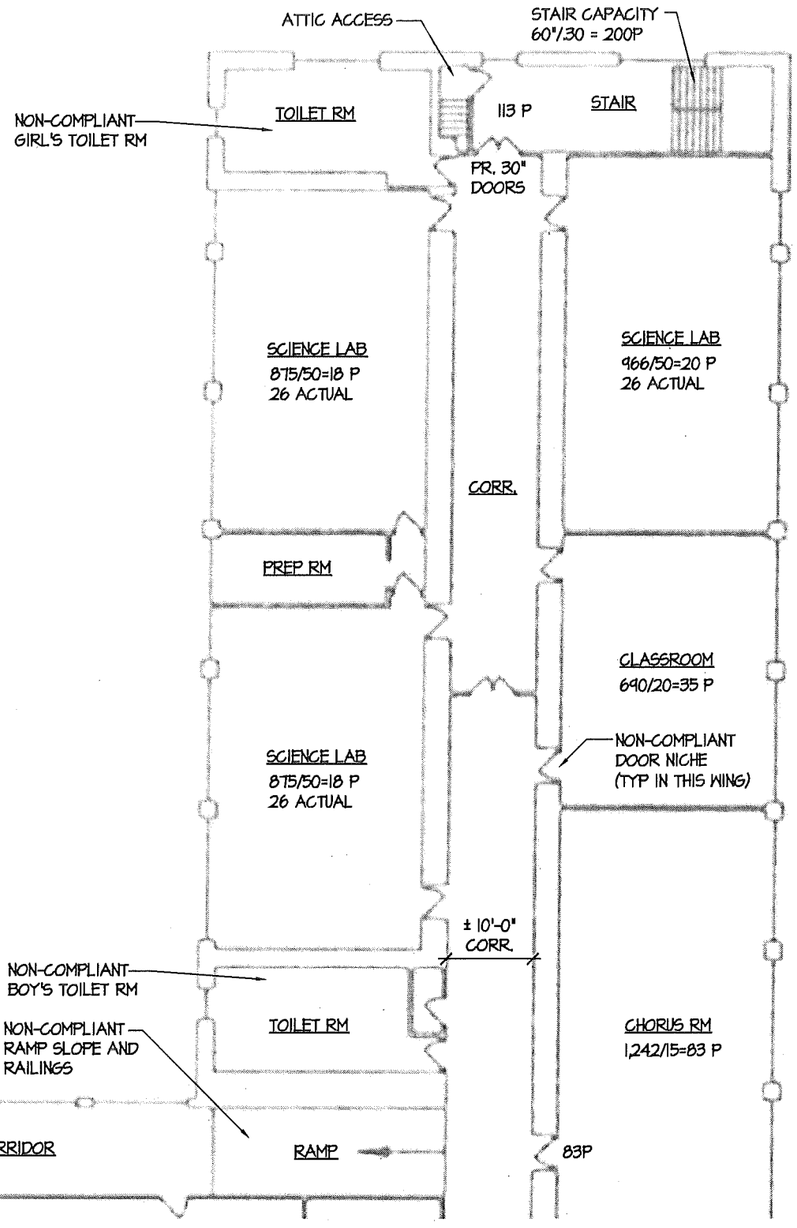

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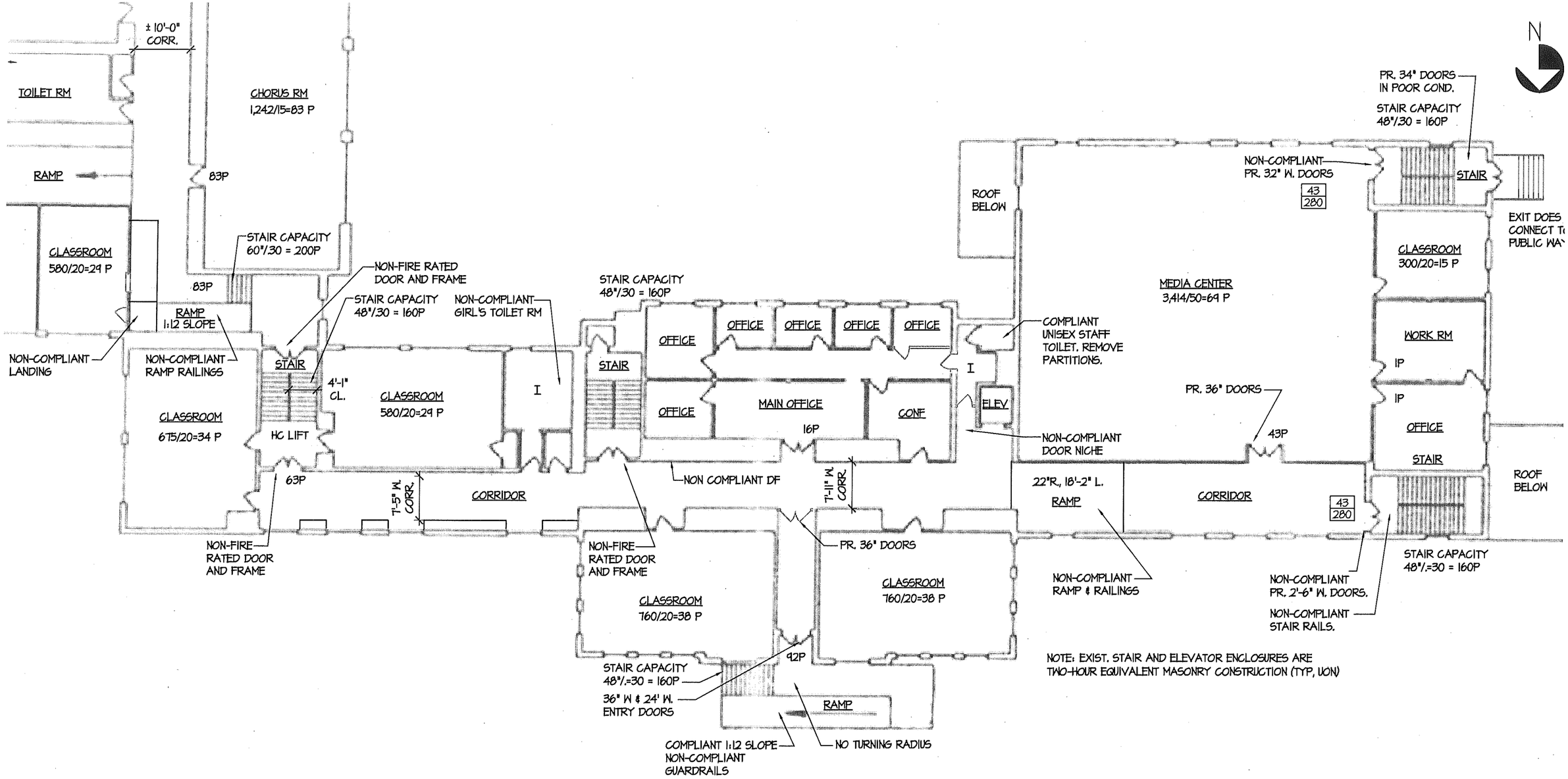

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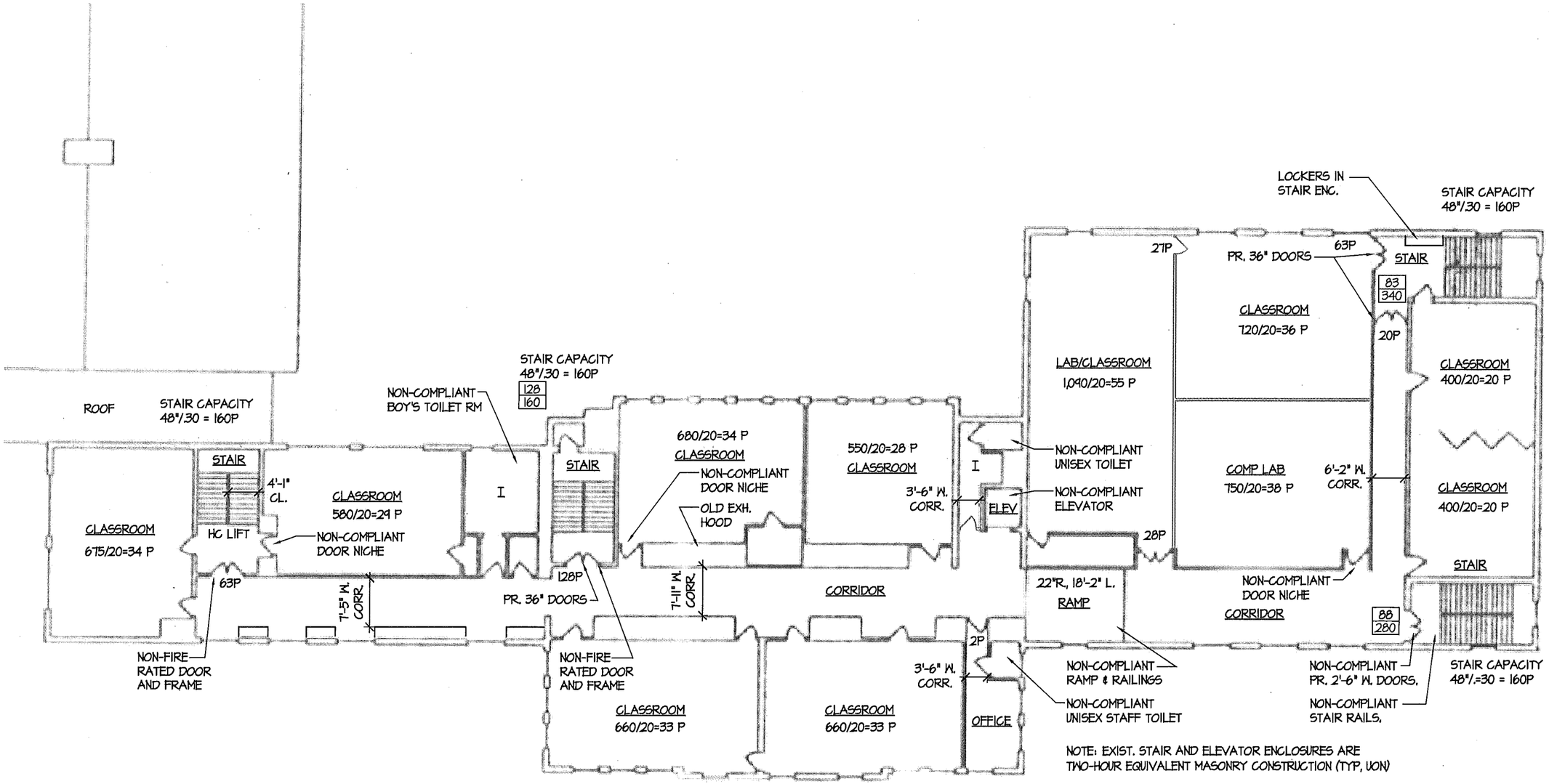

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