City of Biddeford

Mayor's Ad Hoc Community Center Review Committee

April 04, 2018 4:00 PM

J Richard Martin Community Center

189 Alfred Street

1. **Call to Order**
2. **Old Business**
   2.1. Update - Community Center Section of Oak Point Report
   Oak Point Assoc Facility Report - Community Ctr Section.pdf
3. **New Business** - *Chairwoman report on goals/objectives, deliverables, and timelines*
4. **Other Business**
5. **Adjourn**

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ARCHITECTURE & ENGINEERING DESIGN SERVICES

Facility Assessment Report
For the City of Biddeford

City Hall
Police Facility
Fire Station
Public Works Building
Community Center
Emery School

Prepared For:

City of Biddeford
205 Main Street
Biddeford, Maine 04005

December 30, 2005

Prepared By:

OAK POINT
ASSOCIATES

ARCHITECTURE ■ ENGINEERING ■ PLANNING

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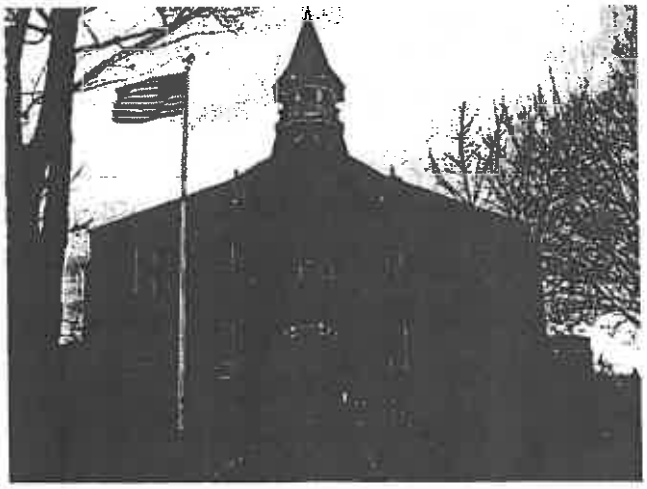
Existing Conditions

ARCHITECTURAL

The Community Center in the City of Biddeford was constructed in 1888 as the public High School. An addition was added in the 1930's, which included a gymnasium and additional classrooms. The building is approximately 43,000 square feet and consists of three stories. The ground floor houses a daycare facility with play rooms, an eating area, kitchen and offices. The gymnasium is also on this level. On the first floor are classrooms that have been converted into offices, a TV studio, medical clinic, an eating area with a kitchen, and access to the gymnasium mezzanine. Approximately half of the mezzanine has recently been converted into office space and is still under renovation. The remaining half of the mezzanine is used for storage and a horseshoe pit. The second floor consists mostly of classrooms. There is also a small auditorium with a stage and office spaces. An area of classrooms is currently under renovation after substantial water damage from a burst pipe during the previous winter.



Circulation through the building is provided by a number of stairs. Most stairwells have been enclosed with gypsum board walls and fire-rated doors in an attempt to comply with current building and life safety code requirements. The current tread and rise configuration at the stairs varies between stairs and does not meet current building codes, though it does comply with the

requirements for an existing stair in the Life Safety Code (NFPA). The existing guards and handrails at the stairs are constructed mostly of wood, with a few constructed of metal. The current configurations do not meet building code requirements for height, mounting locations and sizes. An elevator was installed during the early 1990's and provides access to all three floor levels.

The flat roof consists of a "Firestone," EDPM membrane roof system. Using the manufacturer's stamp on the membrane, it can be assumed it was installed in 1991. The flashing was re-caulked and sealed in 2005. It appears rigid insulation has been added to the exterior of the original roof construction, but the thickness is not known. The pitched areas of roof, at the front of the building are covered with asphalt shingles.

Interior walls are mostly painted plaster on lath with wood framing. Glazed terracotta blocks where incorporated into the 1930's addition and the gymnasium. Newer partitions are constructed of painted gypsum board and studs. Floor finishes consist mostly of strip wood flooring with a wood base; though, different resistant tiles and sheet goods have been provided. There are also areas of painted concrete and ceramic tile floors. The ceiling finishes are painted plaster on lath, and a suspended acoustical ceiling system using melt away ceiling tiles were covering the sprinkler system.

The exterior windows consist mostly of units made of an aluminum frame with upper translucent fiberglass panels and lower operable awning windows. These units were installed during a window renovation in the 1970's. Windows on the ground floor have been replaced more recently and consist of aluminum double hung units and combination fixed/hopper units. These newer windows have insulated glazing with divided lights.

Exterior doors consist of painted hollow metal doors and frames. Some doors have single-pane glazed lites and side lites. All exterior egress doors have panic hardware, closers, and weather stripping. Interior doors at the stairwells are 1-1/2 hour rated, and consist of hollow metal doors and frames with wire glazing, closers and panic hardware. Other interior doors consist of a combination of wood doors and frames and hollow metal doors and frames. Many interior doors throughout have half-glazed lights. Door hardware is a mixture of code-compliant levers and non-code compliant knobs.

Located on each floor level are recently renovated gang toilet rooms. These toilet rooms include ADA fixtures, painted metal toilet partitions, and other standard toilet accessories. On the ground floor, there is a large abandoned toilet room with two connecting rooms. The fixtures have been removed and the finishes in these spaces are in disrepair.

CODE ANALYSIS

The following code review is based on the 2003 edition of the International Building Code (IBC) and the 2003 edition of the Life Safety Code NFPA 101 (NFPA).

OCCUPANCY CLASSIFICATION

Use	IBC Classification	NFPA Classification (6.1.1)
Offices	B (304)	Business
Gymnasium & Auditorium	A -3 (303)	Assembly
Adult Ed Classrooms	B (304)	Business
Daycare	I-4 (308)	Day-care

HEIGHT AND AREA LIMITATIONS

IBC (Table 503) - Height and area limitations for occupancies with Non-combustible/ Combustible - Protected Construction: Type III-A

Occupancy	Allowable Stories	Actual Stories	Allowable Height (ft)	Actual Height (ft)	Allowable Area per Floor (SF)	Actual Area per Floor Max. (SF)
B	4	3	65	42	37,000	13,100
A-3	5	3	65	42	14,000	9,000
I-4	3	1	65	42	23,500	7,300

1. A-3 (Assembly) is the most restrictive of the occupancies and will be used to determine the allowable height and area requirements.
2. No part of the building appears to exceed the allowable height or area.
3. The building is protected by a sprinkler system.

FIRE RESISTANCE RATINGS

TYPE OF CONSTRUCTION

Non-combustible/Combustible - Protected Construction, IBC Type III-A (Table 601) and NFPA (Table A.8.2.1.2):

Building Component	Fire Resistance Requirement
Structural Frame	no requirement
Bearing Exterior Walls	1 hour
Bearing Interior Walls	no requirement
Exit Stairs	1 hour
Floor Construction	no requirement
Roof Construction	no requirement

1. The fire resistance ratings have been reduced by one hour because the building is equipped with an automatic sprinkler system.

SPECIFIC OCCUPANCY AREAS

IBC

1. **An automatic sprinkler system is required by code for all I occupancies (903.2.5). This building is equipped with a sprinkler system.**

NFPA

Location and Construction Type Limitations Per NFPA Table 17.1.6:

1. *The type of building construction and the sprinkler system only permits the location of a day care occupancy on the level of discharge and one floor above the level of discharge. The existing day care facility is one level below discharge and, therefore, should not be occupying that space in the building.*

MEANS OF EGRESS REQUIREMENTS

Occupant Load: (Table 1004.1.2)

MAXIMUM DESIGN LOAD

Space	Area (SF)	Occupant Load Factor	Occupant Load
Ground Floor		(IBC/NFPA)	
Gymnasium	9000	7/15	1285/600
Daycare	3100	20/35	155/88
1st Floor			
Business	13100	100	131
Assembly	1500	7	215
2nd Floor			
Auditorium	3300	7	471
Classrooms	16500	100	165
TOTAL			

Number of Exits: (IBC Table 1018.1)

1 Two exits are required for an occupant load of 0-500. Each floor of the building requires, and has, two (2) exits, except at the gym nasium which requires four (4).

2. The gymnasium does not have the required four (4) exits for an occupant load over 1,000.

REQUIRED WIDTHS

Required Widths per Occupant

Egress Component	IBC - Table 1005.1 (inches)	NFPA - Table 7.3.3.1 (inches)
Stairs	0.2	0.3
Doors	0.15	0.2
Corridor	0.15	0.2

1. The gymnasium does not have the required, calculated egress width with the existing three exits. The allowable occupant capacity has been posted i n the gym.

Minimum Required Widths

Egress Component	IBC (inches)	NFPA (inches)
Stairs	44	44
Doors	32	32
Corridor	44	44

1. Existing egress components meet the minimum required widths.

Travel Distances

Egress Travel	IBC	NFPA (Table A.7.6)
Travel Distance:	(1015.1)	
Business	300'	300'
Assembly	250'	200'
Institutional (I-4)	200'	200'
Common Path of Travel:	(1013.3)	
Business	100'	100'
Assembly	75'	75'
Institutional (I-4)	200'	200'
Dead Ends:	(1016.3)	
Business	50'	50'
Assembly	20'	20'
Institutional (I-4)	20'	20'

1. No travel distances appear to exceed those allowed by code.

ADA REVIEW:

The review of the building for accessibility by persons with disabilities is based on the Code of Federal Regulation, 28 CFR Part 36, Non-discrimination on the Basis of Disability by Public Accommodation and in Commercial Facilities, including Appendix A, ADA Accessibility Guidelines for Building and Facilities.

The building has a wheelchair accessible entrance and egress on the first floor from an exterior ramp near the front of the building, with access between floors being provided by an elevator. Access to the ground floor gymnasium is provided from the elevator or two exterior entrances.

Accessible toilet rooms are provided on each floor. Toilet fixtures and stalls appear to have the required clearances and include grab bars at the handicap toilet.

Handrails throughout the building do not meet ADA requirements, or no handrails have been provided.

Door hardware throughout the building consists of ADA compliant levers and non-ADA compliant knobs.

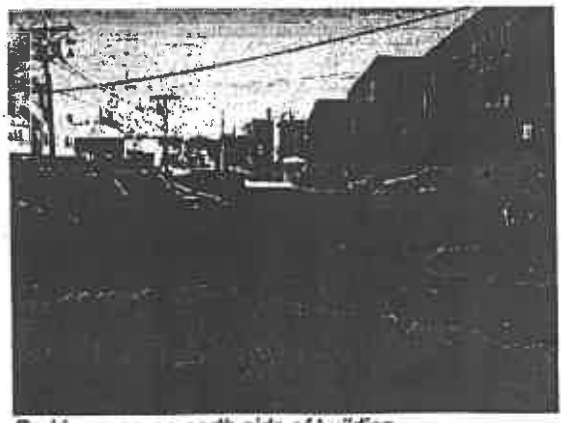
CIVIL

The Community Center site is bounded by Myrtle Street on the north, Alfred Street on the west, Clark Street on the south, and Prospect Street on the east. The building and paved parking areas and drives occupy the easterly part of the site, while vegetated areas and playgrounds exist on the westerly part. The asphalt concrete pavement extends from the building to the sidewalk on three sides, where a large granite curb defines t he on-site parking areas.

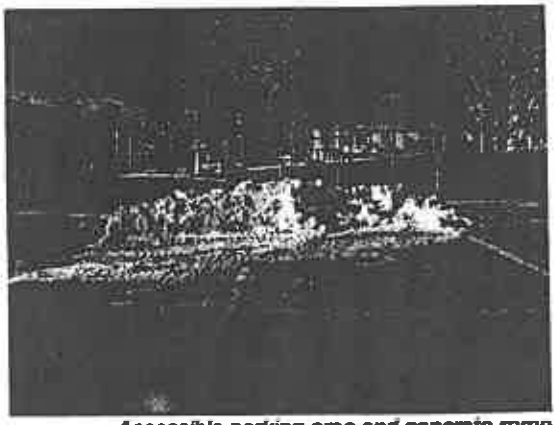
Playground and westerly end of building

Granite curb and parking area on south side of building

Access to parking on both the north and south sides of the building is via separate drives off Prospect Street. The northerly parking area is marked for approximately 22 spaces, with an egress onto Myrtle Street. The southerly parking area is marked for approximately 23 spaces, including 2 spaces designated as handicapped accessible. The slope of the ground surface in the vicinity of the accessible parking spaces appears to exceed 2 percent, making them non-compliant with the requirements of the Americans with Disabilities Act. Egress from the south parking area is onto Clark Street. A more efficient striping layout would result in additional spaces in both the north and south parking area s.



Parking area on north side of building



Accessible parking area and concrete ramp

The asphalt concrete pavement surface of the parking areas and drives is in poor condition. Block and alligator cracking is widespread, with some areas of pavement breaking up completely with potholes resulting. Rutting and uneven settlement of the paved surface was also observed in some areas.

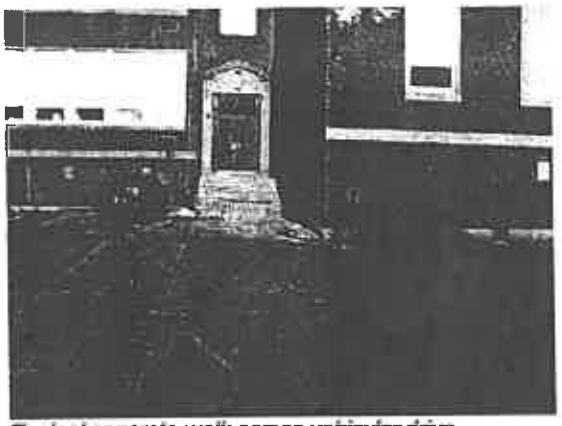
Entrance to north parking area showing poor condition of pavement

The main entrance to the building is on the westerly end, and can be accessed by a wide concrete sidewalk extending to Alfred Street. Concrete sidewalks separate this end of the building from the adjacent turf and play areas. These walks are generally in fair condition with some broken slabs noted. The vegetated and play areas are encompassed by a chain link fence in good condition. The turf and play area surfaces were covered with snow at the time of this evaluation.

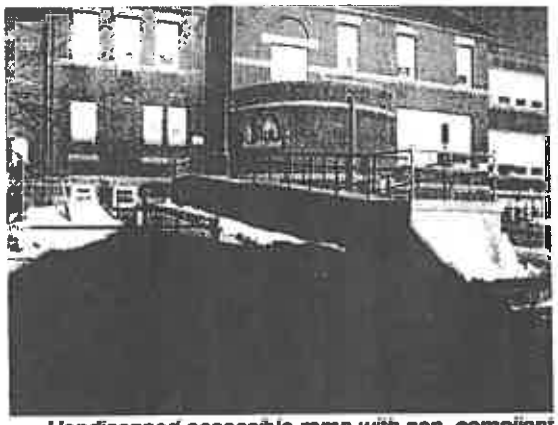
Main entrance and walk to westerly end of building

Play area at southwest corner of building

Other concrete walks run from doors on the north and south sides of the building. These walks are generally in poor condition, especially the walks that cross vehicular drives. The handicapped accessible route is via a large concrete ramp to an entrance near the southwest corner of the building. The concrete surface of the ramp is in adequate condition, with the exception of a few failed joints. The ramp is equipped with steel pipe handrails that do not meet the requirements of the ADA.



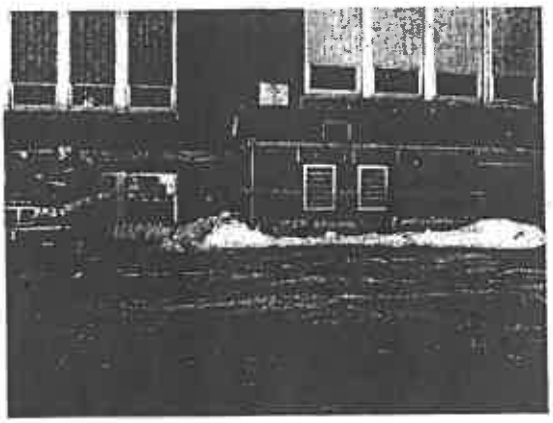
Typical concrete walk across vehicular drive



Handicapped accessible ramp with non-compliant handrails

An underground fuel oil storage tank exists near the westerly end of the northerly parking area. The tank is equipped with leak detection as required by Maine law.

Roof drainage is accomplished by a number of downspouts, some of which run down the outside of the building and some are internal. The internal downspouts discharge through the exterior building wall generally about three feet above grade. Some of the exterior downspouts extend into an existing underground drain system, while others discharge at or above grade. The downspouts that discharge above grade are subject to freezing and result in ice build up on the adjacent parking areas.



Typical roof leader discharge - underground fuel tank is in foreground

Four exterior doorways provide exterior access to the basement level. The threshold level of three of the doorways is approximately three feet below grade, with retaining walls on the side and access provided by a number of steps. These exterior below-grade areas are notorious for causing drainage problems. In addition, the retaining walls at two of the doorways do not have hand rails and guard rails as required by code. These two doorways appear to be rarely used.

STRUCTURAL

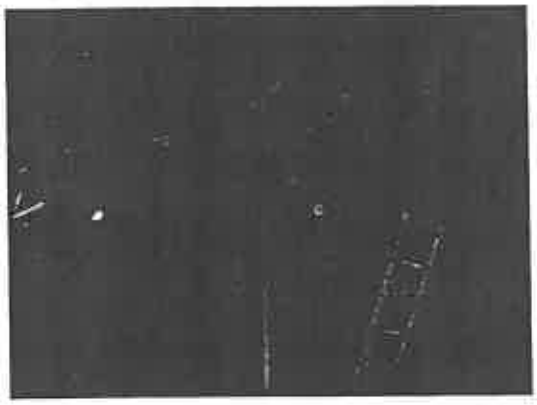
The existing structure is a combination of wood framing, structural steel, and unreinforced brick masonry and granite foundations. The following are structural system descriptions and are based on visual inspections and conditions identified on the elevator plans by Shelley Engineering. Structural calculations and determination of design forces and loads were done in accordance with the International Building Code 2003 (IBC 2003), which is the current building code for the City of Biddeford.

The building is a Red Cross Emergency Shelter. As an emergency shelter, the building is required to withstand higher loads than a building of the same type of use that is not considered an emergency shelter. There is an increase in design, snow, wind and seismic forces.

Roof Structure

The existing roof structure consists of a combination of flat and sloped roof framing. Framing consists of 2x wood joists that are supported by timber beams and exterior load bearing walls. There is 12-inch wood board sheathing over the jois ts.

The roof framing of the addition consists of 2x wood joists with 4-inch wide wood board sheathing over the joists.



Original building roof framing

Based on the lack of insulation in the roof, it is not believed that the structure has been subjected to the full design snow loads. The structure has most likely not been subjected to the full design wind uplift forces. In similar buildings constructed in the same time frame, typical roof framing connections are not sufficient to withstand full design wind uplift forces.

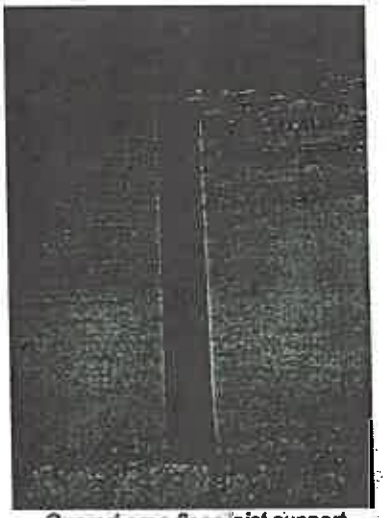
Attic Framing

Framing for the attic consists of 2x wood joists with a wood board floor over the joists. There were many holes and loose pieces of floor boards that were observed.

First/Second Floor Framing

The first floor and second floor framing consist of 2x12 wood joists spaced at approximately 16 inches on center with 12-inch wide wood board floor over the joists. The framing spans between the exterior load-bearing walls and the central corridor load-bearing components. The first floor framing bears on a load-bearing masonry wall. The second floor framing bears on a load-bearing wall with 4x4 timber posts located at 4 feet on center.

In the curved portions of the first floor, the floor joists are bearing partially on the exterior brick walls and partially on 2x6 wood posts that are supported by the granite foundation. These 2x6 wood posts are not connected to the floor joists or the granite foundation.

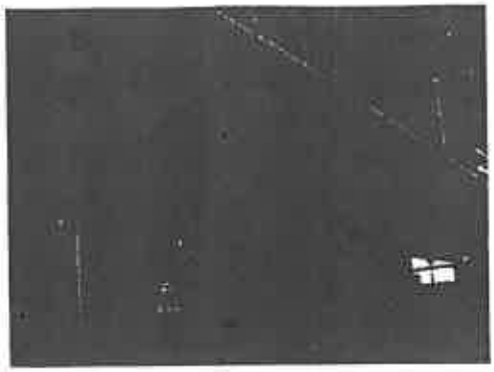


Curved area floor joist support

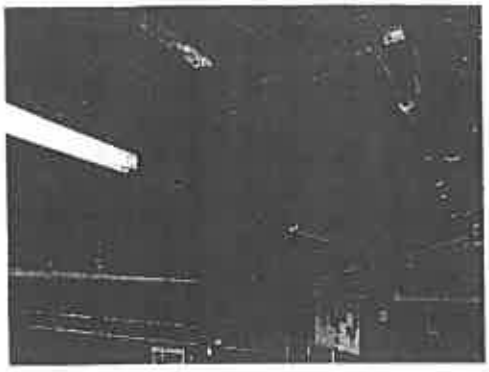
Gymnasium Framing

The gymnasium ceiling framing consists of timber beams at approximately 5 feet on center spanning between deep steel plate girders at approximately 16 feet on center. Two of the timber beams have been replaced by structural steel W-shape beams. The steel plate girders span between structural steel W-shape columns. There is 4-inch wide wood sheathing over the timber beams.

The balcony framing in the gymnasium consists of timber beams and structural steel framing. At the exterior of the balcony, the structural members are supported on load bearing masonry walls. At the interior of the balcony, the structural members are supported by steel cables that tie back to the steel plate girders.



Steel plate girders and cable hangers



Balcony support framing

The original use of the balcony was bleachers. The majority of this space has been converted to offices.

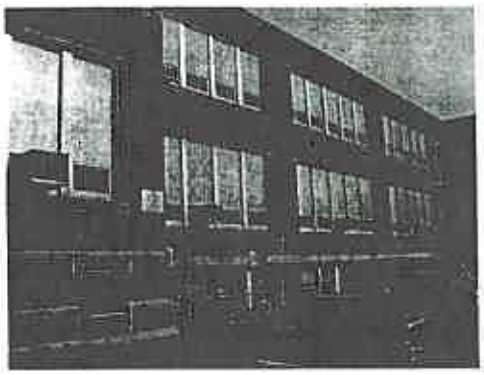
Lateral Force Resisting System

The structure may be subject to wind and seismic forces. Based on the mass of the building, it is anticipated that the seismic forces would be greater than the wind forces. Like most buildings of this age, there was no consideration given to the resistance of lateral forces. Therefore, existing elements of the building must be counted on to provide this resistance, if possible. Both horizontal and vertical elements must be provided.

The only horizontal resisting elements would be the wood board floor and roof sheathing acting as a diaphragm to transfer lateral forces to vertical resisting elements. This type of construction has limited strength and stiffness to act as a diaphragm to transfer lateral forces. The effectiveness of any diaphragm is also dependent on adequate connections. Based on visual inspections, it was determined that there are insufficient connections or mechanisms to tie the exterior walls to the floor structure and transfer forces.

Adequate connections at the floor and roof level are also needed to brace the unreinforced brick walls at each level and transfer out-of-plane lateral force into the floor and roof diaphragms. Failure of any floor/roof to wall connection would increase the effective length of walls as well as significantly increase the flexural stresses in the wall. There are no apparent connections of the roof framing to the brick walls which would act as the vertical resting elements.

Vertical resisting elements consist of the perimeter unreinforced brick walls, the ground floor brick corridor walls, and the brick stair towers. These elements would only resist lateral forces, assuming there were adequate diaphragms in place. Based on the lack of reinforcing, it is anticipated that the vertical resisting elements would not have sufficient strength to resist the maximum design lateral forces.



Horizontal and vertical brick elements

The large window openings in the brick walls result in the remaining brick piers and horizontal brick framing spanning between piers acting similar to a moment frame. This increases the forces in the piers by adding both tension and compression forces, in addition to lateral forces.

Foundations

The foundation systems for both the original construction and the addition consist of granite blocks of varying sizes. Visual inspections did not indicate any evidence of failure or differential settlement.

Granite foundation

MECHANICAL

The Community Center is heated by two oil-fired Burnham steam boilers. The oil supply is from an underground tank on the east side of the building, installed within the last 10 years. Boiler feed-water is from a horizontal tank with duplex pumps. The boilers are vented to the building's original chimney. Service switches and thermal switches are provided at both boilers. The boiler room has two combustion air openings as required by code. The make-up water to the system is protected by an reduced pressure zone backflow preventer.

Heating distribution is predominantly via cast iron radiators, both floor and wall mounted. A few spaces have fin-tube radiation where the radiators have been removed. There are also cabinet heaters in some spaces, though many have been effectively converted to convectors by removal of the fans. Nearly all terminal units have been retrofitted with self-contained control valves. There are no HVAC coils in the building.

Steam and condensate piping is steel, and in many places appears to be in poor condition. At some locations, failed fittings have been replaced. Most piping has no insulation, since the original insulation contained asbestos and has been removed.

The building has no mechanical ventilation, with the exception of several small exhaust fans which serve some of the restrooms. The rooms do meet window area requirements for natural ventilation. A "passive" ventilation system, consisting of large ductwork running the length of the building with intakes high and low in most of the major rooms and open ventilators on the building roof, still operates. In a few spaces, window air conditioners provide spot-cooling. The free clinic has ductless split-system air conditioning, with condensing units on the adjacent low roofs.

Plumbing

The building's water entrance is an 8-inch pipe supplying a 6-inch meter and a 3-inch meter in parallel. The meters serve both the 2-inch water main to the building's fixtures and the wet and dry pipe sprinkler systems. There is no backflow preventer at the water entrance.

Plumbing fixtures in the building are in good-to-fair condition. Accessible fixtures have been provided on each floor for men and women. There are several kitchen spaces in the building which have sinks and dishwashers. There is one accessible water cooler on each of the two main levels of the building.

Domestic hot water is provided by an oil-fired storage water heater in the boiler room. There is a small circulator pump on the water heater, although it is not clear whether this pump is effectively serving the building, as there is reportedly marginal supply of hot water to most remote fixtures in the building.

Cold and hot water piping is predominantly copper, with some brass mains still present. Water piping is not insulated at most locations.

Sprinklers

The building is almost fully-protected by automatic sprinklers, although access to every space was not possible during the inspection. In the basement, a hung ceiling below the sprinklers hides the piping and heads, but is made of "melt-away" tiles, which allow the sprinklers to be exposed in the event of a fire. Some service spaces created by renovation of the basement are not protected. Many of the building's sprinkler heads have been replaced as renovations have occurred, and where they are accessible in public areas. However, some older heads from the original installation remain.

ELECTRICAL

Power

The service to the building is 120/240 volts single phase. It is fed underground from a pole-mounted transformer to a 600 ampere distribution panel and a 200 ampere panel, each separately metered. They feed various panelboards throughout the building. Many of the panels are mounted too high or do not have code required working clearances. Some panels are the plug-fuse type. There is one location on the ground floor with a sink that does not have GFI receptacles. Wiring is in conduit and type MC and NM cable. Some electrical enclosures on the ground floor are badly rusted.

Lighting

Lighting consists of fluorescent, incandescent, and HID type fixtures. Most fixtures are fluorescent. There are battery-powered emergency light fixtures in the corridors and some in the stairwells. Coverage is spotty. There are no exterior emergency lights. There are exit signs at most exits, but some are not working. One exit from the ground floor does not have an exterior light.

Fire Alarm

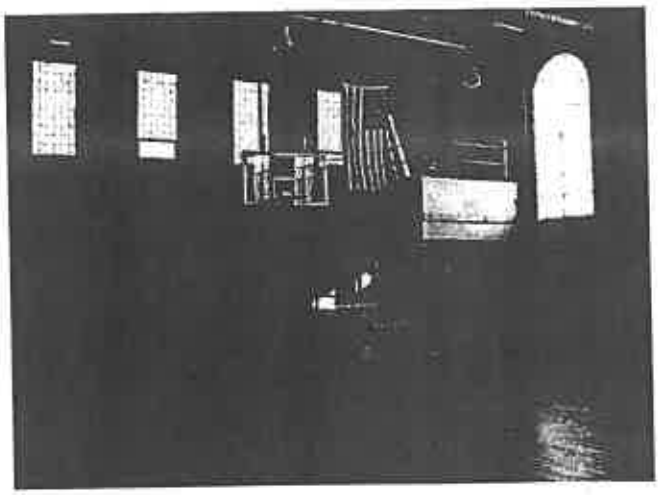
The fire alarm system is a four zone Silent Knight system with one zone per floor and one for sprinklers. There are smoke detectors in the corridors and some rooms on the ground floor. There are no smoke detectors at the top of the stairwells. There are a few heat detectors. Manual pull stations are at most exits. Some are mounted higher than 48 inches. There are ADA audio/visual devices throughout the building. One audio/visual device in the gymnasium is not ADA type and is mounted too high. Coverage is spotty and is not up to code. All strobes are rated 15/75 candela. Most audio/visual devices are mounted between 77 and 84 inches, a few are higher.

Conclusions, Recommendations, and Cost Estimates

ARCHITECTURAL

Egress stairs in the building are missing handrails or existing handrails do not meet building code or ADA requirements. Additionally, existing guards are below the 44-inch code requirements. All existing handrails and guards should be replaced or, if missing, be provided on each side of egress stairs: $9,000

Door knob hardware used in the building does not meet building code or ADA requirements. Knob hardware should be replace wi th levers: $8,000

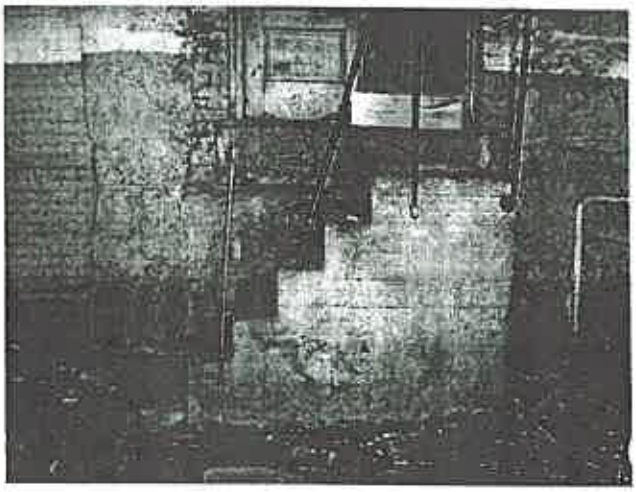


The existing athletic wood floor in the gymnasium was severely damaged from a water pipe burst last winter. The water damage has caused cupping of the boards, overall unevenness of the floor, and weakening of the structure. Therefore, the entire floor system should be replaced: $70,000

The existing exterior hollow metal doors and frames have rust forming near ground level. These doors and frames will need to be replaced in the near future and should include energy efficient, insulated glazing and panels: $9,000

The existing sliding fire door into the boiler room does not meet current building code and should be replaced with a rated door and frame: $2,500

The exterior boiler room door and stair are in a deteriorated condition with plywood added to the door and part of the handrail missing. The door and frame, as well as the handrail, should be replaced: $3,000

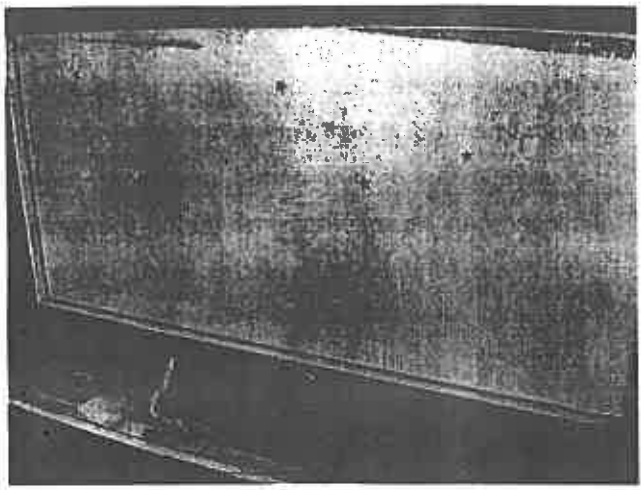


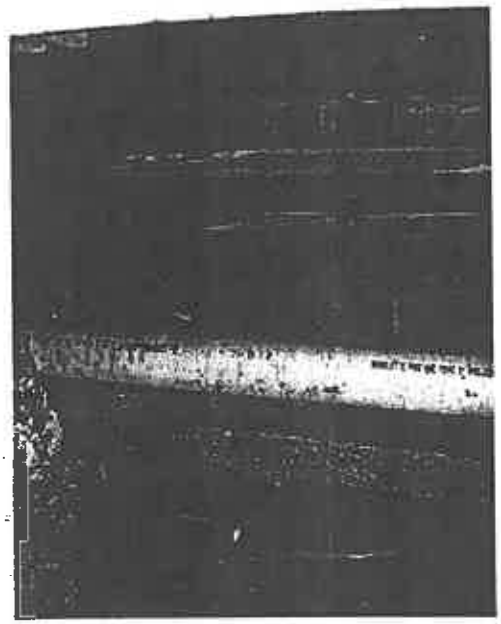
The gym mezzanine office area should have the existing stair enclosed to meet current building and life safety codes: $4,500

All egress doors should swing in the direction of egress travel to meet code. Doors in the daycare area not meeting this requirement should be modified to change their swing: $2,000

The existing windows are nearing the end of their expected useful life. The glazing used in the awning windows has lost its transparency due to age, and the fiberglass panels have areas of damage.

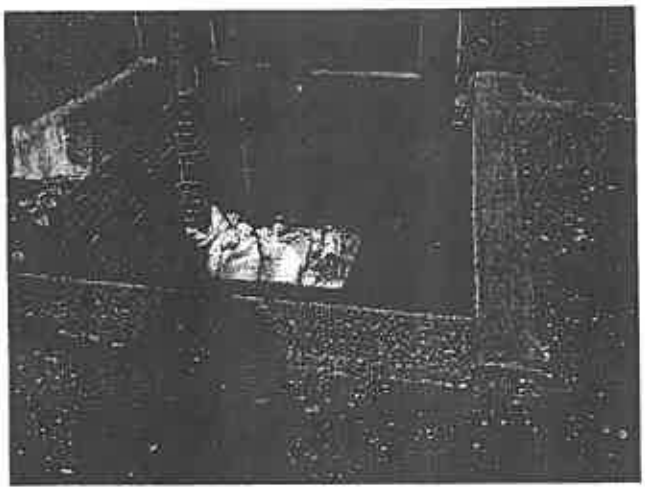
This existing system is also less energy efficient than current designs. It is recommended that the windows be replaced with units that are energy efficient and with transparent glazing: $320,000





Three of the exterior entrances and landings where noted as leaking. The finishes below these areas on the ground floor have been damaged, and at one location the water has severely damaged existing piping in the ceiling. Further investigation needs to be completed to locate the point where water is penetrating the structure. The rusted piping and finishes should be repaired and replaced.

One of the exterior exits on the ground floor has been barricaded with sand bags. This door is labeled as an emergency exit on the interior with an exit sign; therefore, the sandbags should be removed.



CIVIL

The paved surface of the parking areas and drives is in poor condition, and reconstruction is recommended. Reclaiming the existing asphalt concrete surface with the underlying base course is the recommended means of reconstruction. Minor grade changes at accessible parking can be accomplished during the reclaimation process to ensure the area complies with the slope requirements of the ADA. In addition, removal of the broken up concrete walks crossing vehicular paved areas is recommended at this time. Following fine grading and compaction of the reclaimed base, the area should be resurfaced with new asphalt concrete pavement. The estimated cost to reclaim and repave the parking areas and drives is $55,000.

Installation of underground piping to collect runoff from the roof leaders is recommended. This project should be undertaken before or during the reconstruction of the pavement. A more intensive evaluation would have to be conducted to determine the most effective way of conveying the drainage to the existing storm drain system. The estimated cost for the drainage improvements is $20,000.

Due to the height of the handicapped accessible ramp, the existing handrails do not meet code and guard rails are required on both sides. The estimated cost to repair the concrete surface and replace the hand rails with guard rails is $15,000.

STRUCTURAL

Roof Hold-down Anchors

Provide roof joist hold down anchors: $4,000

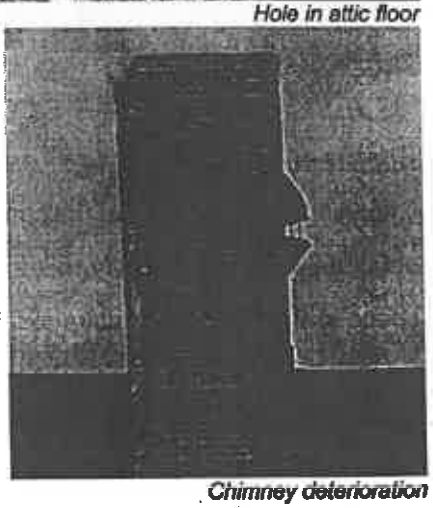
Attic Framing

Broken floor boards in the attic should be replaced. Required holes should be provided with guardrails at the perimeter of the openings. Loose boards should be connected to the joists below in accordance with IBC 2003: $3,000

Hole in attic floor

Chimney Repointing

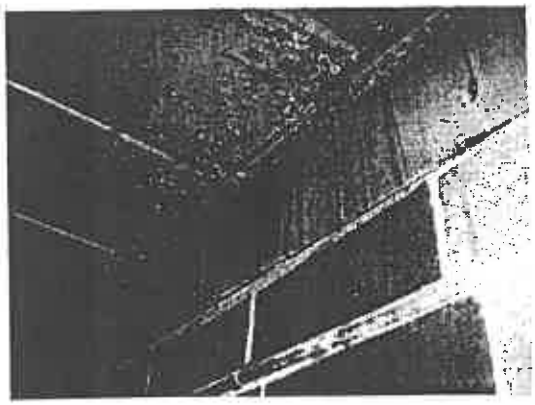
The brick chimney above the original portion of the building is visibly in poor condition where it extends above the sloped roof. The chimney should be repointed in the immediate future to prevent further deterioration: $3,500



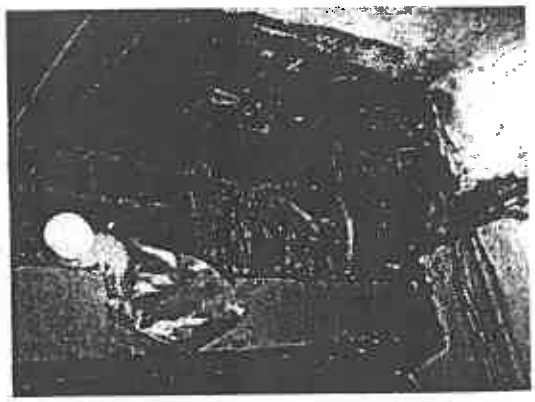
Chimney deterioration

Corroded Stair Beams

Replace corroded beams located in the stair tower. Provide temporary support of existing structure while work is completed: $10,000



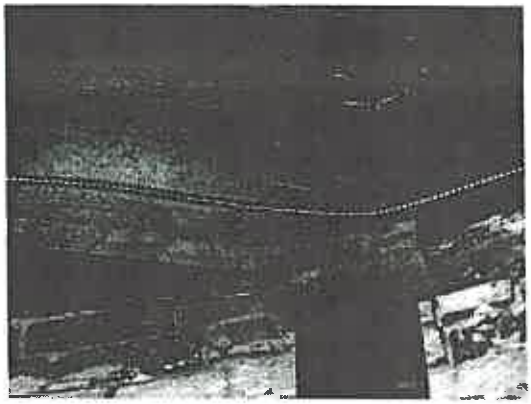
Corroded beam



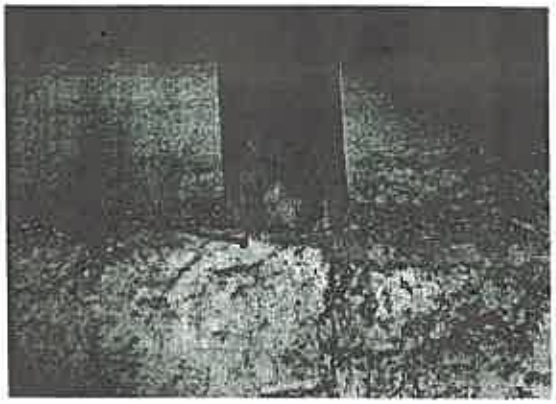
Corroded beam

First Floor Joist Support Connections

Provide connections of the first floor joist support posts to the first floor framing and the granite foundation: $3,000



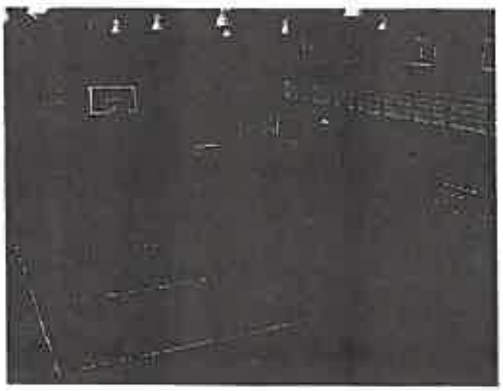
Top of floor joist support



Base of floor joist support

Change of Use

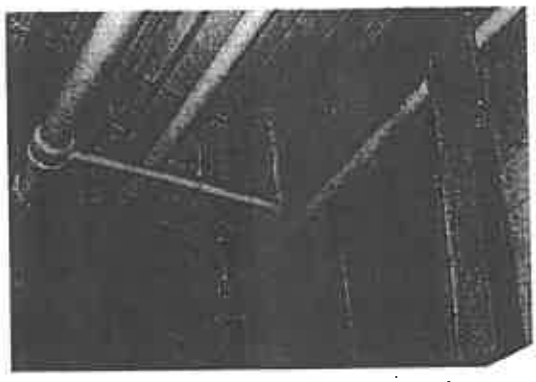
Changing the use of the balcony from bleachers to office space should involve a detailed structural analysis to verify that the existing structure can support the loading required for office space in the current building codes. Although in the current codes, the loading for bleachers is greater than that for office areas, this does not verify that the design loads used for bleachers when the gymnasium was constructed are also greater than the current values for office space. A review of connections to the existing structure should also be conducted to determine that other forces are not being transferred to the new framing.



Office area installed on balcony

Lintel Lateral Displacement and Distortion

In the corner storage room, located off of the gymnasium on the Clark Street side of the building, there is a lintel supporting balcony framing that has lateral displacement and distortion. The lintel is a structural steel channel member located above a window opening. The lintel is supporting a built-up channel beam that supports the balcony. The built-up channel beam is connected to the lintel by a structural steel WT-section. The WT is connected to both the channel beam and the lintel by non-strength bolts. The lintel is currently displaced 1-3/4 inches from the wall. Further analysis is required to determine the cause of the lintel displacement and distortion and to determine the appropriate modifications needed.



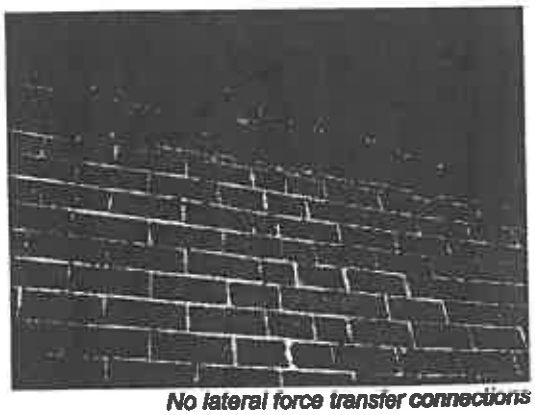
Lintel lateral displacement and distortion

Lateral Force Analysis

Based on the considerations outlined in the lateral force resisting system section, it is concluded that the structure would not comply with current building code requirements. Considering that this is a designated evacuation shelter, a detailed structural analysis should be performed. The minimum anticipated upgrades are to install lateral connections and to replace the floor and roof sheathing.

Lateral Connections

Provide connections to transfer lateral forces from wind and seismic loads from the horizontal lateral resisting elements to the vertical lateral resisting elements: $30,000



No lateral force transfer connections

New Floor/Roof Sheathing

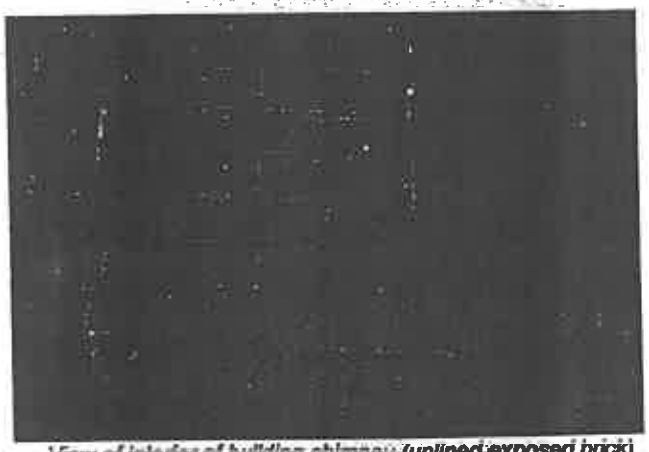
Replace floor and roof sheathing to provide sufficient diaphragm strength required for the horizontal lateral force resisting elements: $80,000

MECHANICAL

The steam boilers are less than 10 years old, as is the feedwater equipment and the underground storage tank and its leak detection system. As such, this equipment is in relatively good condition and well within its expected service life. However, the steam and condensate piping is in visibly deteriorated condition at several locations, and some short sections have already been replaced due to leaks. Similarly, the traps on the steam terminal units are old, and are likely the cause of poor performance of some of the terminals. Furthermore, nearly the entire system is un-insulated, due to abatement of the asbestos-containing insulation in the past. Ongoing maintenance on the piping and steam traps will increase, and the system will become more unreliable in the coming years. Ultimately, the building's heating system will have to be replaced, at which time it should be replaced with all-new boilers, piping, and terminal equipment. If the conversion is done in the next few years, consideration may be given to converting the existing steam boilers to hot water. Estimate to replace steam heating system with hot water, boilers, and controls: $450,000

The safety switch for the boilers is at the top of the stairs to the first floor. This does not satisfy code requirements for the placement of this switch, and also creates the possibility that the switch will be turned off accidentally or maliciously. The switch should be relocated to a suitable location just outside the boiler room entrance. Estimate: $200

The chimney is in visibly poor condition where it extends above the pitched roof, as discussed in the structural analysis of this report. Also, inspection of the chimney at the cleanout in the boiler room shows that the chimney is not lined, as required by current code. The chimney should be repointed in the immediate future to prevent further deterioration, and should be lined as part of any future upgrade to the boiler system. Alternatively, if more extensive changes to the building's HVAC systems are undertaken in the future, consideration may be given to high-efficiency boilers with direct vents, which do not require a chimney. Estimate to line the chimney with injected cementitious liner: $75,000



View of interior of building chimney (unlined exposed brick)

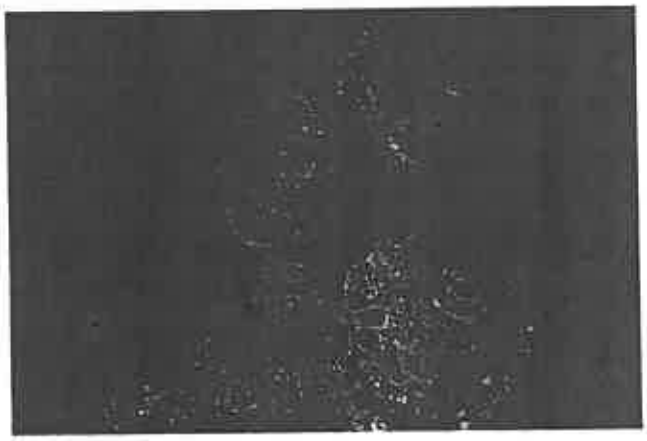
The building has no mechanical ventilation. There is a passive ventilation system, which does not meet current requirements for ventilation rates, does not serve all spaces, and which is very energy-inefficient. Furthermore, due to deterioration of the ventilators on the roof, and inaccessibility of the ductwork for cleaning, birds and probably other animals have gained access to the ducts, adding to the accumulation of contaminants in the ductwork. While the ductwork is designed to carry air from the rooms to outlets on the roof, uneven thermal distribution in the building and wind effects outdoors may cause the system to transfer air from space to space, or even to flow air backwards into the building, possibly causing introduction of contaminated air into occupied spaces. Also, as a general rule, this type of system will tend to exhaust more air from the building as the difference between warm indoor and cold outdoor air temperatures increases, which will cause relatively higher energy use during very cold weather.

A new ventilation system, serving all spaces and incorporating energy recovery, should be provided. Consideration should be given to including new heating and cooling systems as part of the system, which would eliminate problems with the existing heating system already discussed, as well as the use of window air conditioners and localized AC systems. Additional savings would be provided by the abil ity to automatically reduce heatin g and cooling on nights and weekends. Serious consideration should also be given to combining design and installation of this system with changes to the heating plant and distribution.

Typical supply and return grates for passive ventilation system

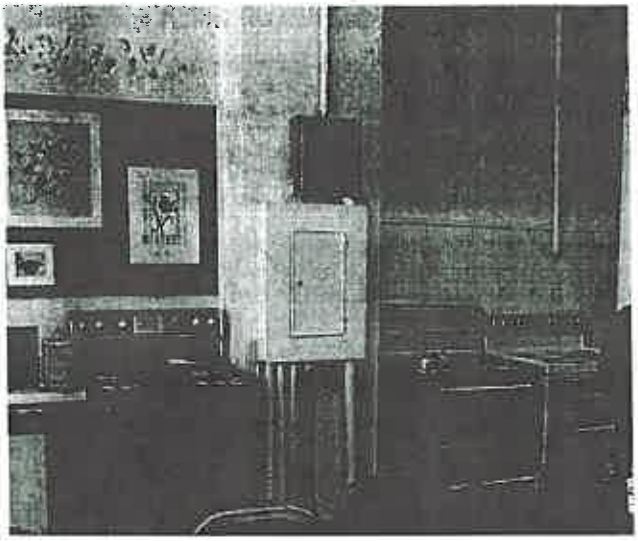
Estimate to remove existing passive system and provide mechanical ventilation (in the form of low-cost packaged rooftop equipment) to the entire building: $400,000

The building's water entrance has two large meters, which are reportedly not functioning. The City is being charged the base rate for a 6-inch meter by the water department, which is inordinate compared to the actual water use by the building. The meters are between the water supply and the sprinkler system, which is not typical; typically, only the domestic water is metered. There is not a tamper-alarm device on the main water supply valves, which is required by the code for sprinkler systems to prevent accidental shut-off of sprinkler systems. Also, there is no backflow prevention on the water entrance to protect the public water supply at the point of connection. Given these problems, the water entrance should be replaced. A backflow preventer sized for the fire protection service should be provided independent of the meter, with a smaller meter sized for the building's domestic use only installed on a separate line. A reduced pressure zone backflow preventer on the domestic water connection is also recommended. Estimate: $10,000



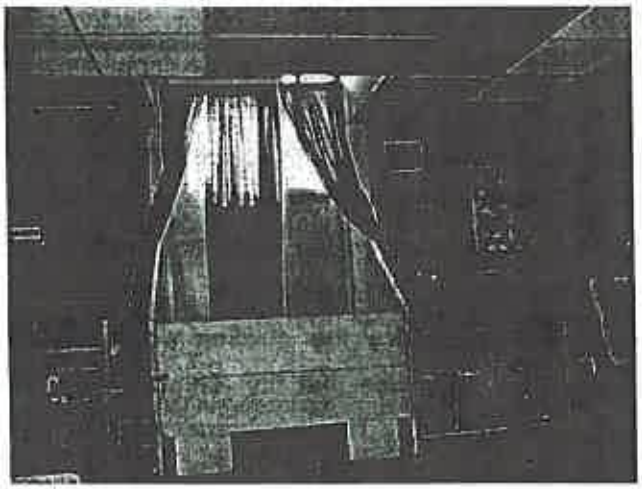
Existing dual-meter water entrance

There are three rooms which have residential-style electric ranges (cooktops and ovens), totaling six ranges. None of these is equipped with a commercial kitchen hood exhaust system with fire suppression. Neither are any of the ranges equipped with a light-duty residential style fire suppression system, which is sometimes substituted for commercial-grade equipment for cooking equipment in educational environments. NFPA 96, The Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, requires commercial hoods with fire suppression for residential-style appliances installed in commercial buildings, except in buildings of non-assembly occupancy. Since the building does contain some assembly spaces, compliance with the standard requires that the ranges be equipped with commercial grade exhaust hoods with fire suppression. This requirement may sometimes be waived by the Fire Marshal if operations are considered limited enough to not warrant such equipment. Estimate to provide six hoods with suppression: $75,000



Unvented electric ranges in second floor life-skills room

The building's sprinkler system appears to have originally covered the entire building. However, some partitions that have been added since have created spaces which are not protected, or in which sprinkler spacing and distances from walls may not be appropriate. Also, as already noted, some original building sprinklers, which are in excess of 50 years old, remain in use. In order to re-establish a condition of full coverage, a complete building survey by a qualified fire protection professional should be done, followed by work performed to eliminate unprotected and under-protected spaces. The remaining old sprinklers should be replaced with new. Estimate to do a complete building sprinkler inspection, change out remaining old sprinklers, and extend system to spaces currently lacking protection: $8,000

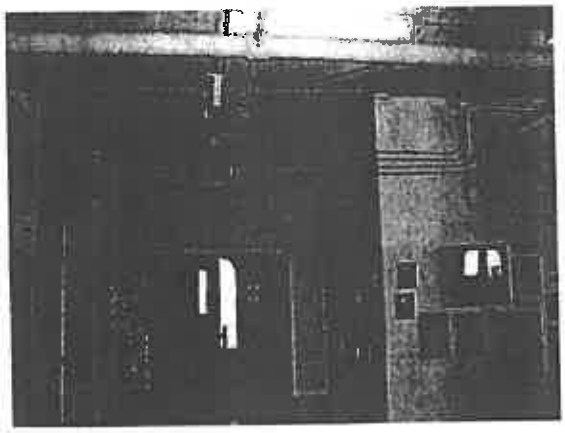


Typical construction of storage pockets which have no sprinklers

ELECTRICAL

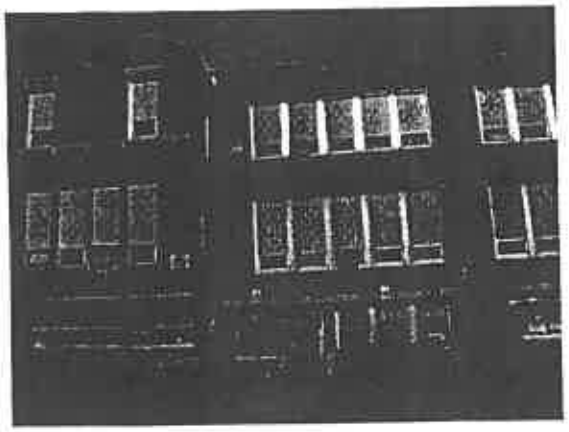
Power

1. Replace and relocate plug-fuse panels: $3,000
2. Relocate panels that are mounted too high, or do not have code required working clearances: $8,000
3. Provide GFI receptacles at sinks: $100
4. Replace rusted enclosures: $1,000



Lighting

1. Provide additional exit signs where needed and replace existing signs that are not working: $7,000
2. Provide additional emergency lights in corridors, stairs, and outside at exits: $10,000
3. Add exterior light at ground floor exit: $600



Fire Alarm

1. Add smoke detectors at the top of stairs and at doors with m agnetic holders: $2,600
2. Provide additional audio/visual devices to provide full coverage. Relocate or replace devices that do not have the proper candela rating: $15,000
3. Relocate the two pull stations in the gym that are mounted higher than the code maximum mounting height of 54 inches: $200

Implementation of Recommendations

BIDDEFORD COMMUNITY CENTER

PROJECT A

The items included in this project are upgrades to meet egress requirements, upgrades to meet structural requirements, and upgrades to the mechanical ventilation and heating system. These items are a high priority and should be further investigated as soon as possible.

PROJECT A

Recommendation	Cost
Enclose gym mezzanine stair	$4,500.00
Swing of egress doors	$2,000.00
Boiler room door	$2,500.00
Piping for roof drain leaders	$20,000.00
Roof hold-down anchors	$4,000.00
Chimney repointing	$3,500.00
Corroded stair beams	$10,000.00
Floor joist support connections	$3,000.00
Lateral connections	$30,000.00
Floor/roof diaphragm	$80,000.00
Boiler safety switch*	$200.00
Heating system	$450,000.00
Ventilation system	$400,000.00
Chimney lining	$75,000.00
Range hoods	$75,000.00
Modify sprinkler system	$8,000.00
GFI outlets*	$100.00
Replace fuse type electrical panel	$3,000.00
Rusted electrical enclosures	$1,000.00
Exit signs	$7,000.00
Magnetic door holders	$2,600.00
Subtotal	$1,181,400.00
Design Contingency (10%)	$118,140.00
Subtotal	$1,299,540.00
Overhead/Profit and Bond (25%)	$324,885.00
Subtotal	$1,624,425.00
Construction Contingency (10%)	$162,442.50
Project Total	**$1,786,867.50**

Items with an (*) could be removed from a project and completed separately by a contractor hired by the City.

BIDDEFORD COMMUNITY CENTER

PROJECT B

The following project items are included to meet current building codes, repair building finishes and provide a more energy efficient building.

PROJECT B

Recommendation	Cost
Stair handrails and guardrails	$9,000.00
Gym hardwood flooring	$70,000.00
Boiler room exterior door and stair	$3,000.00
Exterior window system	$320,000.00
Repaving parking	$55,000.00
Exterior emergency lights	$10,000.00
Exterior lighting	$600.00
Upgrade fire alarm	$15,200.00
Subtotal	$482,800.00
Design Contingency (10%)	$48,280.00
Subtotal	$531,080.00
Overhead/Profit and Bond (25%)	$132,770.00
Subtotal	$663,850.00
Construction Contingency (10%)	$66,385.00
Project Total	$730,235.00

Items with an (*) could be removed from a project and completed separately by a contractor hired by the City.

BIDDEFORD COMMUNITY CENTER

PROJECT C

These project items include upgrades to ADA, life safety and building code recom mendations.

PROJECT C	
Recommendation	**Cost**
ADA door hardware	$8,000.00
Exterior doors	$9,000.00
Exterior ramp handrail	$15,000.00
Attic flooring	$3,000.00
Electrical panel height	$8,000.00
Subtotal	$43,000.00
Design Contingency (10%)	$4,300.00
Subtotal	$47,300.00
Overhead/Profit and Bond (25%)	$11,825.00
Subtotal	$59,125.00
Construction Contingency (10%)	$5,912.50
Project Total	$65,037.50

Items with an (*) could be removed from a project and completed separately by a contractor hired by the City.