

VALUE MANAGEMENT ANALYSIS
AFTON ELEMENTARY SCHOOL
Edmonton, Alberta

EDMONTON PUBLIC SCHOOLS



N53 ARCHITECTURE INC

FILE: 1606

AUGUST 21, 2016

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1.0 INTRODUCTION

The Purpose of the Value Management (VM) Study is to create a deeper understanding of the current building condition for each of the existing school buildings.

We have assumed for this project that the building, regardless of the option chosen, will be brought to a condition to allow the building to function without additional major work for the next 40 years.

The VM study will provide a better understanding of the condition of the building than is available from existing building condition database, based on the provincial VFA (formerly RECAPP) system. The VFA system considers components of a building and determines the need for replacement based on condition, building code, and life cycle.

This VM study will not review the buildings for their ability to meet 21st century learning practices. A further review of the building with the stakeholders will be required to determine the best solutions to meet program and pedagogical requirements.

1.1 EXECUTIVE SUMMARY

N53 Architecture Inc. was requested to objectively review the existing condition of Afton Elementary School, and identify upgrades that are necessary to bring the school to “as new or modern condition”, with an expected life of 40 years.

The scope of this evaluation includes a review of the available drawings, field review of the building condition, bylaw and zoning review and building code analysis.

Afton Elementary School is comprised of an original building constructed in 1966, and an addition, completed in 1972. The basic structure of the building is sound. Work is required architecturally, mechanically and electrically to bring the building in line with the 40-year expected life.

The building does not comply with the current edition of the Alberta Building Code (A.B.C.). At the time of original construction, the building most likely complied with the Alberta Building Code standards then in place. The building is considered “grandfathered” under the previous code. Over the years, it appears that there has been several alterations made that would not have complied with the Alberta Building Code or Alberta Fire Code at the time. For instance, the expanded wire mesh that covers all of the exterior windows prevents immediate fire-fighter access into various parts of the school. Consideration should be made to correct these items that are life-safety concerns.

Under the current A.B.C., the building is well beyond the permitted building area. In order to comply with the current edition, the building would require the addition of sprinklers. The travel distance from inside some classrooms to the nearest exit is over 40m. Once sprinklered, the travel distance can be increased from 30m to 45m.

The school staff considers the General Office to be poorly situated. The General Office should be located in close proximity to the main entrance. Being located centrally within the school, and since the corridors are concentric, vision down corridors and way-finding to the General Office is poor.

The presence of natural light into classrooms is minimal and inadequate. The General Office, Staff Workroom and Lunchroom, and four classrooms are located internally and receive no natural light.

The total cost of essential upgrades has been estimated at \$5,938,134.00 (see Appendix H – Costs).

2.0 BUILDING ASSESSMENT AND UPGRADES

2.1 Building Components

Afton Elementary School
16604 – 91 Avenue, Edmonton, AB.

1966 – Original Building
1972 – Addition

Areas: 1966 section:	3,239.4 sm
1972 section:	1,048.1 sm
Gross Area:	4,287.5 sm

Note: Areas taken from RECAPP Facility Evaluation Report.
Evaluation date: August 25, 2010.

School Capacity:	539 by Instructional Area Model (IAM)
2015 Enrollment:	310 (Total), 303 (Adjusted)

Refer to **Appendix A** for completed Facility Evaluation Templates, Bylaw and Zoning Review, Building Code Assessment, Floor Plan(s) of School, and Alberta Infrastructure Uniformat listing identifying theoretical life of building components.

2.2 General Description

The original school was constructed in 1966. In 1972, an addition was constructed. The building is single storey, un-sprinklered, and constructed with both combustible and non-combustible materials. Both the 1966, and 1972 areas, utilize the same exterior and interior materials and design.

Afton is a K-6 elementary school, comprised of 20 classrooms (including a Computer/ Science room, Special Education, and a Music room), a Library, Lunchroom, Gymnasium with stage, Administrative Offices, Washrooms, Infirmary, Staff Lounge, Storage, Boiler room, Mechanical room and interior corridors.

Way-finding throughout the school is poor due to the continuous curvature of the walls (concentric circular design), limited variation in finishes and design, and limited sight-lines to the building exterior. Sight-lines along the concentric corridors are poor also due to the continuous curvature of the walls.

The General Office and Administration area is located within the central ring of rooms, approximately 25 meters from the front entrance. Consequently, there is no direct sight-line to the main entrance. Access is controlled via audio/visual communication and remote door release. Way-finding from the Main Entrance to the General Office is poor.

Classroom areas have limited or no natural light: classrooms located on an exterior wall have a single window; select 1966 classrooms (5,6,7,8) have no exterior windows due to the 1972 addition. The central Library and Music/Multi-purpose room are provided natural light via clerestory windows. Six skylights provide light along the 1966 concentric corridor.

The finishes palette is dull or muted, predominantly cool and dated. Although natural building materials are present (wood doors and frames, millwork, roof beams and wood decking), these components are predominantly painted.

With respect to Barrier-Free requirements, one barrier-free activator is provided at the Main Entrance. All entrance/exit doors are at grade. The Gymnasium is not barrier-free accessible. One barrier-free toilet stall is provided in Girls W.C. 28. One unisex barrier-free washroom is provided – access via the Infirmary.

The site is bounded by alleyways to the west, north-west, and north; 165 Street to the east; and 91st Avenue to the south. The school is located approximately at the south-west quarter of the site. The site appears to be relatively flat.

Site content includes: mature trees, sod field, soccer goal posts, sand play-area, play apparatus, hard-scape, basketball nets, and a parking lot (south-east). Bus loading is located along 91st Avenue.

2.3 Existing Condition Summary and Required Upgrades

Building General Summary:

Overall, the building condition is generally well maintained and operating adequately. However, due to the varying age of components, some remain serviceable while many others are worn-out, compromised or well beyond their intended life cycle.

Building Site Summary:

At the time of the review, the site was partially snow covered; therefore, a thorough evaluation of site elements could not be undertaken. Evaluated site content is in adequate condition.

Structure:

The building is constructed of load bearing concrete block walls supported on concrete grade beams on piles.

Roof structure: wood decking over a combination of glulam and steel beams with some OWSJ.

Floor: 125mm thick concrete slab on grade. Adequate condition.

Building Envelope:

Roofing: 2 Ply SBS Modified Bituminous membrane - condition and thickness of vapour retarder and insulation is unknown. Some ponding was observed on the lower roof around the existing roof drains. Adequate condition.

Walls: load bearing concrete block with zonolite insulation infill. Presence of vapour barrier is unknown. Exterior finish: predominantly brick veneer masonry with some vertical prefinished metal siding. Adequate condition.

Windows: steel, aluminum and PVC windows are inefficient and past their expected life span. Marginal condition.

Entrance doors: insulated steel doors, pressed steel frames with sidelights and fixed glass panels above. Adequate condition.

Utility doors: insulated metal doors. Mechanical room and Gymnasium only. Adequate condition.

Special purpose: roof hatch accessed via a roof ladder located in the mechanical Boiler room. Adequate condition.

Special Features: acrylic skylights installed on the roof allowing natural light into the main concentric corridor. Adequate condition.

Building Interior:

Interior partitions: painted concrete block with glazed-block features in the corridors. Partitions between classrooms: wood stud walls and demountable partitions. Partitions are in adequate condition.

Ceramic wall tile: washroom wall tiles are dated (colour and patterns) and damaged. Grout lines are stained. Worn and past its expected lifespan. Marginal condition.

Carpeted Flooring: located in music room, administration offices, library and corridor at library. Worn and past its expected lifespan. Marginal condition.

Resilient flooring: located in corridors and classrooms. Adequate condition.

Athletic wood flooring: located in gymnasium. Adequate condition.

Ceramic tile flooring: located in 1966 section washrooms. Worn and past its expected lifespan. Marginal condition.

Epoxy flooring: located in 1972 section washrooms. Worn and past its expected lifespan. Marginal condition.

Suspended acoustic T-bar: located in classrooms, corridors and library. Adequate condition.

Painted gypsum board ceilings: located in Administration area, washrooms, janitor and storage rooms. Adequate condition.

Interior Openings: non-rated wood framed window with an aluminum insert located between the Janitor's office and the Mechanical room. Potential risk to custodian and building. Critical condition.

Wired Glazing: approximately 12.5 sm of wire-glazing throughout school: 18 x 0.55 sq.m door lite, 4 x 0.1 sm door lite, 2 x 1.1 sm side lite.

Casework: worn and damaged throughout. Marginal condition.

Mechanical:

Mechanical Heating:

Heating Plant: one original Peerless, 3760 MBH and one Peerless 2730 MBH input steel tube hot water boilers. Boiler pumps, expansion tanks and accessories are located in the mechanical boiler room. Boilers are original to the building and are past their expected lifespan. Some corrosion is evident. Marginal condition.

Terminal Heating Unit and Distribution System: a mixture of copper and schedule 40 steel piping. Base mounted Armstrong pumps located in the mechanical room that feed perimeter finned tube radiation distribute heated water. Classrooms are heated and ventilated by Herman Nelson & Dunham Bush unit ventilators. Hot water heaters are

installed at entrances complete with dedicated thermostats and metal diffusers. There are suspended hot water unit heaters in the mechanical areas. The system is original and possibly not up to the current standards for outdoor air ventilation rates. Marginal condition.

Ventilation and Air Conditioning:

Canadian Blower air handling units are provided for the central building areas including the office and music room. Units have supply fans, return fan, motorized exhaust/return dampers, filters and heating coils. Marginal condition.

Roof mounted exhaust fans are provided for the bathroom and central corridor exhaust. Low velocity galvanized ductwork connects the air handling units to the sidewall grilles, rectangular and round cone grill diffusers. Classroom #7 reports of “musty” air quality; probable cause is a malfunctioning intake on unit ventilators. The air-handling units are original and possibly not up to the current standards for outdoor air ventilation rates. Adequate condition.

Building Systems Controls:

New DCC control system installed in 2015. Adequate condition.

Plumbing Fixtures:

One natural gas A.O. Smith 71-gallon storage capacity, 120 mbh input. Wet rotor, fractional HP recirculation pump, flue damper and T&P valve - installed in 2004. Adequate condition. Washroom lavatories, urinals, water closets, mop sinks and drinking fountains are in adequate condition. Domestic water, sanitary and vent, and storm piping systems are in adequate condition. Domestic water and natural gas service are in adequate condition.

Fire Protection Systems:

The building is not sprinklered. A fire hose cabinet is located in the gymnasium – fire hose cabinet is in adequate condition. Recessed and wall mounted dry chemical fire extinguishers are located throughout the building.

Electrical:

Electrical Power Distribution:

Service Entry: incoming service: 600 amp, 120/208V, 3 phase, 4 wire fused at 450 Amps fed underground from a utility owned pad mounted transformer. Wall mounted fused disconnect switches feed branch circuit panels and equipment. The main switchboard is original and beyond its expected lifespan with limited space for expansion. Marginal condition.

Sub-panels, Conduit and Wireways: 120/208V branch circuit panels installed in service rooms. Sub-panels are original and beyond expected lifespan with limited spaces left. Marginal condition.

Lighting:

Interior lighting: primarily fluorescent fixtures with T8 lamps and electronic ballasts. Adequate condition.

Exit/ Emergency Lighting: emergency battery packs with single remote heads throughout the building. Battery packs are original and showing signs of deterioration. Single remote heads are not in compliance with current building code requirements. Marginal condition.

Emergency Systems:

Fire Alarm and Detection: Edwards 6616 zoned hard wired fire alarm system. Control panel is located in the general office with a remove annunciator panel at the main entrance. It has heat detectors, smoke detectors, manual pull stations and 10” bells. System in outdated and no longer manufactured or supported. Marginal condition.

Communications: security, telephone, LAN and PA system are in adequate condition.

2.4 Code Review Summary and Upgrades

This Code Review provides a realistic assessment of changes required for the ‘Essential’ components of the study. It is not all-encompassing and a thorough Code review (and confirmation with an Authority Having Jurisdiction) needs to be undertaken before actual construction documents are produced.

The following summary items reflect aspects of the building that **do not comply** with the current edition of the Alberta Building Code 2014. Refer to **Appendix C** for the complete Building Code Assessment.

Summary

Major Occupancy: Group A Division 2 – Assembly (School)
Construction: combustible and non-combustible, unsprinklered.
Building Area: 4,287.5 sq.m
Building Height: one storey
Multiple Occupancies: No
Facing: 1 Street

- The building does not conform to a classification within the current Alberta Building Code 2014. Under the classifications for Group A Division 2 unsprinklered buildings (3.2.2.25), a one storey building, facing 1 streets, can be a maximum of 1,600 sm. In order to comply, the building would have to be sprinklered throughout. Once sprinklers are added, the classification would be 3.2.2.26.
- 3.2.5.1 Access to Above-grade storeys: direct access for firefighting shall be provided from the outdoors to every storey that is not sprinklered throughout and whose floor level is less than 25m above grade, by a least one unobstructed window or access panel for each 15m of wall in each wall required to face a street. The windows are not accessible (all windows are protected by expanded metal lath for protection from breakage). Windows are further apart than 15m.
- **3.2.5.9, 3.2.5.10, 3.2.5.11 Standpipes, Hose Connections and Hose Stations:** the building is equipped with a Fire Hose cabinet in the Gymnasium. The building does not comply. Sentence 3.2.5.11 states that Hose Stations shall be located in the floor area within 5m of exits and at other locations to provide coverage of the entire floor area.

- **3.3.1.21 (1) Janitor Room Fire Separations:** : since the building is not sprinklered, and the floor assembly must have a fire-resistance rating of 1 h, janitor's rooms shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 hour. There is a window between the Janitor's Room and the Boiler Room.
- **3.3.1.26 Storage Room Fire Separations:** The ratings of the storage room doors could not be verified. Required fire-resistance rating: not less than 1 h. The ratings of the doors could not be verified. Some doors were labeled, other doors that should have labels were not labeled.
- **3.3.2.6 (2) Corridors:** Corridors providing public access to exit are required to be fire separations rated for 45 minutes. The building does not comply: most doors have grilles to permit ventilation. The travel distance from the furthest point in a classroom to an exit is greater than 30m.
- **3.4.2.5 (1)(f) Travel Distance:** the distance from some classrooms to the exit is greater than the 30m maximum.
- **3.8.1.2:** less than 50% of the building entrances are designed as barrier free.
- **3.8.2.2 Barrier-free Parking Stalls:** Barrier free parking stalls are required. The building lot has 38 stalls. 3 Barrier-free stalls are required. 2 Barrier-Free stalls are provided. Building does not comply.
- **3.8.3.3.3 Accessible Doors:** lever handles are not provided.

2.5 Recommendations

Recommendations are based on the project requirements for the evaluation team to identify the upgrades to bring the school to "as new or modern condition" with an expected life of 40 years. Using Alberta Infrastructure Unifomat listing identifying theoretical life of building components, most building components are assumed to require replacement to meet the 40 year target.

See Appendix for Alberta Infrastructure Unifomat listing identifying theoretical life of building components.

Life Safety/Building Code:

- The building should be sprinklered throughout. Once sprinklered, the travel distance is increased from 30m to 45m.
- Other items identified in the Building Code Analysis should be implemented.

Structure:

- Settlement on the southeast corner has resulted in the brick veneer separating at the mortar joints. Investigate existing structural settlement and repair/ repoint mortar joints to portion of damaged brick masonry.
- Recommend repairing damaged portion of concrete slab at doorway.

Building Envelope:

- Roofing: lower the approx. 10 existing roof drains to help eliminate ponding.
- Walls: investigate existing structural settlement and repair/ repoint mortar joints to portion of damaged brick masonry.
- Windows: replace all steel, aluminum and PVC windows with new sealed window units.

Building Interior:

- Ceramic wall tile: replace with new.
- Flooring: replace all carpet, epoxy and ceramic tile flooring with new.
- Interior Openings: replace the window between the Janitor's office and the Boiler Room with a fire-rated assembly.
 - Wired Glazing: replace wired glass with tempered glass. Fire-rated glass to be provided as required.
- Casework: replace the existing millwork and countertops with new.

Mechanical:

- Mechanical Heating:
 - Terminal Heating Unit and Distribution System: replace the unit ventilators with new.
 - Ventilation and Air Conditioning: replace the air handling units with new.

Electrical:

- Electrical Power Distribution:
 - Service Entry: replace main switchboard with new.
 - Sub-panels: replace sub-panels with new.
- Lighting:
 - Exit/ Emergency Lighting: replace with new.
- Emergency Systems:
 - Fire Alarm and Detection: replace with new.

2.6 Costing Summary

The total cost of essential upgrades has been estimated at \$5,938,134.00 (see Appendix H – Costs).

The overall estimate summary amount is greater than the sum of the individual items because various project costs are added in order to generate a Total Project Cost (i.e. as if EPS were to include all the scope items into a single project and take it from the initial stages of design through construction completion).

For example:

- Contractor's General Conditions and Fee - to pay for site supervision, safety, office trailer, temporary power/heat, tools, etc. and to allow a fair and reasonable profit to the work.
- Contingencies:
 - Project Contingency (or Design Allowance) - An allowance for design changes during the development of the design. The allowance is to cover unforeseen items during the design phase that do not change the project scope. The allowance, which is included in the primary stages, is ultimately absorbed into the design and quantified work as more detailed information becomes available and is therefore normally reduced to zero at tender stage.
 - Construction Contingency - An allowance for changes to the contract price during construction. The allowance is to cover unforeseen items during the construction period which will result in change orders
 - Phasing Contingency - An allowance for increased requirements for projects being executed in multiple phases. This restriction leads to increased costs due to increased temporary protection requirements, etc.
- Soft/Other Costs:
 - Project Admin - costs associated with EPS's administration of the project (could be an internal PM, etc.).
 - Design Fees - costs for design and contract administration of the project.
 - Furnishings & Equipment - typical allowance in order to furnish the modernized school with new Furnishings and Equipment.
 - Non-refundable GST - typically, school boards do not pay full amount of GST, so these costs are shown in order to illustrate the full cost of the project.

The reason each of these add-ons are not applied to each individual scope item is that particular approach isn't truly realistic for smaller individual scopes of work (i.e. a site trailer would not be brought on site to execute a minor scope item). But when all scopes are packed into a larger project and the timeline becomes longer term then economies of scale may be realized in terms of individual items' pricing with a slight offset in General conditions. In the long run, it should be cheaper and faster to do all the scopes in one large project rather than piece-meal.

For mathematical sake, it should also be noted that on the summary page the sum of the sections A. Demolition and B. Preservation/Modernization equals the sum of the individual items for all schools.

APPENDIX A

FACILITY EVALUATION TEMPLATE

FACILITY EVALUATION TEMPLATE

SITE NAME: Afton Elementary School

BUILDING NAME: Afton Elementary School

Evaluation Date: March 23, 2016

Evaluated By: N53 Architecture Inc.

Notes:

Four ratings are listed

- 1 = **Critical:** unsafe, high risk of injury or system failure.
- 2 = **Marginal:** operating at minimum capacity. Significant deficiencies. Above average operating maintenance costs.
- 3 = **Adequate:** reached end of life cycle. Still operating adequately.
- 4 = **Good:** as new, state of the art meets present and foreseeable requirements.

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Building General Summary	<p>Afton is a K-6 elementary school constructed in 1966 with an area of 3239.4 square meters. In 1972 a 1048.1 square metre addition was constructed bringing the total area of the school to 4,288 square metres.</p> <p>It is a single storey building, unsprinklered, constructed with both combustible and non-combustible materials.</p>	<p>The building is in an adequate condition with some minor repair work required for some items. Many items are past their expected lifespan but are still functioning properly.</p>		3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Building Site Summary	<p>The school faces two streets, 91st avenue on the South, 165th street on the East and a service lane to the West.</p> <p>The site is a large grassed area with mature trees located on the south side.</p> <p>There is a bus loading zone along 91st avenue and an asphalt parking lot located on the East side. Sidewalks are concrete and located around the building.</p>	The site is in adequate condition.		3	
Structure Summary	<p>The building is constructed of load bearing concrete block walls supported on concrete grade beams on piles. The roof structure is wood decking over a combination of glulam and steel beams with some OWSJ. The floor is a 125mm thick concrete slab on grade.</p>	<p>The structure is in adequate condition.</p> <p>Settlement on the southeast corner has resulted in the brick veneer separating at the mortar joints.</p> <p>Recommend repairing damaged portion of concrete slab at doorway.</p>	10 m2	3	
Building Envelope Summary	<p>Exterior walls are load bearing concrete block walls with infill zonolite insulation. Presence of vapour barrier is unknown. Exterior finishes are brick veneer masonry with some vertical metal siding.</p>	The building envelope is in adequate condition.		3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Roofing	<p>2 Ply SBS Modified Bituminous membrane roofing was installed over the entire roof in 2003.</p> <p>Condition and thickness of vapour retarder and insulation is unknown.</p>	<p>Some ponding was observed on the lower roof around the existing roof drains.</p> <p>Recommend to lower the existing roof drains to help eliminate ponding.</p>	Approx. 10 drains	3	
Walls	<p>Exterior and interior are load bearing concrete block walls supported on concrete grade beams over piles.</p> <p>Concrete block walls are filled with zonalite insulation. Presence of wall air / vapour barrier is unknown.</p> <p>The exterior finish is predominantly brick veneer with some vertical prefinished metal siding along the front edge of the overhangs and on the gyms walls above the roof. There is a small amount of aluminum panels siding below the windows of the 1972 addition.</p>	<p>The brick veneer on the south wall, east of the main entrance has separated due to structural settlement.</p> <p>Recommend to investigate existing structural settlement and repair / repoint mortar joints to portion of damaged brick masonry.</p>	50 m2	3	
Windows	<p>1966 Section has steel windows with upper fixed glazed panels and lower operable sliders.</p> <p>1972 Section has aluminum windows with fixed glazing panels with sliders below.</p> <p>The Clerestory windows are PVC.</p>	<p>Steel windows are inefficient and past their expected life span. Recommend replacing with new efficient sealed window units.</p> <p>Aluminum windows are inefficient and past their expected life span. Recommend replacing with new sealed window units.</p> <p>PVC windows are inefficient and past their expected life span. Recommend replacing with new sealed window units.</p>	<p>14 windows</p> <p>7 windows</p> <p>28 windows</p>	<p>2</p> <p>2</p> <p>3</p>	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Exterior Doors & Openings	<p>There are insulated steel framed storefront doors with sidelights and fixed glass panels above.</p> <p>The exterior utility doors are insulated metal doors installed at the mechanical room and gymnasium.</p>		<p>11 doors</p> <p>7 doors</p>	<p>3</p> <p>3</p>	
Special Purpose Doors	<p>There is a roof hatch accessed from a roof ladder located in the mechanical boiler room.</p>			3	
Special Features	<p>There are acrylic skylights installed on the roof allowing natural light into the main corridor.</p> <p>Canopies are located at the exterior entrances.</p>		6 skylights	<p>3</p> <p>3</p>	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Envelope - Other	Painted plywood soffits are installed to the underside of the canopies at the exterior entrances.			3	
Building Interior Summary	<p>The interior has concrete block interior partitions with glazed block in the corridors. There are wood stud walls and demountable partitions between classrooms.</p> <p>Flooring is comprised of carpet and vinyl sheet flooring in the classrooms and corridors with ceramic tile and epoxy flooring in the washrooms.</p> <p>Ceilings are suspended T-Bar systems with painted gypsum board ceilings in the storage rooms.</p>	The building interior is in adequate condition.		3	
Partitions	<p>The interior has concrete block interior partitions with glazed block along the corridors.</p> <p>There are wood stud walls with gypsum board separating classrooms and in the administration area of the 1966 Section.</p> <p>There are wood stud walls with gypsum board and demountable partitions between classrooms in the 1972 Section.</p>			3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Interior Finishes	<p>All concrete block, gypsum board walls and ceilings are painted throughout.</p> <p>The concrete block along the corridors is Spectra-glazed finish.</p> <p>There is ceramic wall tile installed in the washrooms.</p>	<p>The ceramic wall tiles in the washrooms are dated and have minor damage throughout its surface. Grout lines are stained in some areas. The wall tile is past its expected lifespan. Recommend to replace the ceramic wall tile.</p>	130 m2	2	
Floors	<p>The music room, administration offices, library and corridors connected to the library have carpet flooring.</p> <p>The corridors and classrooms have resilient sheet and tile flooring.</p> <p>There is athletic wood flooring in the gym and stage area.</p> <p>The staff and student washrooms in the 1966 original building have ceramic tile flooring and the washroom in the 1972 addition have epoxy finish over concrete.</p>	<p>The carpet flooring is worn and past its expected lifespan, it was installed in 1990.</p> <p>The sheet flooring is newer is in adequate condition</p> <p>The gym flooring is in adequate condition</p> <p>The epoxy flooring in the washrooms are damaged and in need of repair.</p> <p>The ceramic tile flooring is worn and past its expected lifespan.</p>	<p>385 m2</p> <p>2,740 m2</p> <p>400 m2</p> <p>15 m2</p> <p>85 m2</p>	<p>2</p> <p>3</p> <p>3</p> <p>2</p> <p>2</p>	
Walls	<p>Painted concrete block and gypsum board walls. Spectra-glazed concrete block walls in corridors.</p>			3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Ceilings	<p>Administration area, washrooms, janitor and storage rooms have painted gypsum board ceilings.</p> <p>Classrooms, corridors and library have suspended T-Bar system with acoustic ceiling tiles.</p>		2,930 m2	3	
Interior Openings	<p>There is a wood framed window with an aluminum insert between the Janitor Office and the mechanical boiler room.</p> <p>The administration area has painted steel framed windows.</p> <p>There are glass block windows between the computer room and the corridor.</p>	<p>The window between the Janitor Office and mechanical boiler room is not rated. It is a risk to the custodian and the building if there is any fire caused by the mechanical natural gas boilers.</p> <p>Recommend replacing the window with a new fire rated assembly.</p>	1 m2	1	
Furnishings & Equipment	Classrooms contain student desks, chairs, teacher desk and miscellaneous cabinets. The library contains desks, chairs and wood book storage shelves.			3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Casework Items	<p>The classrooms have painted plywood open and closed shelving units with plastic laminate countertops.</p> <p>There is a wood display case in the corridor.</p> <p>Plastic laminate over plywood vanities are installed throughout the washrooms.</p> <p>Staff room has upper and lower kitchen cabinets with plastic laminate countertops.</p>	The millwork throughout is original and is worn and damaged throughout. Recommend replacing the existing millwork and countertops with new.	<p>Classroom – 150 m²</p> <p>Display 2 linear metres</p> <p>Vanities 8 linear metres</p> <p>Kitchen – 3 linear metres</p>	2	
Equipment Items	<p>Kitchen staff room has dishwasher, range, fridge, and microwave ovens. Some classroom has microwaves and fridges.</p> <p>There are stage curtains and tracks in both the stage and drama room. The stage also has track lighting.</p> <p>The gym have ceiling hung and wall mounted basketball nets and miscellaneous athletic sporting equipment.</p>			3 3 3	
Window Treatments	<p>The 1972 addition classrooms and four of the 1966 original building classrooms have venetian blinds.</p> <p>The remaining four classrooms in the 1966 building and the clerestory windows have curtains installed.</p>			3 3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Interior - Other	The drama room has wood framed tiered seating platforms covered in carpet.			3	
Building Code	ABC Group A Division 2 – School. Refer to the building code analysis within this report for further details.				
Hazardous Materials	Refer to HAZMAT review within this report.				

FACILITY EVALUATION TEMPLATE

SITE NAME: Afton Elementary School

BUILDING NAME: Afton Elementary School

Evaluation Date: March 23, 2016

Evaluated By: N53 Architecture Inc.
Nowak Engineering Inc.

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- 2 = **Marginal:** operating at minimum capacity. Significant deficiencies. Above average operating maintenance costs.
- 3 = **Adequate:** reached end of life cycle. Still operating adequately.
- 4 = **Good:** as new, state of the art meets present and foreseeable requirements.

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
<u>MECHANICAL HEATING</u> Heating Plant	There is one original Peerless, 3760 MBH and one Peerless 2730 MBH input steel tube hot water boilers. Boiler pumps, expansion tanks and accessories are all located in the mechanical boiler room.	Boilers are original to the building and are past their expected lifespan. Some corrosion is evident.	2 boilers	2	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Terminal Heating Units and Distribution Systems	<p>There is a mixture of copper and schedule 40 steel piping. Heating water is distributed by base mounted Armstrong pumps located in the mechanical room that feed perimeter finned tube radiation.</p> <p>Classrooms are heated and ventilated by Herman Nelson & Dunham Bush unit ventilators.</p> <p>Hot water heaters are installed at entrances complete with dedicated thermostats and metal diffusers.</p> <p>There are suspended hot water unit heaters in the mechanical areas.</p>	<p>Classroom 7 reports of “musty” air quality; probable cause is a malfunctioning intake on Duhham unit ventilators.</p> <p>The system is original and possibly not up to the current standards for outdoor air ventilation rates.</p> <p>Recommend replacing the unit ventilators.</p>	20 unit ventilator	2	
VENTILATION AND AIR CONDITIONING Air Handling Units	<p>There is Canadian Blower air handling units for the central building areas including the office and music room. They have supply fans, return fan, motorized exhaust / return dampers, filters and heating coils.</p>	<p>The system is original and possibly not up to the current standards for outdoor air ventilation rates.</p> <p>Recommend replacing the air handling units.</p>	2 units	2	
Exhaust Fans	<p>There are roof mounted exhaust fans for the bathroom and central corridor exhaust.</p>		6	3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Duct Distribution, Grilles and Inlets/outlets	Low velocity galvanized ductwork connects the air handling units to the sidewall grilles, rectangular and round cone grill diffusers.			3	
Humidification	There is no humidification provided within the building.				
Packaged Air Conditioning Units	There is no air conditioning units provided within the building.				

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
BUILDING SYSTEM CONTROLS Energy Management Control Systems	New DDC control system installed in the fall of 2015 to replace the original system.			3	
PLUMBING SYSTEMS Domestic Hot Water	There is one natural gas A.O. Smith 71 gallon storage capacity, 120 mbh input. It has a wet rotor, fractional HP recirculation pump, flue damper and T&P valve. It was installed in 2004.		1	3	
Plumbing Fixtures	<p>Washrooms have mainly stainless steel lavatories with push type metering valves installed in 2000.</p> <p>Urinals are floor mounted, recessed with flush valves.</p> <p>Water closets are floor mounted flush valve and flush tank.</p> <p>There are single and two compartment stainless steel sinks installed in classrooms and staff room. They were installed in 2000.</p> <p>Mop sinks are cast iron wall and floor mounted located in the janitors rooms. They were installed in 2000.</p> <p>Single bubbler, vitreous china drinking fountains are installed in the corridors</p>		19 11 18 27 2 8	3 3 3 3 3 3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Domestic Water Piping, Valves and Insulation	There is an insulated piping system with gate valves that connect to various plumbing fixtures.		25 valves	3	
Sanitary and Vent Piping Systems	The piping is cast iron throughout and the vent piping is cast iron and copper.			3	
Storm Piping System	Conventional roof drains with cast iron dome strainers connect to cast iron roof drainage piping. The piping connects to the municipal mains below grade.			3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Domestic Water Service	The piping is copper with soldered fitting throughout. There is a Watts backflow preventer for the boiler make up water line and for the fire hose cabinet in the gymnasium that was installed in 1999.			3	
Natural Gas Service	The natural gas meter is located in the mechanical room with schedule 40 steel gas piping to the mechanical appliances.			3	
FIRE PROTECTION SYSTEMS Wet Protection Systems	There is a fire hose cabinet located in the gymnasium. The building is not sprinklered.			3	
Fire Extinguishers and Cabinets	Recessed and wall mounted dry chemical fire extinguishers at several locations throughout the building.			3	

FACILITY EVALUATION TEMPLATE

SITE NAME: Afton Elementary School

BUILDING NAME: Afton Elementary School

Evaluation Date: March 23, 2016

Evaluated By: KSJ Engineering Ltd.
N53 Architecture Inc.

Notes:

Four ratings are listed

- 1 = **Critical:** unsafe, high risk of injury or system failure.
- 2 = **Marginal:** operating at minimum capacity. Significant deficiencies. Above average operating maintenance costs.
- 3 = **Adequate:** reached end of life cycle. Still operating adequately.
- 4 = **Good:** as new, state of the art meets present and foreseeable requirements.

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Electrical Power Distribution Service Entry	Incoming service is 600 amp, 120/208V, 3 phase, 4 wire fused at 450 Amps fed underground from a utility owned pad mounted transformer. Wall mounted fused disconnect switches feed branch circuit panels and equipment.	The main switchboard is original and beyond its expected lifespan. There is limited space for expansion. Recommend replacing it with new.	1	2	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Sub-panels, Conduit and Wireways	120/208V branch circuit panels installed in service rooms.	The sub-panels are original and beyond its expected lifespan. They have very little spaces left. Recommend replacing it with new.	10 panels	2	
Appliances/Receptacles	Power receptacles installed throughout the building.			3	
Grounding and Static Control	Building Ground.			3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Lighting Building Exterior	There is exterior wall mounted H.P. sodium light fixtures installed around the exterior perimeter. They are controlled by a photo-cell with manual override.			3	
Building Interior	Interior fluorescent fixtures with T8 lamps and electronic ballasts. They were installed in 1998. They are controlled by line voltage switching in the classrooms and corridors. The gym has GE low voltage switching.		850	3	
Exit/Emergency Lighting	Emergency battery packs with single remote heads throughout the building.	The battery packs are original and showing signs of deterioration. Single remote heads are not in compliance with current building code requirements. Recommend replacing with new.	4,210m2	2	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Emergency Systems Fire Alarm and Detection	Edwards 6616 zoned hard wired fire alarm system. The control panel is located in the general office with a remove annunciator panel at the main entrance. It has heat detectors, smoke detectors, manual pull stations and 10" bells.	The fire alarm system is outdated and no longer manufactured or supported. Recommend to replace with new fire alarm system.	4,283m2	2	
Security	Magnum Alert security system complete with motion detectors and key pads. The main panel is located in the mechanical room.			3	
Telephone System	Nortel Networks Meridian telephone system. It is located in the storage room of the general office. Each classroom has a telephone provided. It was installed in 2000.			3	
TV/Computer (LAN)	Main network rack mounted patch panels and switches are located in the server room. Data outlets are provided in the administration area and each classroom with Cat 5 cable. An underground cable TV service terminates in the mechanical room.			3 3	

System	Description	Recommended Action Concerns	QTY/Area	Rating	-
Intercom/Public Address (PA)	Bogen Multicomm 2000 interfaced with the telephone system with overhead speakers throughout the building. Telephones have been provided in each classroom.			3	
Clock and Program System	120V and battery operated clocks			3	
Communications-other					

APPENDIX B

BYLAW AND ZONING REVIEW

BYLAW AND ZONING REVIEW – AFTON ELEMENTARY SCHOOL

An analysis that encompasses elements of the existing building configuration and anticipated changes are included below. The analysis is meant to establish a baseline of requirements for the purposes of verifying scope and potential variables that will need to be considered in future detailed design development. This information will therefore need to be reviewed in detail and verified over the course of further option development.

Edmonton Zoning Bylaw 12800, last revised March 2016, is the land use bylaw currently in force. The site is zoned **US Urban Services**. The general purpose of the US zoning category is stated as being “to provide for publicly and privately owned facilities of an institutional or community service nature”, which aligns with the current and projected use of the site.

Zoning requires a minimum front setback of 6.0 m, a rear setback of 7.5 m, and side setbacks of 4.5 m. The maximum permitted building height is 10.0 m. For this Zone, the bylaw states that if “it is unreasonable for the development to comply” with setback and building height requirements, “the Development Officer may relax” these conditions.

Parking requirements: Minimum vehicular parking stall sizes are 2.6m wide x 5.5m long. However, up to 30% of the required number of parking stalls may, if signed and designated, be small vehicle parking stalls and their length may be reduced to 4.6m. Barrier free parking stalls shall be 3.7m wide. Minimum parking aisle widths must be 7.0m wide. The required number of parking stalls for the Afton Elementary School is 27 calculated as follows:

1. For full build-out – 19 classrooms (18 currently, not including library spaces) x 1.4 stalls per classroom = 27 stalls

Bicycle storage requirements are: Minimum bicycle stall size is 0.6m wide x 1.8m long and must be located in a hard surfaced area adjacent to a walk with a minimum width of 1.5m. Bicycle parking must be in the form of rooms, lockers, racks or railings not more than 15m from the student entry locations. Quantity of stalls must be equal or greater than 10% of required vehicle parking requirements, which results in 3 bicycle stalls.

Loading requirements are: Loading spaces are required to be 3.0m wide and 9.0m long. The required number of loading spaces is 2 calculated as follows:

1. 1 stall per the first 2,800 m² of total building area (total building area = 4,288 m²) = 1 space
2. 1 stall for each 2,800 m² after (total building area of 4,288 – 2,800 m² = 1,488 m²) = 1 space

Passenger drop off spaces (54.5 of the land use bylaw) located on school property (not overlapping with parking requirements), are to be provided for all new schools or existing schools where an expansion of 100 students or 20% of existing enrollment, whichever is less, is expected. The development officer has latitude to consider a variance should full application of bylaw requirements not be feasible given site constraints. The number of drop off spaces is to be calculated based on the ultimate school built-out capacity (ie: including any future contemplated portable classrooms) and must be designed for linear traffic flow with parallel parking to eliminate backing up or turning.

Passenger drop off space requirements for Elementary Schools (54.5, Schedule 4):

1. Offsite: 3 spaces per 100 students, but in no case less than 5 spaces (19 classrooms = 539 students / 100) = 18 spaces
2. Onsite: 1 space per 100 students, but in no case less than 5 spaces (19 classrooms = 539 students / 100) = 6 spaces

Use of setbacks are restricted. Among other restrictions, parking, loading, storage and trash collection are not permitted to be placed within, or encroach upon, setbacks.

Elements of regulations noted above, which may be deemed non-compliant with respect to the existing school's configuration, are most likely to be grandfathered by the City of Edmonton. New development option(s) will be required to strictly adhere to the cited bylaw regulations.

APPENDIX C

BUILDING CODE REVIEW AND DIAGRAMS

BUILDING CODE REVIEW

Afton Elementary School
9812 161 Street, Edmonton, AB

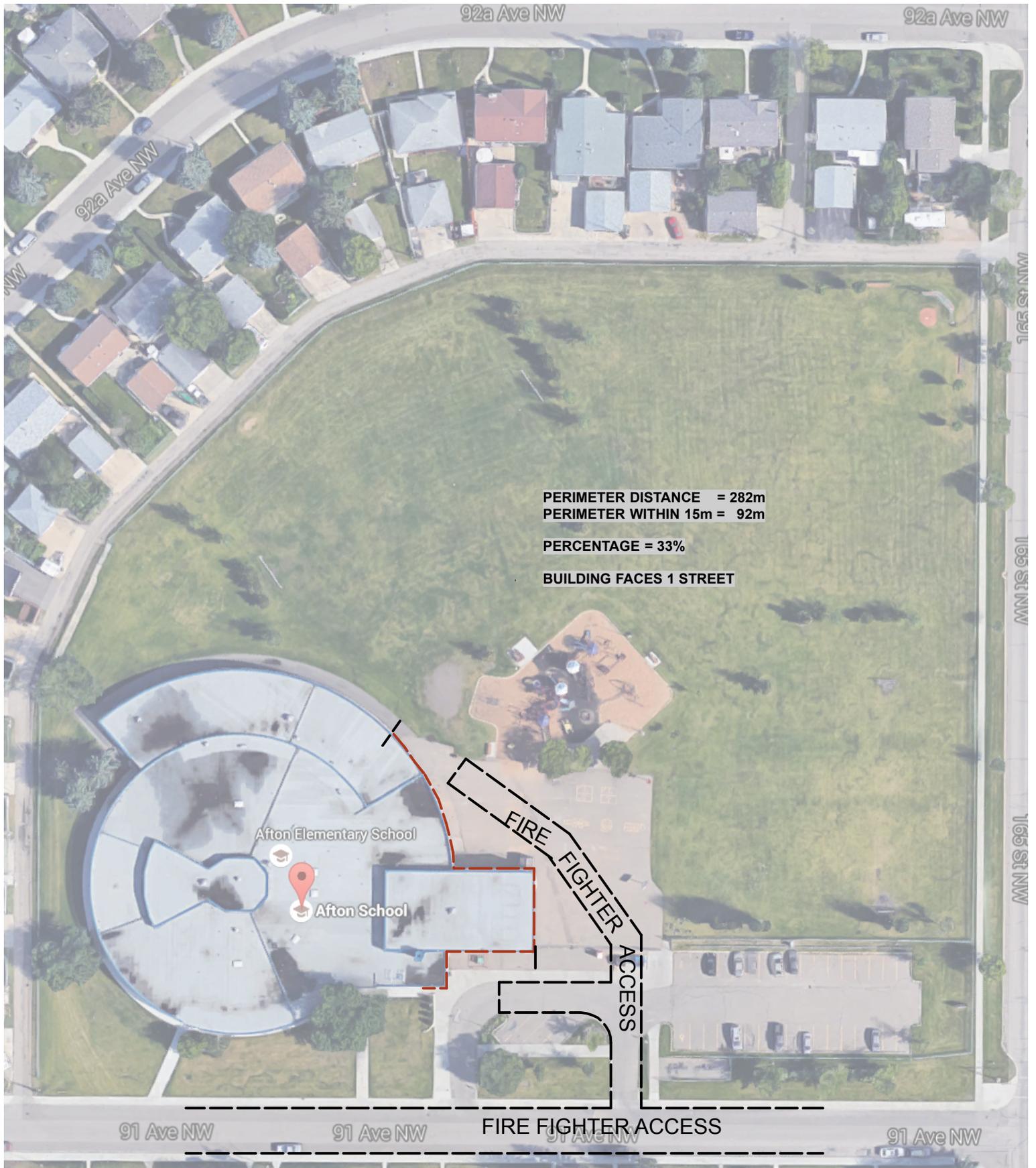
Current Building Code in Force: ABC 2014.

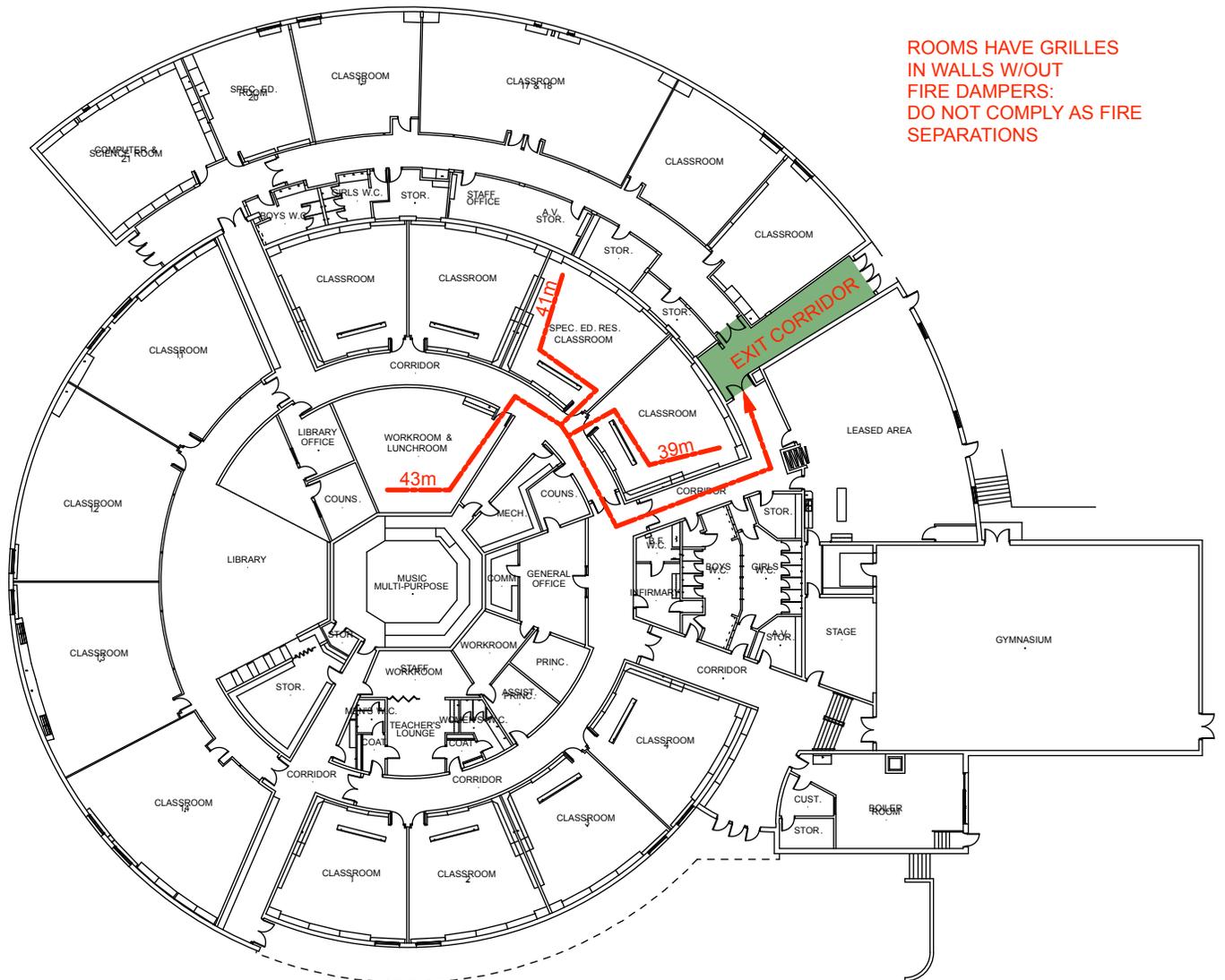
1. **Major Occupancy:** Group A, Division 2
2. **Streets (3.2.2.10):** faces 1 street under the definition of the Alberta Building Code. Building Perimeter = 282m, Perimeter within 15m of street = 92m. Percentage within 15m of building face = 33%.
3. **Construction:** Combustible and Non-combustible, unsprinklered.
4. **Building Area:** 4,288 m²
5. **Building Height:** One storey.
6. **3.1.3.1 Multiple Occupancies:** No.
7. **Occupant Load 3.1.17.1:** 20 classrooms (including Computer/ Science room, Special Education, Music room), library, lunchroom, gymnasium with stage, and ancillary spaces (administrative offices, washrooms, infirmary, staff lounge, storage, boiler room, mechanical room). The net capacity established by EPSB is 539 students. Allowing for 21 staff, the occupant load is 560 persons.
8. **Alberta Building Code Classification:** **The building does not conform to a classification within the current Alberta Building Code 2014.** Under the classifications for Group A Division 2 unsprinklered buildings (**3.2.2.25**), a one storey building, facing 1 streets, can be a maximum of 1,600 sm. In order to comply, the building would have to be sprinklered throughout. Once sprinklers are added, the classification would be **3.2.2.26**.
 - combustible or non-combustible. *Building complies.*
 - floor assemblies shall be fire separations... *Building complies (only 1 storey).*
 - mezzanines... *Building complies (no mezzanines).*
 - loadbearing walls, columns and arches supporting an assembly... (does not apply – no supported assembly). *Building complies.*
9. **3.2.3 Limiting Distance:** the building is considered as one fire-compartment, limiting distance is not an issue.
10. **3.2.4.1** A fire alarm system is required (and is in place) for a school with an occupant load of more than 40 persons. *Building complies.*
11. **3.2.4.2.(2)** A single Fire Alarm system is required to serve all major occupancies within a building. *Building complies.*
12. **3.2.4.3.(1)(d)** Fire alarm system may be single or two stage alarm. *Single Stage is in place.*
13. **3.2.4.8 Signals to Fire Department:**

- control panel with integral annunciator and remote annunciator is in place. *Building complies.*
14. **3.2.4.9 Annunciator and Zone Indication:**
 - control panel with integral annunciator and remote annunciator is in place. *Building complies.*
 15. **3.2.4.11 Fire and Smoke Detectors:** the building is not sprinklered, fire detectors are required in storage rooms, service rooms, janitor's rooms, rooms with hazardous substances. *Building complies.*
 16. **3.2.5.1 Access to Above-grade Storeys:** For an unsprinklered building, direct access for firefighting shall be provided from the outdoors to every storey that is not sprinklered throughout and whose floor level is less than 25m above grader, by a least one unobstructed window or access panel for each 15m of wall in each wall required to face a street by Subsection 3.2.2. **The building does not comply. The windows are not accessible (all windows are protected by expanded metal lath for protection from breakage). Windows are further apart than 15m.**
 17. **3.2.5.6** Access routes for fire fighting access must have a clear width of not less than 6m, centerline radius of not less than 12m, overhead clearance of not less than 5m and route must be connected to a public thoroughfare. *Building complies.*
 18. **3.2.5.9, 3.2.5.10, 3.2.5.11 Standpipes, Hose Connections and Hose Stations:** the building is equipped with a Fire Hose cabinets in the gymnasium **The building does not comply. Sentence 3.2.5.11 states that Hose Stations shall be located in the floor area within 5m of exits and at other locations to provide coverage of the entire floor area.**
 19. **3.2.5.16** Distance between building fire department connection and street hydrant cannot exceed 45 m of un-obstructed distance (clear of structures or parking in the hose path) and be located on the building no closer than 3m and no further than 15m from the principal entrance. *Building complies. The distance from the closest hydrant to the building is within 45m.*
 20. **3.3.1.21 (1) Janitor Room Fire Separations:** since the building is not sprinklered, and the floor assembly must have a fire-resistance rating of 1 h, janitor's rooms shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 hour. **There is a window between the Janitor's Room and the Boiler Room.**
 21. **3.3.1.26 Storage Room Fire Separations:** Storage Rooms are required to be a fire separation having a fire-resistance rating not less than 1 h. **The ratings of the doors could not be verified. Some doors were labeled, other doors that should have labels were not labeled.**
 22. **3.3.2.6 (2) Corridors:** Corridors providing public access to exit are required to be fire separations rated for 45 minutes. **The building does not comply: most doors have grilles to permit ventilation. The travel distance from the furthest point in a classroom to an exit is greater than 30m.**
 23. **3.4.2.5 (1)(f) Travel Distance:** 30 m as building is unsprinklered. **The distance from some classrooms to the exit is greater than 30m.**

24. **3.4.3.2 Exit Width:** The building complies with the adequate exit widths.
 Gymnasium:
- Gym area = 365 sm
 - Gymnasium occupant load (Table 3.1.17.1) is 0.4 sm per person = $365/0.4 = 912$ persons
 - Existing exit doors from Gymnasium = 5,400 mm cumulative width. $3,600\text{mm}/6.1\text{mm} + 1,800/8$ (by means of stairs) = $590 + 225 = 815$ persons can exit. *A sign is posted stating a maximum of 473 persons. Building complies.*
- School Corridor Exits:
- 3 exits @2,700mm per exit + 1 exit @ 1,800 per exit = 9,900 mm cumulative width. $9,900\text{mm}/6.1\text{mm} = 1,623$ persons can exit.
25. **3.4.4.1 Fire Separation of Exits:** fire separations will be rated for 45 min. *Building complies.*
26. **3.6.2.1 (2) Service Rooms** containing fuel fired appliances require fire separations rated for 1 hour, 3.6.2.10 – this requirement does not apply to fuel fired roof top HVAC units. *Building complies.*
27. **3.6.2.1 (6) & (7) Electrical Rooms** containing equipment required to be in a service room by applicable electrical codes and standards, must be located in a room with a 1 hour rated fire separation. Other electrical equipment can be located in a room with no rating. *Building complies.*
28. **3.6.4.7 Roof Access:** Building will be provided with direct roof access by a stair or other means in accordance with Standata 06-BCV-009-R1 to provide fire fighting and service access for roof-top HVAC equipment. Access to the roof is by a fixed ladder and a roof hatch. *Building complies.*
29. **3.7.2.2 A Water Closets counts:** For 560 persons (280 Males and 280 Females), the required water closet count is 5 male and 10 female. *Building complies.*
30. **3.8.1.1** Building is required to be designed for barrier free access. 3.8.2.1 – all normally occupied areas require a barrier free path of travel not including service rooms or janitor rooms. *Building complies.*
31. **3.8.1.2** At least one entrance and not less than 50% of building entrances must be designed as barrier free entrances (automatic operator). There are 4 entrance/exit points to the building. Only the main entrance door on the south end has a barrier-free automatic operator. **The building does not comply with the current A.B.C. requirement.**
32. **3.8.1.3** Unobstructed width of a Barrier free path of travel shall be not less than 920 mm. *Building complies.*
33. **3.8.2.1 Areas Requiring a Barrier-Free Path of Travel:** Access to the stage level of the gymnasium is required. *Building complies.*
35. **3.8.2.2 Barrier-free Parking Stalls:** Barrier free parking stalls are required. The building lot has 38 stalls. 3 Barrier-free stalls are required. 2 Barrier-Free stalls are provided. **Building does not comply.**
36. **3.8.2.3 (6) Barrier-Free Washrooms:** a barrier-free stall is required for every 10 stalls. . There is one “universal” stall in the infirmary, and one in the girl’s washroom. *Building complies.*

37. **3.8.3.1 Accessibility Signage** is required identifying Barrier-free entrances and washrooms. *Building complies.*
38. **3.8.3.3.3 Accessible Doors** (lever handles) are required. **Orbital knobs are throughout the school.**
39. **3.8.3.16 Barrier-free Drinking Fountain** At least one shall be barrier-free. *Building complies.*





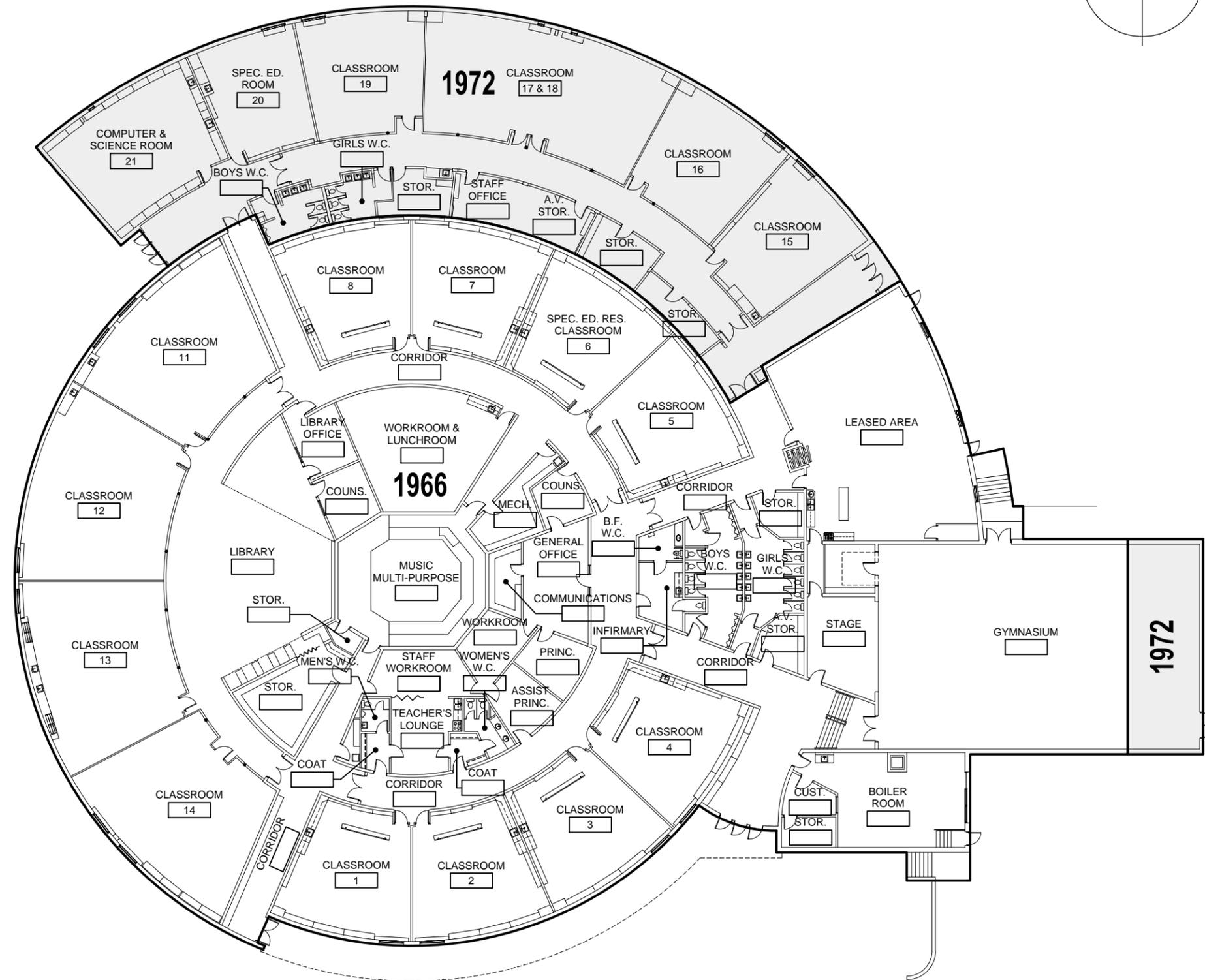
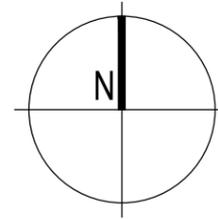
ROOMS HAVE GRILLES
IN WALLS W/OUT
FIRE DAMPERS:
DO NOT COMPLY AS FIRE
SEPARATIONS

APPENDIX D

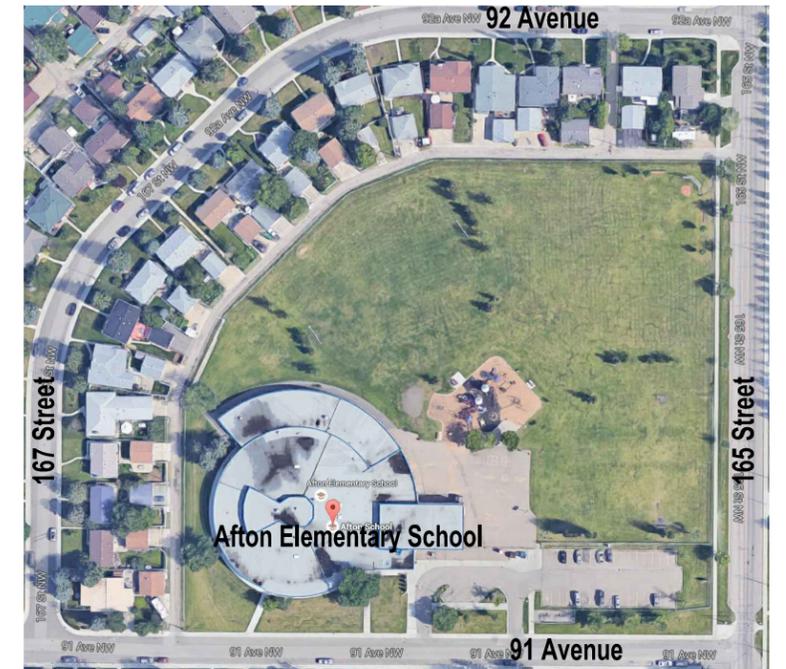
SITE AND FLOOR PLAN

VALUE MANAGEMENT ANALYSIS - AFTON ELEMENTARY SCHOOL

EDMONTON PUBLIC SCHOOLS



FLOOR PLAN



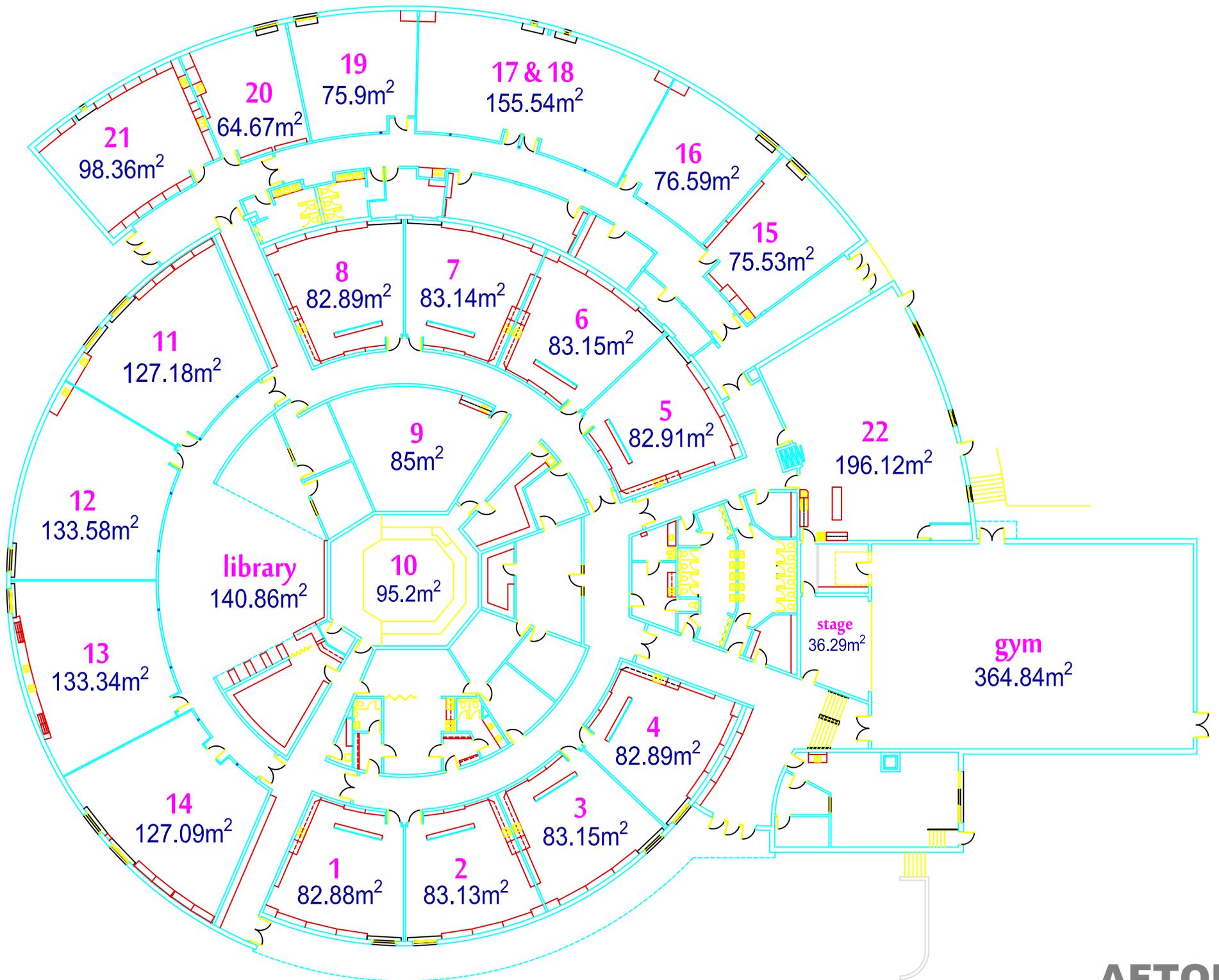
AERIAL VIEW

LEGEND

- BUILDING AREA 1966 WING - 3,239.4 m²
- BUILDING AREA 1972 WING - 1,048.1 m²
- TOTAL BUILDING AREA - 4,287.5 m²

APPENDIX E

AREA ID



APPENDIX F

ASBESTOS ABATEMENT COSTS

Afton Asbestos Abatement Estimated Cost

Item	Square Footage	Cost per	Total removal cost
Boiler Breaching	40 sq ft	\$ 18.00 / sq ft	\$ 720.00
Ceiling Tile	15,950 sq ft	\$ 6.00 / sq ft	\$ 95,700.00
Floor Tile	12,900 sq ft	\$ 2.50 / sq ft	\$ 32,250.00
Pipe Fittings	151 units	\$ 45.00 / unit	\$ 6,795.00
Pipe Parginig	10 ft	\$ 25.00 / ft	\$ 250.00
			\$ 135,715.00 :Total

Item	Removal type
Asbestos Cement Board (Transite)	low risk work
Boiler Insulation	high risk work/scaffolding
Boiler Breaching - Parging	high risk work/scaffolding
Boiler Door Gasket	glovebag
Ceiling Tile	high risk
Drywall Joint Compound	high risk
Duct Insulation - Parging	high risk
Duct Insulation	high risk
Floor Tile	low risk
Floor Leveling Compound	highrisk/includes floor tile
Mud Parging	high risk
Pipe Fittings	glovebag
Pipe Parging	glovebag
Pipe Insulation - Boiler Pipe	glovebag; under 8"
Rain Water Pipe	gloveag
Sheet Flooring	highrisk; \$4 more on wood
Spray Texture	highrisk
Straight Run	glovebag
Vessel Insulation - Parging	high risk work/scaffolding

APPENDIX G

ALBERTA INFRASTRUCTURE UNIFORMAT
LISTING IDENTIFYING THEORETICAL LIFE OF BUILDING COMPONENTS

Uniformat Listing	Theoretical Life
B2010.01.06.03 Metal Siding**	40
B2010.01.06.04 Wood Siding**	40
B2010.01.06.05 Vinyl Siding**	30
B2010.01.11 Joint Sealers (caulking): Ext. Wall**	20
B2010.01.13 Paints (& Stains): Exterior Wall**	15
B2020.01.01.01 Steel Windows (Glass & Frame)**	40
B2020.01.01.02 Aluminum Windows (Glass & Frame)**	40
B2020.01.01.05 Wood Windows (Glass & Frame)**	35
B2020.01.01.06 Vinyl, Fibreglass & Plastic Windows**	40
B2020.02 Storefronts: Windows**	40
B2020.03 Glazed Curtain Wall**	40
B2030.01.01 Aluminum-Framed Storefronts: Doors**	30
B2030.01.02 Steel-Framed Storefronts: Doors**	30
B2030.01.05 All Glass Entrances and Storefronts: Doors**	30
B2030.01.06 Automatic Entrance Doors**	30
B2030.01.10 Wood Entrance Door**	30
B2030.02 Exterior Utility Doors**	40
B3010.02.01.01 Asphalt Shingles**	25
B3010.02.01.07 Wood Shingles**	30
B3010.02.01.08 Wood Shakes**	30
B3010.02.02 Roofing Tiles**	30
B3010.04.01 Built-up Bituminous Roofing (Asphalt & Gravel)**	25
B3010.04.02 Cold-Applied Bituminous Roofing**	25
B3010.04.03 Roll Roofing**	25
B3010.04.04 Modified Bituminous Membrane Roofing (SBS)**	25
B3010.04.05 Membrane Roofing (Single Ply, EPDM, PVC, TPO)**	25
B3010.04.06 Fluid-Applied Roofing**	25
B3010.04.07 Coated Foamed Roofing**	25
B3010.04.08 Membrane Roofing (Inverted/ Protected)**	30
B3010.05 Traffic Coatings: Exterior**	15
B3010.07 Sheet Metal Roofing**	40
B3010.08.02 Metal Gutters and Downspouts**	30
B3020.01 Skylights**	25
C1010.03 Interior Operable Folding Panel Partitions**	30
C1030.01 Visual Display Boards**	20
C1030.02 Fabricated Compartments(Toilets/Showers)**	30
C1030.10 Lockers**	30
C2020.05 Resilient Stair Finishes**	20
C2020.06 Carpet Stair Finishes**	10
C3010.02 Wall Paneling**	30
C3010.06 Tile Wall Finishes**	40
C3010.09 Acoustical Wall Treatment**	20
C3020.02 Tile Floor Finishes**	50
C3020.04 Wood Flooring**	30
C3020.07 Resilient Flooring**	20
C3020.08 Carpet Flooring**	15
C3020.09 Access Flooring**	25
C3020.13 Traffic Coating: Interior**	25
C3030.06 Acoustic Ceiling Treatment (Susp.T-Bar)**	25
D1010.01.01 Electric Traction Passenger Elevators**	30
D1010.01.02 Hydraulic Passenger Elevators**	30

Uniformat Listing	Theoretical Life
D1010.01.03 Electric Traction Freight Elevators**	30
D1010.01.04 Hydraulic Freight Elevators**	30
D1010.02 Lifts**	25
D1020 Escalators and Moving Walks**	25
D2010.04 Sinks**	30
D2010.05 Showers**	30
D2010.06 Bathtubs**	30
D2010.08 Drinking Fountains / Coolers**	35
D2010.10 Washroom Fixtures (WC, Lav, Urn)**	35
D2020.01.02 Valves: Domestic Water**	40
D2020.01.03 Piping Specialties (Backflow Preventors)**	20
D2020.02.02 Plumbing Pumps: Domestic Water**	20
D2020.02.03 Water Storage Tanks**	30
D2020.02.04 Domestic Water Conditioning Equipment**	20
D2020.02.06 Domestic Water Heaters**	20
D2090.01 Compressed Air Systems (Non Controls)**	30
D2090.02 Deionized Water Systems**	30
D2090.03 Distilled Water Systems**	30
D2090.10 Nitrous Oxide Gas Systems**	30
D2090.11 Oxygen Gas Systems**	30
D2090.12 Reverse Osmosis Systems**	30
D2090.13 Vacuum Systems (Medical)**	30
D2090.14 Acid Waste Systems**	30
D2090.15 Pool & Fountain Equipment**	20
D3020.01.01 Heating Boilers & Accessories: Steam**	35
D3020.01.03 Chimneys (&Comb. Air) : Steam Boilers**	35
D3020.02.01 Heating Boilers and Accessories: H.W.**	35
D3020.02.02 Chimneys (&Comb. Air): H.W. Boiler**	35
D3020.03.01 Furnaces**	25
D3020.04.01 Fuel-Fired Duct Heaters**	30
D3020.04.02 Fuel-Fired Radiant Heaters**	30
D3020.04.03 Fuel-Fired Unit Heaters**	30
D3030.01 Absorption Water Chillers**	25
D3030.02 Centrifugal Water Chillers**	25
D3030.03 Reciprocating Water Chillers**	25
D3030.04 Rotary-Screw Water Chillers**	25
D3030.05 Cooling Towers**	25
D3030.06.01 Refrigeration Compressors**	25
D3030.06.02 Refrigerant Condensing Units**	25
D3030.07 Heat Pumps**	15
D3040.01.01 Air Handling Units: Air Distribution**	30
D3040.01.06 Air Terminal Units: Air Distribution (VAV Box)**	30
D3040.02 Steam Distribution Systems: Piping/Pumps**	40
D3040.03.01 Hot Water Distribution Systems**	40
D3040.03.02 Chilled Water Distribution Systems**	40
D3040.04.01 Fans: Exhaust**	30
D3040.05 Heat Exchangers**	30
D3050.01.01 Computer Room Air Conditioning Units**	30
D3050.01.02 Packaged Rooftop Air Conditioning Units (& Heating Units)**	30
D3050.01.04 Unit Air Conditioners**	30
D3050.02 Air Coils**	30

Uniformat Listing	Theoretical Life
D3050.03 Humidifiers**	25
D3050.05.01 Convectors**	40
D3050.05.02 Fan Coil Units**	30
D3050.05.03 Finned Tube Radiation**	40
D3050.05.04 Induction Units**	30
D3050.05.06 Unit Heaters**	30
D3050.05.07 Unit Ventilators**	30
D3050.05.08 Radiant Heating (Ceiling & Floor)**	35
D3060.02.01 Electric and Electronic Controls**	30
D3060.02.02 Pneumatic Controls**	40
D3060.02.05 Building Systems Controls (BMCS, EMCS)**	20
D4090.02 Carbon Dioxide Fire Extinguishing Systems**	40
D4090.03 Clean Agent Extinguishing Systems**	40
D4090.04 Dry Chemical Fire Extinguishing Systems (Kitchen Hood)**	40
D4090.05 Halon Extinguishing Systems**	40
D4090.06 Smoke Protection & Exhaust Fans**	40
D5010.01 Main Electrical Transformers**	40
D5010.02 Secondary Electrical Transformers (Interior)**	40
D5010.03 Main Electrical Switchboards (Main Distribution)**	40
D5010.05 Electrical Branch Circuit Panelboards (Secondary Distribution)**	30
D5010.07.01 Switchboards, Panelboards, and (Motor) Control Centers**	30
D5010.07.02 Motor Starters and Accessories**	30
D5010.07.03 Variable Frequency Drives**	30
D5020.02.02.02 Interior Florescent Fixtures**	30
D5020.02.03.02 Emergency Lighting Battery Packs**	20
D5030.01 Detection and Fire Alarm**	25
D5030.02.02 Intrusion Detection**	25
D5030.02.03 Security Access**	25
D5030.02.04 Video Surveillance**	25
D5030.04.03 Call Systems**	25
D5030.05 Public Address and Music Systems**	20
D5090.01 Uninterruptible Power Supply Systems**	30
D5090.02 Packaged Engine Generator Systems (Emergency Power System)**	35
E2010.02 Fixed Casework**	35
E2010.03.01 Blinds**	30
E2010.03.06 Curtains and Drapes**	30
E2010.05 Fixed Multiple Seating**	35
F1010.02.04 Portable and Mobile Buildings**	30
F1010.02.05 Grandstands and Bleachers**	30
G2010.02.02 Flexible Pavement Roadway (Asphalt)**	25
G2010.04 Rigid Roadway Pavement (Concrete)**	25
G2020.02.02 Flexible Paving Parking Lots(Asphalt)**	25
G2020.04 Rigid Parking Lot Pavement (Concrete)**	25
G2030.02.02 Asphalt Pedestrian Pavement**	20
G2030.03 Pedestrian Unit Pavers**	20
G2030.04 Rigid Pedestrian Pavement (Concrete)**	25
G2040.02.05 Wood Fences and Gates**	30
G2040.03 Athletic and Recreational Surfaces**	25

APPENDIX H

COSTS

PROGRAM AREA (m ²)	A Demolition	B Preservation	C New	D Modulars	E Other	Total (B+C+D+E)
Architectural	0	4,288	0	0	0	4,288
Mechanical	0	4,288	0	0	0	4,288
Electrical	0	4,288	0	0	0	4,288
Civil / Site	0	4,288	0	0	0	4,288
Modulars	0	0	0	0	0	0
Demo - Selective	4,288	0	0	0	0	0
TOTAL :	4,288	4,288	0	0	0	4,288

CAPITAL COST

A Demolition

Demo - Selective	4,288 m ²	\$75.00	\$321,600
Hazmat - Selective	4,288 m ²	\$50.00	\$214,400

A Demolition Net : \$536,000

B Preservation/Modernization

Architectural	4,288 m ²	\$201.85	\$865,536
Mechanical	4,288 m ²	\$467.80	\$2,005,946
Electrical	4,288 m ²	\$93.82	\$402,321
Civil / Site	4,288 m ²	\$0.00	\$0

Note: No Civil Comments Provided

B Preservation/Modernization Net : \$3,273,804

C New/Expansion

New Construction	0 m ²	\$0.00	\$0
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C New/Expansion Net : \$0

D Modular's

Construction	0 m ²	\$0.00	\$0
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D Modular's Net : \$0

E Other

GC's & Fee	15.0%	\$571,471
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Other Net : \$571,471

Z Contingencies

Project	5.0%	\$219,064
Construction	7.0%	\$306,689
Phasing	3.0%	\$131,438

Z Contingencies Net : \$657,191

(A+B+C+D+E+Z) Construction Net : \$5,038,465

Soft/Other Costs

Project Admin	2.0%	\$100,769
Design Fees	10.0%	\$503,847
Furnishings & Equipment	4.0%	\$201,539

Soft/Other Net : \$806,154

SUB-TOTAL \$5,844,620

Non-refundable GST	1.60%	\$93,514
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CAPITAL COST TOTAL (April 2016 \$) \$5,938,134

Escalation		\$0
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CAPITAL COST TOTAL \$5,938,134

SITE NAME: Afton Elementary School Site

BUILDING NAME: Afton Elementary School

BUILDING AREA (m2): 4,288

ROOF AREA (m2): 4,288

System	Description	Recommended Action Concerns	QTY/Area	Rating	Upgrade Replacement Cost	TCCL				
						Assumed Scope	QTY	Unit	Rate	Sub-Total Construction
ARCHITECTURAL										
BUILDING GENERAL SUMMARY	Afton is a K-6 elementary school constructed in 1966 with an area of 3239.4 square meters. In 1972 a 1048.1 square metre addition was constructed bringing the total area of the school to 4,288 square metres. It is a single storey building, unsprinklered, constructed with both combustible and non-combustible materials.	The building is in an adequate condition with some minor repair work required for some items. Many items are past their expected lifespan but are still functioning properly.		3		See details below				
BUILDING SITE SUMMARY	The school faces two streets, 91st avenue on the South, 165th street on the East and a service lane to the West. The site is a large grassed area with mature trees located on the south side. There is a bus loading zone along 91st avenue and an asphalt parking lot located on the East side. Sidewalks are concrete and located around the building.	The site is in adequate condition.		3		see Civil details below				
STRUCTURE SUMMARY	The building is constructed of load bearing concrete block walls supported on concrete grade beams on piles. The roof structure is wood decking over a combination of glulam and steel beams with some OWSJ. The floor is a 125mm thick concrete slab on grade.	The structure is in adequate condition. Settlement on the southeast corner has resulted in the brick veneer separating at the mortar joints. Recommend repairing damaged portion of concrete slab at doorway.	10 m2	3	\$5,000	Repair SOG	10	m2	\$497	\$4,968
BUILDING ENVELOPE SUMMARY										
Building Envelope	Exterior walls are load bearing concrete block walls with infill zonalite insulation. Presence of vapour barrier is unknown. Exterior finishes are brick veneer masonry with some vertical metal siding.	The building envelope is in adequate condition.		3		See details below				
Roofing	2 Ply SBS Modified Bituminous membrane roofing was installed over the entire roof in 2003. Condition and thickness of vapour retarder and insulation is unknown.	Some ponding was observed on the lower roof around the existing roof drains. Recommend to lower the existing roof drains to help eliminate ponding.	Approx. 10 drains		\$20,000	Modify roof drain elevations	10	ea	\$2,000	\$20,000
Walls	Exterior and interior are load bearing concrete block walls supported on concrete grade beams over piles. Concrete block walls are filled with zonalite insulation. Presence of wall air / vapour barrier is unknown. The exterior finish is predominantly brick veneer with some vertical prefinished metal siding along the front edge of the overhangs and on the gyms walls above the roof. There is a small amount of aluminum panels siding below the windows of the 1972 addition.	The brick veneer on the south wall, east of the main entrance has separated due to structural settlement. Recommend to investigate existing structural settlement and repair / repoint mortar joints to portion of damaged brick masonry	50 m2	3	\$141,000	Selective repairs (allow 10% GFA)	429	m2 GFA	\$328	\$140,571
Windows	1966 Section has steel windows with upper fixed glazed panels and lower operable sliders.	Steel windows are inefficient and past their expected life span. Recommend replacing with new efficient sealed window units.	14 windows	2	\$24,000	Replace windows	14	ea	\$1,700	\$23,800
	1972 Section has aluminum windows with fixed glazing panels with sliders below.	Aluminum windows are inefficient and past their expected life span. Recommend replacing with new sealed window units.	7 windows	2	\$12,000	Replace windows	7	ea	\$1,700	\$11,900
	The Clerestory windows are PVC.	PVC windows are inefficient and past their expected life span. Recommend replacing with new sealed window units.	28 windows	3	\$48,000	Replace windows	28	ea	\$1,700	\$47,600
Exterior Doors/Openings	There are insulated steel framed storefront doors with sidelights and fixed glass panels above.		11 doors	3	\$27,000	Replace exterior doors	18	ea	\$1,500	\$27,000
	The exterior utility doors are insulated metal doors installed at the mechanical room and gymnasium.		7 doors	3						
Special Purpose Doors	There is a roof hatch accessed from a roof ladder located in the mechanical boiler room.			3	\$0	No scope required	4,288	m2 GFA	\$0	\$0
Special Features	There are acrylic skylights installed on the roof allowing natural light into the main corridor.		6 Skylights	3	\$15,000	Replace skylights	6	ea	\$2,500	\$15,000
	Canopies are located at the exterior entrances.			3	\$0	No scope required	0	ea	\$0	\$0
Envelope - Other	Painted plywood soffits are installed to the underside of the canopies at the exterior entrances.			3	\$0	No scope required	4,288	m2 GFA	\$0	\$0

System	Description	Recommended Action Concerns	QTY/Area	Rating	Upgrade Replacement Cost	TCCL				
						Assumed Scope	QTY	Unit	Rate	Sub-Total Construction
BUILDING INTERIOR SUMMARY										
BUILDING INTERIOR SUMMARY	The interior has concrete block interior partitions with glazed block in the corridors. There are wood stud walls and demountable partitions between classrooms. Flooring is comprised of carpet and vinyl sheet flooring in the classrooms and corridors with ceramic tile and epoxy flooring in the washrooms. Ceilings are suspended T-Bar systems with painted gypsum board ceilings in the storage rooms.	The building interior is in adequate condition.		3		See details below				
Partitions	The interior has concrete block interior partitions with glazed block along the corridors. There are wood stud walls with gypsum board separating classrooms and in the administration area of the 1966 Section. There are wood stud walls with gypsum board and demountable partitions between classrooms in the 1972 Section.			3	\$0	No scope required	4,288	m2 GFA	\$0	\$0
Interior Finshes	All concrete block, gypsum board walls and ceilings are painted throughout. The concrete block along the corridors is Spectra-glazed finish. There is ceramic wall tile installed in the washrooms.	The ceramic wall tiles in the washrooms are dated and have minor damage throughout its surface. Grout lines are stained in some areas. The wall tile is past its expected lifespan. Recommend to replace the ceramic wall tile.			\$0	No scope required	4,288	m2 GFA	\$0	\$0
					\$0	No scope required	4,288	m2 GFA	\$0	\$0
			130 m2	2	\$16,000	Replace Washroom Wall Tiles	130	m2 GFA	\$125	\$16,250
Floors	The music room, administration offices, library and corridors connected to the library have carpet flooring. The corridors and classrooms have resilient sheet and tile flooring. There is athletic wood flooring in the gym and stage area. The staff and student washrooms in the 1966 original building have ceramic tile flooring and the washroom in the 1972 addition have epoxy finish over concrete.	The carpet flooring is worn and past its expected lifespan, it was installed in 1990. The sheet flooring is newer is in adequate condition The gym flooring is in adequate condition The epoxy flooring in the washrooms are damaged and in need of repair. The ceramic tile flooring is worn and past its expected lifespan.	385 m2	2	\$25,000	Replace Carpet	385	m2 GFA	\$65	\$25,025
			2740 m2	3	\$0	No scope required	2,740	m2 GFA	\$0	\$0
			400 m2	3	\$0	No scope required	400	m2 GFA	\$0	\$0
			15 m2	2	\$2,000	Replace epoxy flooring	15	m2 GFA	\$150	\$2,250
			85 m2	2	\$10,000	Replace Tile Flooring	85	m2 GFA	\$115	\$9,775
Walls	Painted concrete block and gypsum board walls. Spectra-glazed concrete block walls in corridors.			3	\$160,000	Replace all wall finishes (less wall tile above)	4,288	m2 GFA	\$37	\$160,094
Ceilings	Administration area, washrooms, janitor and storage rooms have painted gypsum board ceilings. Classrooms, corridors and library have suspended T-Bar system with acoustic ceiling tiles.			3	\$217,000	Replace ceiling finishes in all areas	4,288	m2 GFA	\$51	\$216,651
			2930 m2	3						
Interior Opening	There is a wood framed window with an aluminum insert between the Janitor Office and the mechanical boiler room. The administration area has painted steel framed windows. There are glass block windows between the computer room and the corridor.	The window between the Janitor Office and mechanical boiler room is not rated. It is a risk to the custodian and the building if there is any fire caused by the mechanical natural gas boilers. Recommend replacing the window with a new fire rated assembly.	1 m2	1	\$1,000	Replace windows	1	m2	\$850	\$850
					\$0	No scope required	0	m2 GFA	\$0	\$0
					\$13,000	Replace windows	15	m2	\$850	\$12,750
Furnishings & Equipment	Classrooms contain student desks, chairs, teacher desk and miscellaneous cabinets. The library contains desks, chairs and wood book storage shelves.			3	\$0	Equipment funded separately				
Casework Items	The classrooms have painted plywood open and closed shelving units with plastic laminate countertops. There is a wood display case in the corridor. Plastic laminate over plywood vanities are installed throughout the washrooms. Staff room has upper and lower kitchen cabinets with plastic laminate countertops.	The millwork throughout is original and is worn and damaged throughout. Recommend replacing the existing millwork and countertops with new.	Classrom - 150 m2 Display 2 linear metres Vanities 8 linear meters Kitchen - 3 linear meters	2	\$88,000	Millwork removal and replacement - Selective (allow 25% GFA)	1,072	m2 GFA	\$82	\$88,172

System	Description	Recommended Action Concerns	QTY/Area	Rating	Upgrade Replacement Cost	TCCL				
						Assumed Scope	QTY	Unit	Rate	Sub-Total Construction
Equipment items	Kitchen staff room has dishwasher, range, fridge, and microwave ovens. Some classroom has microwaves and fridges. There are stage curtains and tracks in both the stage and drama room. The stage also has track lighting. The gym have ceiling hung and wall mounted basketball nets and miscellaneous athletic sporting equipment.			3	\$0	Equipment funded separately				
			3							
			3							
Window treatments	The 1972 addition classrooms and four of the 1966 original building classrooms have venetian blinds. The remaining four classrooms in the 1966 building and the clerestory windows have curtains installed.			3	\$0	No scope required				
			3							
Interior - Other	The drama room has wood framed tiered seating platforms covered in carpet.			3	\$0	No scope required				
BUILDING CODE	ABC Group A Division 2 – School. Refer to the building code analysis within this report for further details.				\$0	Items noted throughout report				
BARRIER FREE					\$43,000	Barrier Free Allowance	4,288	m2 GFA	\$10	\$42,880
DEMOLITION					\$322,000	Demolition - Selective	4,288	m2 GFA	\$75	\$321,600
HAZARDOUS MATERIALS	Refer to HAZMAT review within this report.				\$214,000	Hazmat (Allowance)	4,288	m2 GFA	\$50	\$214,400
Sub-Total =										\$1,401,536

MECHANICAL										
HEATING										
Heating Plant	There is one original Peerless, 3760 MBH and one Peerless 2730 MBH input steel tube hot water boilers. Boiler pumps, expansion tanks and accessories are all located in the mechanical boiler room.	Boilers are original to the building and are past their expected lifespan. Some corrosion is evident.	2 boilers	2	\$176,000	Heat Generation and Refrigeration	4,288	m2 GFA	\$41	\$176,344
Terminal Heating Units and Distribution System	There is a mixture of copper and schedule 40 steel piping. Heating water is distributed by base mounted Armstrong pumps located in the mechanical room that feed perimeter finned tube radiation. Classrooms are heated and ventilated by Herman Nelson & Dunham Bush unit ventilators. Hot water heaters are installed at entrances complete with dedicated thermostats and metal diffusers. There are suspended hot water unit heaters in the mechanical areas.	Classroom 7 reports of "musty" air quality; probable cause is a malfunctioning intake on Duhham unit ventilators. The system is original and possibly not up to the current standards for outdoor air ventilation rates. Recommend replacing the unit ventilators.	20 unit ventilator	2	\$479,000	Terminal & Packaged Units	4,288	m2 GFA	\$112	\$478,648
VENTILATION AND AIR CONDITIONING										
Air Handling Units	There is Canadian Blower air handling units for the central building areas including the office and music room. They have supply fans, return fan, motorized exhaust / return dampers, filters and heating coils.	The system is original and possibly not up to the current standards for outdoor air ventilation rates. Recommend replacing the air handling units.	2 units	2		Included above				
Exhaust Fans	There are roof mounted exhaust fans for the bathroom and central corridor exhaust.		6	3	\$3,000	Exhaust Fans	6	ea	\$450	\$2,700
Duct Distribution, Grilles and Inlet/Outlets	Low velocity galvanized ductwork connects the air handling units to the sidewall grilles, rectangular and round cone grill diffusers.			3	\$605,000	Ductwork	4,288	m2 GFA	\$141	\$604,608
Humidification	There is no humidification provided within the building.					Included above				
Packaged Air Conditioning Units	There is no air conditioning units provided within the building.					Included above				
BUILDING SYSTEM CONTROLS										
Energy Management Control Systems (EMCS)	New DDC control system installed in the fall of 2015 to replace the original system.				\$0	No scope required	4,288	m2 GFA	\$0	\$0

System	Description	Recommended Action Concerns	QTY/Area	Rating	Upgrade Replacement Cost	TCCL				
						Assumed Scope	QTY	Unit	Rate	Sub-Total Construction
PLUMBING SYSTEMS										
Domestic Hot Water	There is one natural gas A.O. Smith 71 gallon storage capacity, 120 mbh input. It has a wet rotor, fractional HP recirculation pump, flue damper and T&P valve. It was installed in 2004.		1	3	\$0	No scope required	4,288	m2 GFA	\$0	\$0
Plumbing Fixtures	Washrooms have mainly stainless steel lavatories with push type metering valves installed in 2000. Urinals are floor mounted, recessed with flush valves. Water closets are floor mounted flush valve and flush tank. There are single and two compartment stainless steel sinks installed in classrooms and staff room. They were installed in 2000. Mop sinks are cast iron wall and floor mounted located in the janitors rooms. They were installed in 2000. Single bubbler, vitreous china drinking fountains are installed in the corridors		19 11 18 27 2 8	3 3 3 3 3 3	\$141,000	Fixtures	4,288	m2 GFA	\$33	\$141,075
Domestic Water Piping, Valves and Insulation	There is an insulated piping system with gate valves that connect to various plumbing fixtures.		25 valves	3	\$76,000	Domestic Water Distribution	4,288	m2 GFA	\$18	\$75,576
Sanitary and Vent Piping Systems	The piping is cast iron throughout and the vent piping is cast iron and copper.			3	\$76,000	Sanitary and Vent Piping Systems	4,288	m2 GFA	\$18	\$75,576
Storm Piping System	Conventional roof drains with cast iron dome strainers connect to cast iron roof drainage piping. The piping connects to the municipal mains below grade.			3	\$65,000	Storm Piping System	4,288	m2 GFA	\$15	\$65,499
Domestic Water Service	The piping is copper with soldered fitting throughout. There is a Watts backflow preventer for the boiler make up water line and for the fire hose cabinet in the gymnasium that was installed in 1999.			3	\$0	No scope required				
Natural Gas Service	The natural gas meter is located in the mechanical room with schedule 40 steel gas piping to the mechanical appliances.			3	\$0	No scope required				
FIRE PROTECTION SYSTEMS										
Wet Protection Systems	There is a fire hose cabinet located in the gymnasium. The building is not sprinklered.			3	\$0	No scope required	4,288	m2 GFA	\$0	\$0
					\$386,000	Sprinklers (if required)	4,288	m2 GFA	\$90	\$385,920
Fire Extinguishers and Cabinets	Recessed and wall mounted dry chemical fire extinguishers at several locations throughout the building.			3	\$0	No scope required	0	ea	\$750	\$0
Sub-Total =										\$2,005,946

ELECTRICAL										
BUILDING ELECTRICAL POWER DISTRIBUTION										
Service Entry	Incoming service is 600 amp, 120/208V, 3 phase, 4 wire fused at 450 Amps fed underground from a utility owned pad mounted transformer. Wall mounted fused disconnect switches feed branch circuit panels and equipment.	The main switchboard is original and beyond its expected lifespan. There is limited space for expansion. Recommend replacing it with new.	1	2						
Sub-panels, Conduit and Wireways	120/208V branch circuit panels installed in service rooms.	The sub-panels are original and beyond its expected lifespan. They have very little spaces left. Recommend replacing it with new.	10 panels	2	\$191,000	Service & Distribution	4,288	m2 GFA	\$45	\$191,459
Appliances / Receptacles	Power receptacles installed throughout the building.			3						
Grounding and Static Control	Building Ground.			3						
LIGHTING										
Building Exterior	There is exterior wall mounted H.P. sodium light fixtures installed round the exterior perimeter. They are controlled by a photo-cell with manual override.			3	\$1,000	Light replacement	3	ea	\$250	\$750

System	Description	Recommended Action Concerns	QTY/Area	Rating	Upgrade Replacement Cost	TCCL				
						Assumed Scope	QTY	Unit	Rate	Sub-Total Construction
Building Interior	Interior fluorescent fixtures with T8 lamps and electronic ballasts. They were installed in 1998. They are controlled by line voltage switching in the classrooms and corridors. The gym has GE low voltage switching.		850	3	\$0	No scope required				
Exit/Emergency Lighting	Emergency battery packs with single remote heads throughout the building.	The battery packs are original and showing signs of deterioration. Single remote heads are not in compliance with current building code requirements. Recommend replacing with new.	4210 m2	2	\$21,000	Emergency Lighting	4,288	m2 GFA	\$5	\$21,440
EMERGENCY SYSTEMS										
Detection and Fire Alarm	Edwards 6616 zoned hard wired fire alarm system. The control panel is located in the general office with a remote annunciator panel at the main entrance. It has heat detectors, smoke detectors, manual pull stations and 10" bells.	The fire alarm system is outdated and no longer manufactured or supported. Recommend to replace with new fire alarm system.	4283 m2	2	\$64,000	New Fire Alarm System	4,288	m2 GFA	\$15	\$64,320
Security	Magnum Alert security system complete with motion detectors and key pads. The main panel is located in the mechanical room.			3	\$0	No scope required				
COMMUNICATIONS										
Telephone Systems	Nortel Networks Meridian telephone system. It is located in the storage room of the general office. Each classroom has a telephone provided. It was installed in 2000.			3	\$0	Included in Data	0		\$0	\$0
TV/Computer (LAN)	Main network rack mounted patch panels and switches are located in the server room. Data outlets are provided in the administration area and each classroom with Cat 5 cable. An underground cable TV service terminates in the mechanical room.			3	\$4,000	Data	4,288	m2 GFA	\$1	\$4,288
				3	\$86,000	Data	4,288	m2 GFA	\$20	\$85,760
Intercom/Public Address (PA)	Bogen Multicomm 2000 interfaced with the telephone system with overhead speakers throughout the building. Telephones have been provided in each classroom.			3	\$21,000	P.A. System	4,288	m2 GFA	\$5	\$21,440
Clock and Program Systems	120V and battery operated clocks			3	\$13,000	Clock System	4,288	m2 GFA	\$3	\$12,864
Communications - other					\$0	Included in PA System	4,288	m2 GFA	\$0	\$0
Sub-Total =										\$402,321

CIVIL										
SITE GRADING AND PAVEMENT STRUCTURES - NO COMMENTS PROVIDED										
Sub-Total =										\$0

\$3,810,000					\$3,810,000
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