St Pius X Hall

Functional and Physical Condition Assessment

by

St Pius X Building & Maintenance Committee

Photo 1 - Watercolor Rendition of First St Pius X Church

Photo 2 - St Pius X Hall (original St Pius X Church) in the "Winter of its Life"

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Terms of Reference

This report is intended to provide an overview of the general condition of the parish hall for the purpose of providing Parish Council with information necessary to inform their decisions on future plans for the hall. The facility assessment was undertaken by the parish Building Maintenance Committee (BMC) comprised of individuals having professional experience in relevant engineering disciplines but is not intended to replace a detailed engineering investigation of the facility and component systems.

The methodology for the building assessment included a visual review of the facility and component systems, limited review of operational records and consideration of available historical records. No finishes were removed as part of the evaluation. No record (engineering) drawings for the building were available. No calculations were done to verify adequacy or compliance with current standards.

1 Executive Summary

The 65 year old building has functioned moderately well through multiple stages including as a hall for St Pius X parish.

Multiple features of the building are deteriorating although the structural members remain sound.

Failure of the hot water heating pipes are the greatest risk as replacement would be very expensive and time consuming, especially in the winter.

The configuration of the hall, its storage and meeting facilities do not serve the needs of the parish.

The structure is deteriorating at a rate that it could be unusable within 8 years unless significant remediation is done now.

The City of Calgary plans for an interchange at Crowchild Trail and 24 Ave NW are currently on hold; however, they will have a significant impact on the land west of the church.

2 BACKGROUND

2.1 History of Parish

St. Pius X Parish was created in 1954 when Fr Holland arrived in northwest Calgary. The hall was opened for Midnight Mass in 1955.

The parish has been a successful community of Catholics with a strong outreach program for others in The City of Calgary since then. In 2015 our church hall was identified as requiring a review and potential rebuild as it is essential to the ongoing worship, educational and outreach activities of the parish community.

St. Pius X parishioners come from across Calgary and has remained stable at around 500 active families for the past 15 years. This parish is associated with St. Pius X School and Madeleine d'Houet School in the northwest Calgary and until recently was also the home of the University of Calgary Catholic Community.

Photo 3 - Original Church (later becoming the parish hall)

Joe Klassen, was at the first Midnight Mass on Christmas Eve 1955 and Dan Violini was at the first Christmas Day Mass. Mike and Jeanine Verbisky were married at this early church.

Photo 4 - Interior of Parish Hall in 2018

Photo 5 - Parish Hall South Wall (Original Entrance) in 2018

Photo 6 - East Exterior Side of Parish Hall ~2018

Activities & Importance of Hall to St Pius X Parish

The parish has a strong service-ethic based on spiritual and community strength. As a result St Pius X parish serves many different groups.

The parish provides education and faith formation to children, youth and adults. It supports the development and continuing strength of the community.

As a result many outreach activities occur that support the larger Calgary community.

1. St Pius X chapter of the Catholic Women's League supports a child in Bolivia, and sponsors an annual educational scholarship for one young woman in our Parish.
2. St Pius X Manna Ministry group provides
    a. Monthly Sandwich Project – Parishioners make and donate between 400 and 500 sandwiches which are delivered to the Calgary Drop In Centre and Avenue 15
    b. Annual CUPS Toiletry Blitz. This year there were 10 boxes of toiletries donated.
    c. Foothills Shelter Supper biannual dinner at the Mustard Seed Foothills Shelter of Turkey a la King, rice, jellied salads, buttered buns and carrot cake to 270 persons.

3. Food Bank donations average between 200 and 300 pounds of food per month, to either the Interfaith Food Bank or the Veterans Food bank. In December, there is often 300 to 500 pounds of food donated.
4. Avenue 15: In December, Parishioners collect toiletries/bus passes/clothing in backpacks or socks for Teens in Distress
5. Refugee Committee
   Since January 2016, our Refugee Committee has sponsored and supported a Syrian Refugee family of five. This family has been highlighted in the Calgary Herald, December 2016
6. St Rita's Women's Group create Worry Buddy dolls, knitted blankets, toques, gloves and layettes which they donate to YWCA Sheriff King Home, Ronald McDonald House, Kara Centre, and Louise Dean School. They also support financially the Calgary Inter-faith Food Bank, Veterans Food Bank, Mary Dover House, Community Kitchen, Diocesan Priests Retirement Fund and Rosedale Hospice for Children.
7. St Vincent de Paul Society
   a. Assisted 491 adults and 400 children through the year – with groceries, gift card, rent assistance and bus tickets.
   b. Food hampers - 233 through the year and 112 at Christmas
   c. $59,300 of resources distributed annually
   d. Support referrals from The City of Calgary 311 line, Foothills Hospital, Brenda Stafford Home and support others who fall through the cracks.
8. St Pius X Parish donates approximately $32,000 annually to the Bishop's Together-In-Action Fund, which in turn supports a number of charities in Calgary.
9. The Parish used to provide an office for the University Chaplain as well as a place for Catholic University students to gather, pray and hold some of their meetings until the bishop decided to move this function to a location that is not on any public transit routes. St Pius X is in close convenient proximity to the University of Calgary and on a bus route from SAIT

The hall provides a gathering space for various parish social events including funerals, weddings and other religious services.

2.2 Construction of Hall

The original St Pius X parish celebrated Mass and some other parish events in St Pius X School, which was in the neighbourhood. This soon proved to be inadequate for the parish needs.

This hall was built in time to celebrate Christmas Eve Mass in 1955.

The building included an entrance vestibule at the south end, a nave, now the main assembly hall, and a bell tower. The church included second floor living quarters including a main floor level kitchen, bathroom and living room at the rear of the hall for the parish priest. The main bedroom with washroom and a spare bedroom was in the upstairs (roof attic) at the rear of the hall.

The hall features an arch rib supported roof and has wood framed walls on a slab-on-grade floor construction. The roof shingles are laid directly on the arch rib roof deck with little insulation and no ventilation cavity. A small basement contains the hot water heating boiler.

2.3 Modifications to the Hall over Time

Construction techniques and materials of the early 1950's were used along with some volunteer labour.

Many modifications to the original hall have been made since the original construction, including:

- Conversion of the ground floor rectory bathroom to a men's washroom

- Conversion of the “church” washroom to a women’s washroom
- Conversion of the rectory living room to a shared St Vincent de Paul and meeting room
- Conversion of the Altar area to a main kitchen area for the hall
- Conversion of the rectory kitchen so that it is now an extension of the main kitchen area.
- Addition of a variety of storage cabinets, shelves, chair racks, table straps and other devices to store materials for various parish groups
- Conversion of the upper bedroom areas to an office

The former main entrance from 24 Ave NW has been closed off from the inside and is used for outdoor storage only. The space above the original entrance has been made into a separate storage accessible by a stairway from the main level.

A sump pump was installed in the boiler room. Several years ago, a Telus fiber optic communications cable was added in the boiler room. The CAT2 telephone cable from the church PABX was inadvertently severed during storm water repairs at the church.

2.4 Building Construction

The hall features 40.5 x 86 ft building with an arch rib supported roof and wood framed walls on slab-on-grade floor construction. The roof shingles are laid directly on the arch rib roof deck with little insulation and no ventilation cavity. The connection details between the glue laminated arch ribs and the slab on grade foundation are unknown. It does appear as if the arch ribs are constructed from untreated lumber and are attached to the floor perimeter by means of angle plates and bolts. The foundation at most of the attachment locations is above ground except for the NW corner of the hall. Arch rib rot is not expected at the above ground locations.

The hall currently serves as an assembly or gathering space for parish social functions, meetings and volunteer activities. Prior to the pandemic the hall would typically see gatherings up to five or six times a week (?). The second-floor office was also occupied five days a week by parish administration staff.

The current allowable occupancy is established by the Calgary Fire Department in accordance with the Alberta Fire Code and is based on the designated usage, nature of construction (combustible v. non-combustible), fire suppression systems, available fire exits and accessibility for firefighting. The placard indicating the current occupancy limits is included in Photo 58.

A review of life-safety requirements is beyond the scope of this report.

A small basement contains the hot water heating boiler, a sump pump and entrance to the building of the natural gas and recently the fiber optic communications cable.

Construction techniques and materials of the early 1950’s were used along with some volunteer labour.

2.5 Useable Area

An outline sketch shows the approximate outside dimensions.

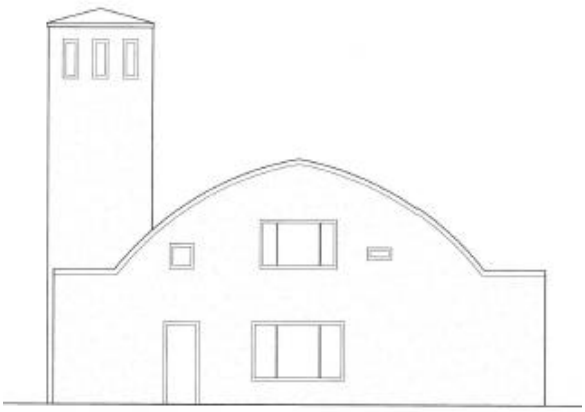

Figure 1 - End (north) elevation of hall

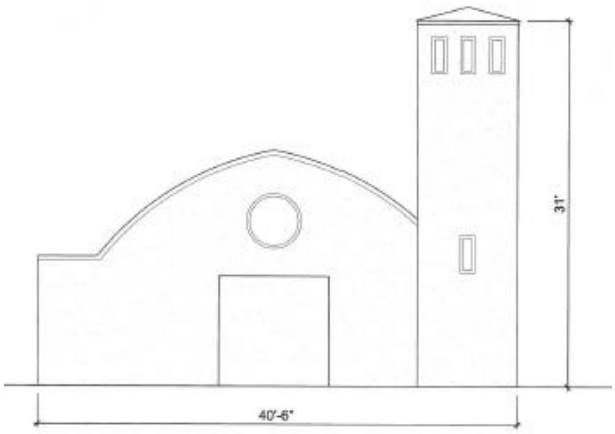

Figure 2 - End (south, 24 Ave NW) elevation of hall

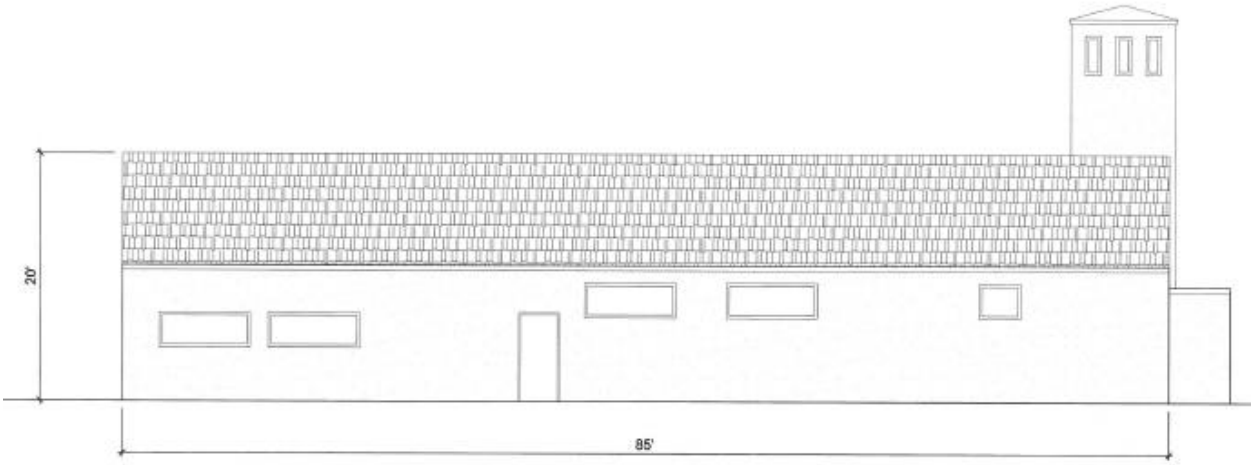

Figure 3 - Side (west) elevation of hall

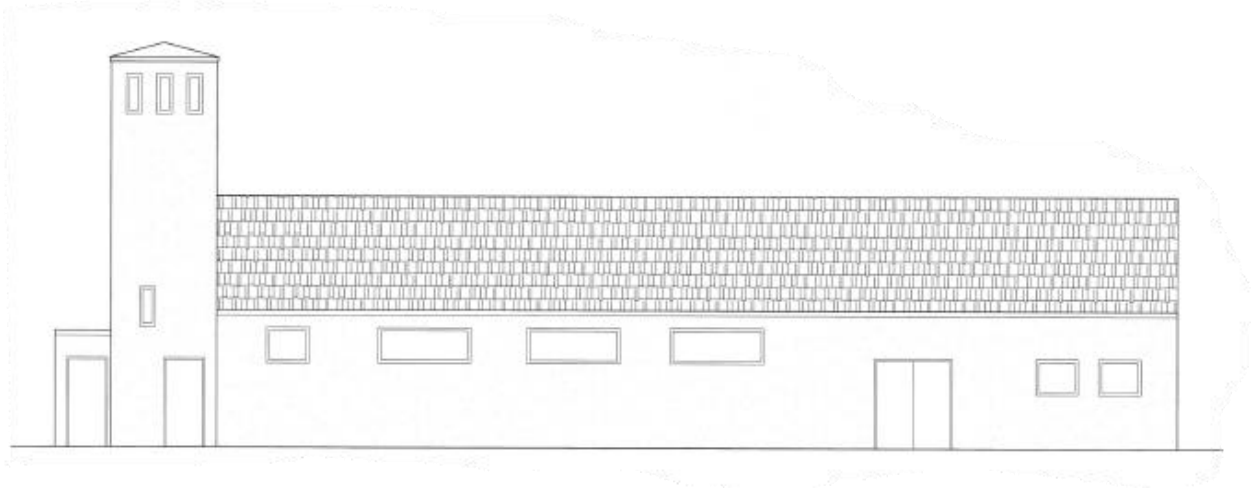

Figure 4 - Side (east) elevation of hall

The floor area of the main room in the hall is about 2,200 square feet (204.39 m2); however, the arch ribs intrude into this space leaving about 1,800 square feet (167.23 m2) of usable open space.

The hall footprint occupies a 40'-6 x 86'-0 foot (12.34 x 26.21 m) area for a total building footprint of 3483 square feet (323.58 m2). However, much of this area is taken up by an office, a kitchen, washrooms, storage areas for the main hall, and intrusion of the arch ribs along each side of the main hall by approximately 3 feet.

Photo 7 - Arch Rib Construction along the Straight Walls Intrude into Main Hall Space

Considering the walls to be approximately 6 inches thick and 3 feet intrusion of the arches into the inside floor area and considering the main area of the hall only, the usable inside main hall area is 33'-6 x 51'-0 (10.21 x 15.54 m). This leaves a usable functional inside area of approximately square feet (158.68 m2).

	Dimensions (ft)	Area (ft^2)	Dimensions (m)	Area (m^2)
Building exterior footprint	40'-6 x 86'-0	3,483.0	12.34 x 26.21	323.58
Main hall usable floor area	33'-6 x 51'-0	1,708.5	10.21 x 15.54 m	158.68

Only approximately half the hall of the exterior footprint forms the useable main hall area. The remainder of the hall is taken up as storage, kitchen serving and washrooms.

The Calgary Fire Marshall has licensed the hall for the following capacities: [See Photo 58].

- Dining and Beverage (with Alcohol) 150 Restriction No Fire Alarm
- Space with Non-Fixed Seats and Tables 197 Restriction Area
- Space with Non-Fixed Seats 249 Restriction Area

There is no access or washroom facilities in the hall for persons with disabilities.

2.6 Building Drawings

No drawings of the St Pius X hall are available, either as originally constructed in 1955 or as modified over time.

3 Condition Assessment Methodology

This report assesses the St Pius X hall the condition on a systems basis. For example, the heating, ventilation and air conditioning (HVAC) items are assessed on an individual component basis as well as on a collective system that provides these performance functions to the hall. The expected remaining functional life is evaluated where possible by a physical assessment of the asset condition.

Some other asset condition assessors rely on a nominated or expected design life for a typical functional life of various components and then estimate the remaining life of those assets base either on their judgement (and sometimes functional testing) or the fraction of initial life expectancy already expended. The net difference is the judged remaining life.

Some other asset condition assessors do such reports by assuming a nominated or expected design life and subtracting the age of the asset to yield a mathematical expected remaining life (without a detailed physical assessment of condition).

This report is an assessment of the physical condition of the hall and an assessment of the hall's ability to provide for the functional needs of the parish. It does not include an engineering review of the design.

This report includes the usual or most common building systems whether or not such systems exist in this hall. In that manner, St Pius X parish might be able to use the framework of this assessment to evaluate other buildings such as the church and rectory.

4 Maintenance Items

4.1 Significant Maintenance Items Outstanding

The Parish Hall has at least the following outstanding identified maintenance issues:

a) Windows that require replacement due to rotting frames, inability to close some of the windows, single pane glass in both the inside opening and outside opening frames. Improved energy efficiency will result from the better windows. Refer to 5.3 for examples. Stained glass window of single pane glass that is cracked allowing wind and rain to enter the building. Refer to Photo 24.
b) Cracked stucco and holes/damaged stucco where various items have been previously attached to the building. Most likely stucco repairs would be required after any window and door replacements. Refer to Photo 9 to Photo 16.
c) Paint falling off the outside stucco. Painting should only be done after the stucco is repaired. Painters claim that conventional paint will not adhere to the old stucco plaster and will not mask cracks in the stucco.

d) Openings or penetrations in the stucco where various service have added, removed or altered over the life of the hall (new doorways, electrical fittings, lighting changes, vehicle damage, etc. Refer to 5.2.
e) Bell tower wood louvers and window are very weathered with some wood rotting and all exterior wood needing paint. Rain can enter the bell tower through the rotting louvers. The bell tower is built on top of the roof deck. There are several broken framing members, some minor water damage, considerable mouse feces, and no insulation on the floor (which is part of the hall ceiling) Refer to 5.5 for examples.
f) Eaves trough and supports are failing due to ice buildup from melting water on the poorly insulated roof. The hall structure around the roof perimeter is no longer able to support the ice laden eaves trough. Refer to 5.6 for examples.
g) Communications cabling between the hall and the church has been severed. The trench depth is inadequate to run new lines and would need to be considered along with any plans for parking lot regrading.
h) Grading allows water to accumulate around the foundations and some portions of the wood frame walls and arch ribs are buried in the soil around the hall.

4.2 Recent Maintenance on Hall

The concrete step at the main door was replaced with sidewalk blocks that function as a wheelchair accessible ramp. Refer to section 5.8 and Photo Photo 50.

After plumbing repairs were completed several years ago, “temporary” floor joists, framing and sheeting were installed at the main entrance to the hall. The replacement floor joists and framing rotted and the floor started to sink. New preserved wood floor joists, framing, sheeting and tiles were installed; however, the plumbing remains embedded in the soil under the floor. The hot water uninsulated heating pipes run under the floor slab under the arch rib connection to the concrete floor slab. The pipes at the main door were insulated at this time. [Refer to Photo 8]

A portion of the north wall was replaced after a vehicle drove into the building.

The interior of the main hall has been painted.

A new electrical service entrance and panel were installed after the buried electrical supply cables from the church failed. Refer to section 9.1.

5 BUILDING STRUCTURE

5.1 Building Framing

The roof and east/west exterior walls are framed with non-standard glulam arched members spaced at 4’0” on centre. The arches are connected with plywood gussets at their peak with bolted connections that suggest that the members are rigidly connected. The connection of the arches would provide frame action that can resist lateral loads including wind loading and unbalanced snow loads. The arches are further stabilized by lower flat roof sections that run the length of the east and west exterior walls. The short outrigger framing members and the timber decking further stabilize the arches, similar in some respects to flying buttresses, by resisting the outward thrust of the arches under load. The bottom of the arches and exterior wall studs are secured to a continuous sill plate that is connected to the foundation wall.

The roof decking consists of 1 ½" or 2" thick tongue and groove decking spanning continuously over the arch and outrigger members.

Exterior walls, interior walls and second floor framing are conventional timber framing. Exterior sheathing is exposed in the bell tower walls and consists of diagonal ship lapped slats.

The building foundation is assumed to be shallow footings founded below frost depth. Basement walls are typically parged but were exposed in a small area and confirmed to be cast-in-place concrete. Exterior finished grade is typically an inch or two below the main floor elevation except at the northwest corner of the building where the paved asphalt surface is up to six inches above the floor elevation.

The main floor is a concrete slab on grade of unknown thickness.

The roof framing (arches) is mostly exposed throughout the hall area and were examined at a few locations. Members were typically painted and were found to exhibit minor cracking (checking) at laminations (photo) but no obvious signs of distress were apparent. The connection of the arches to the sill plate were mostly concealed by finishes and heating cabinets at the base of the exterior walls. The condition of the sill plate was partially visible at a few locations, however, and the painted finish was found to be cracked suggestive of possible water damage (photo 40).

The exterior wall stucco exhibits lots of cracking, but none of it is consistent with foundation movement. Likewise, the floor slab did not exhibit any signs of settlement or heave.

The hot water uninsulated heating pipes run under the floor slab under the arch rib connection to the concrete floor slab.

Photo 8 - Arch rib to edge of concrete slab on grade floor/foundation. (Note pipe has been insulated in this one location only)

5.2 Building Envelope – Exterior Walls Cladding Finish

There are significant cracks and breaks in the exterior stucco walls. Many patches have been applied to the stucco for new doors, window repairs, etc. The multiple layers of paint on the stucco walls are peeling quite badly with many places where there is no paint remaining on portions of the stucco.

Photo 9 - Exterior of the Hall – Paint layer over stucco is falling off and cracks are forming in stucco

Photo 10 - Peeling Paint and Cracks in Underlying Stucco

The exterior paint on the stucco was tested and found to contain lead.

The paint layer over the stucco is falling off and cracks are forming in stucco.

The condition of the underlying stucco is less well known.

Blanked openings for electrical wiring fixtures and other devices are not sealed against water entry. Such instances are found on all walls.

Photo 11 - Open Electrical Conduit Penetration through the Stucco Wall

Photo 12 - Holes in Stucco not Sealed

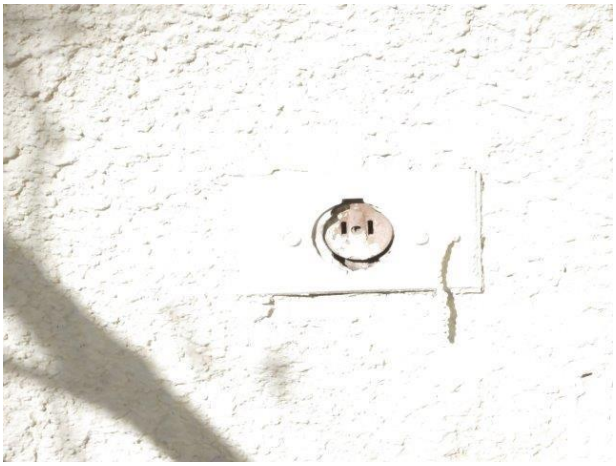

Photo 13 - Unsealed, (and Non Grounded) Electrical Receptacle

Photo 14 - Improperly Covered and Sealed Electrical Fittings

A part of the west and north walls is now below grade. Damaged stucco has allowed wall framing, plaster lath and the interior wall to be exposed to the outside and to surface ground and rain water. Such damage provides a potential ingress location for mice as well as water to further damage the corners of the building.

Correction of this issue will require lowering the ground and asphalt surfaces, implementing drainage in this area and re-contouring of the pavement at the north end of the hall. Only then could the interior wall damage be corrected. Drainage along the entire west wall is an issue and is not consistent with positive drainage of runoff away from the building (see section 12 for additional comments pertaining to site grading issues).

Photo 15 - Damage to Corner of Hall Interior Wall Wood Exposed to Water

Photo 16 - Damage to Hall Corner. Note Wall is Below Surface at this Location

Two building envelope engineers (Randy Smith, P.Eng. of Williams Engineering) and Dave Dechka, PhD, P.Eng. of DC Dechka Engineering) reviewed the exterior stucco wall and provided the following advice:

- Allowing walls to breathe is fundamental to preserving the building wall integrity and preventing additional mould growth, when there is no vapour barrier. A porous/permeable paint is required to prevent activating the quiescent mould in the walls. The breathability of the existing walls and stucco is what has prevented mould growth due to water entry into the wall cavity.
- Cracks in existing stucco will show through any type of coating since the coating is very thin relative to the total thickness of existing stucco. No coating will cover the stucco cracks for very long. If the exterior stucco is to be repaired, the addition of a “fog coat of cementitious paint” is the recommended coating after all multi layers of paint have been removed. Color can be added to the coating mix.
- Application of an acrylic coating or latex paints will prevent the stucco from breathing, resulting in moisture accumulation within the wall cavity and application of such coatings that will seal moisture into the wall cavity is not recommended.

- Stucco should terminate at least two inches above ground so that water is not wicked up into the stucco and the wall behind it.
- On the west end of the hall, the stucco and wall is buried under almost one foot of soil and asphalt. A retaining wall could be built to keep the excavated soil away from the wall.
- On the north end of the hall, the stucco and wall is buried several inches under the asphalt of the parking area. The wall portion below the ground surface is almost certainly rotted.
- If the walls, as constructed, are to be retained, it is desirable to maintain the breathability of the walls (to keep framing dry and prevent rot and mould growth).
- There is no asbestos found in the exterior stucco however lead was found in the exterior paint, a common component in exterior paint from the 1950s and 1960s. [Refer to Appendix **Error! Reference source not found.** and **Error! Reference source not found.**.

5.3 Building Envelope – Windows and Doors

Almost all windows are in very poor condition and allow water entry into the wall cavity.

Many windows frames are rotted and don't seal.

Doors and windows and their associated framing on the north end of the hall have rotted. The interior wall studs are visible in several rot openings.

Photo 17 - Window in North wall of Upper Bedroom (now office) with Rotted Frame

Photo 18 - "Look Out" Window (facing west) from Original Upstairs Bedroom (now upper office)

Photo 19 - North End door With very Rotted Frame

Photo 20 - North Door Frame Rot

Photo 21 - Rotted Frames around Replacement Thermopane Sealed Window Units

Photo 22 - Rotted Frames around Replacement Sealed Window Units

Photo 23 - New Sealed Double Glazed Windows set into Original Frames that are now Rotting. Note how this West Wall of the Hall is Buried Under the Asphalt

A few years ago, the windows on the west side of the hall (in the kitchen area) were replaced with sealed thermal pane double glazed windows set into the original wood frames. This was likely done to avoid having to perform stucco repairs when the expected life of the hall was unknown. Over the years since then, the wood frames around the new window units have rotted.

Windows along the east and west walls are a combination of “awning” style on the outside and “hopper” style on the inside. This configuration allows exterior air flow into the building on hotter days without a direct draft on people near the windows.

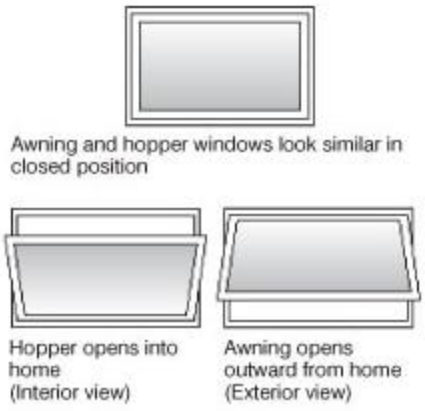

Figure 5 - Awing and Hopper Style Windows

Since hopper and awing windows are opened at an angle, they tend to require more cleaning. They are also very difficult as a means of egress (not applicable in this case)

A hand built stained glass circular window above the original church entrance and a feature visible from 24 Ave NW is unfortunately broken, rotting and allowing rain and cold air to enter the hall. Is has single pane glass with some panes broken. It is lighted at night by means of a special bulb and a timer.

This window is impressive from the outside of the hall along 24 Ave NW. It must have been truly impressive when first constructed.

Photo 24 - Stained Glass Front Window

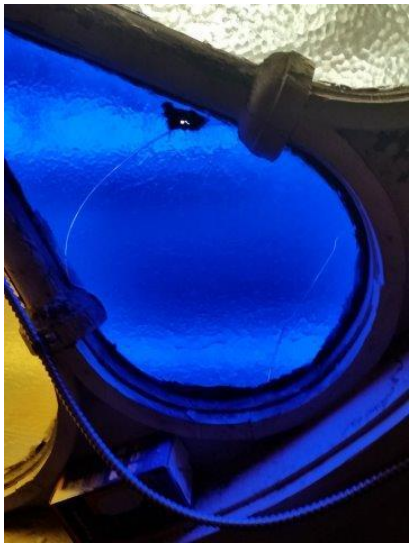

Photo 25 - Broken Single-Pane glass in Circular Window

Photo 26 - Rotted Wood in Hand Built Stained Glass Window

5.4 Building Envelope – Original Front Entrance

The original hall had an enclosed vestibule type entrance surrounding the front interior entrance door to the hall. At some time, the interior door was sealed off from the outside; however, the inside of the vestibule was never finished on its inside.

Photo 27 - South (Original Main) Entrance to Hall (Now Closed Off)

Photo 28 - East Door to Church Former Vestibule (Now used for Exterior Storage)

Photo 29 - Leaking Roof in Church Original Entrance Vestibule

Photo 30 - Unfinished Exterior Wall Where Original Entrance Vestibule was Located

The vestibule has a flat roof that now leaks.

The vestibule has been used from time to time for unheated storage.

5.5 Building Envelope – Bell Tower

A Spanish style faux bell tower was constructed on top of the front three roof arch ribs (with 4'-0 rib spacing) on the SE corner of the hall. The interior space is not insulated and not heated.

Bell tower "window" framing is either blanked (with rotten plywood) or screened (with torn or missing screening) allowing birds, bats and perhaps mice into tower cavity. The net result has been that there is some minor water damage to the walls and framing members, although some framing members are broken.

Photo 31 - Interior of Bell Tower

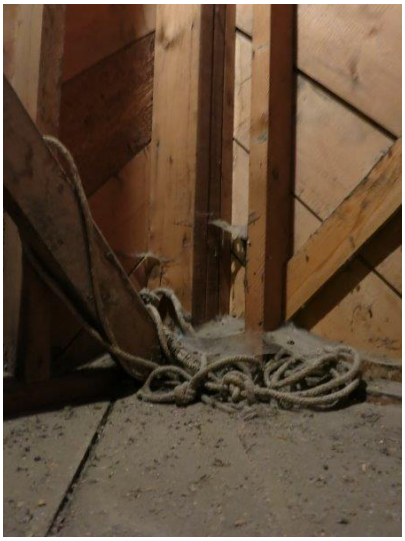

Photo 32 - Interior Debris on Floor of Tower

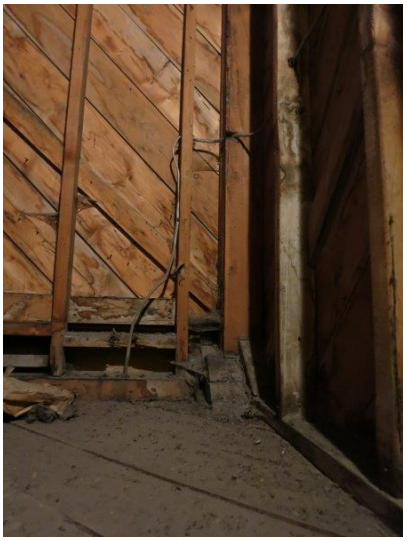

Photo 33 - Interior of Bell Tower Constructed on Top of Arch Rib

Photo 34 - Bell Tower Supported on Arch Rib

Photo 35 - Debris, Bat, Bird and Mouse Feces

Photo 36 - Opening for Ventilation (Exit location inside hall is unknown)

Photo 37 - Access Hatch to Bell Tower

The floor and walls are constructed of tongue and groove lumber.

Access is by way of an attic access hatch in the ceiling of the main hall directly under the tower.

Openings are either blanked (with rotten plywood) or screened poorly (with torn or missing screening) allowing rain water, birds, bats and perhaps mice into tower cavity. There is some water damage to the framing members of the tower, with several broken.

Photo 38 - Blank Windows on Faux Bell Tower

Photo 39 - Louvres on Faux Bell Tower

5.6 Building Envelope - Roofing

Include a description of the existing roofing; i.e., asphalt shingles on the arched portion of the roof, conventional built-up roofing over the flat roof sections at the shoulders of the arches. It is thought that the shingle roof is in the order of 10 to 15 years old.

The roof insulation of the mid 1950s for an arch rib constructed wood building was typically a packed sawdust fill over the interior roof deck. [Wall insulation would be fiberglass due to the usual need to

accommodate electrical, plumbing and heating services in walls]. The minimal roof insulation results in significant thermal loss through the roof, causing snow to melt and fill the eaves trough, and then freeze causing eaves trough failure and risk of falling ice injuring someone. It has also caused water to start to leak through the roof to the building interior or to back up under the shingles and then through the interior planked deck of the roof. The roof leaks to the interior were observed at the time of recent interior painting. The leaks are generally at the junction of the curved and flat portions of the interior ceiling portion of the roof.

Photo 40 - Water Leakage on the Interior/Underside of the Roof

Photo 41 - Water Leakage on the Interior/Underside of the Roof

Water stains have been observed on the inner ceiling of the upstairs office.

The roof has no venting between the shingled exterior roof deck and the insulation between the deck and the interior planking. This design means that the shingles can become quite hot in the summer, with resulting shorter than usual life expectancy. When the existing shingles are next replaced, the flashing around the base of the bell tower and around the chimney roof penetration should also be replaced as it is now quite rusted.

The eaves trough is fastened to a fascia board that inadequately supports the eaves trough when full of water or ice. It has previously been repaired several times. Additional supports could be installed or the fascia replaced when the exterior surface covering (stucco) is replaced.

The eaves troughs and fascia have required persistent repairs due to stresses created by the roof design, and ice buildup resulting from the heat loss through the roof. This is a difficult problem to resolve.

Photo 42 - Icicles along West Wall of Hall

Photo 43 - Icicles along East Wall of Hall

Photo 44 - Icicles along West Walls of Hall. Icicles from melted Snow on Poorly Insulated Roof

Photo 45 - Icicles along West Walls of Hall. Icicles from melted Snow on Poorly Insulated Roof. Note Window that will Not Close.

5.7 Building Envelope – Interior Walls and Wall Cavity

The end walls and the vertical wall portion of the side walls are of 2” x 4” construction. A drywall layer over a form of hard fiber board provides a damage resistant interior wall sheeting. This same material is very hard so does not perform well as an acoustical wall covering. [Refer to Appendix **Error! Reference source not found.**]

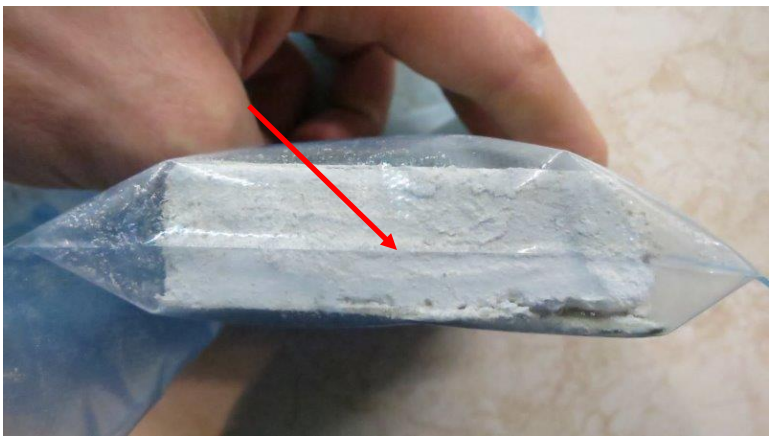

Photo 46 - Interior Wall Finish Material (drywall over hardboard)

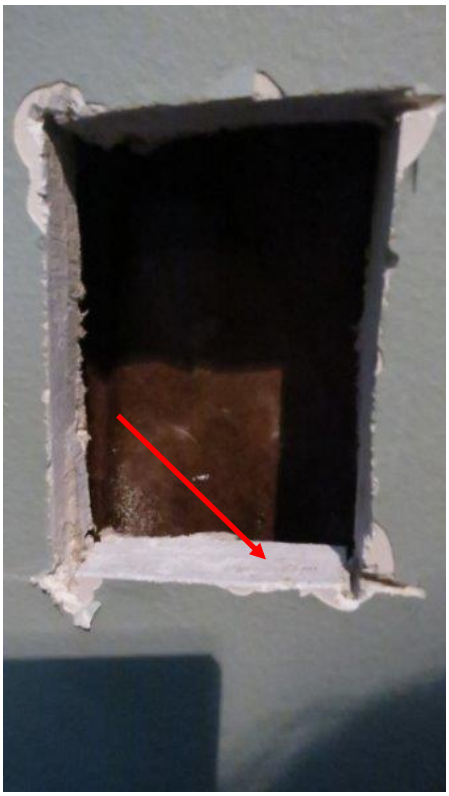

Photo 47 - Hole on Inside Hall Wall where Sample was Taken for Hazardous Material Sampling. Note line between Hardboard and Drywall Materials

The wall cavity was found to contain moderate to low levels of mould in the paper-backed insulation and wall cavity. Informally, the lab associate these levels with a relatively high air flow through the wall, maintaining a dry wall cavity. The wall does have a relatively high leakage rate compared with a building constructed in the present era. [Refer to Appendix 33]

The interior walls and ceiling was painted in 2017.

5.8 Building Finishes – Floors

5.8.1 Asbestos in Floor Tiles

The slab-on-grade concrete floor is covered in aging (but maintained) floor tiles almost certainly containing asbestos. Some tiles at transitions between rooms have some cracks or pieces missing.

Asbestos was used in floor tiles and sheet flooring (linoleum) during much of the last century. Manufacturers often mixed asbestos into their products for greater strength and insulating properties.

Asbestos has been regulated since about 1980.

There are some there are some key indicators of asbestos floor tiles, which might help determine whether the harmful mineral is present in the building:

Age Of Floor Tiles - If the building was constructed before the 1980s, and particularly in the period between 1950 and the 1980s, there's a high probability that the flooring contains asbestos, as the interval matches the times of intense use of the mineral in building materials.

Tile Size - Asphalt asbestos, plastic asbestos, and vinyl asbestos floor tiles during this period were sold in 9"x9", 12" x 12" and in some years 18" x 18" sizes and were quite a bit thicker than most of the modern tiles.

Discoloration - An oily discoloration of the tiles might indicate that they contain asbestos. Asphalt is one of the main materials used for the manufacturing of asbestos floor tiles and leakages of the oil incorporated in it can occur, causing the color of the tiles to fade.

Some of the flooring tiles have come off and you see thick black adhesive underneath. Black mastic, also known as cutback adhesive, was commonly used to glue the flooring tiles down. This type of adhesive was asphalt-based and most likely contains asbestos, whether or not the tiles themselves contain asbestos.

It is almost certain that the hall tiles contain asbestos. They are not dangerous unless there is physical damage to the tile from drilling, grinding, buffing, cutting, sawing or breaking, which can release fibers to the air.

Similarly, sheet flooring/linoleum from the same period is also likely to contain asbestos.

5.8.2 Main Entrance Floor Repairs

The floor at the now-main entrance was replaced about 5 years ago. A prior plumbing leak, necessitated opening the floor at this location and a new floor was built with untreated lumber with the thought that the replacement floor would be temporary. It was not and this temporary floor rotted and sank about 1 ¼ inches. A new floor using treated lumber, a levelling compound, modern tile was used. At the same time, the air gap under the main double doors was repaired, the door hinges were maintained and properly supported, broken asbestos tile at the junction with this new floor and a sloped entrance ramp was built for mobility access to the building.

Photo 48 - Sagging floor at main entrance to hall

Photo 49 - Rotted Framing Below Main Entrance Floor

Photo 50 - Sloped Ramp added to Main Entrance 2016

Photo 51 - New Floor Tile Being Installed at Front Entrance to Hall 2016

Photo 52 - Damaged Door Sill, Subsiding Door Ramp

Photo 53 - Deteriorated Floor Covered with Matting; Note Light Under Left Edge of Door

Although the ramp leading to the renovated door was surface weathered and had large cracks, it turned out to be about 20 inches thick and had no reinforcing rod.

5.9 Building Envelope – Wall Cavity

The condition of the St Pius X hall walls was assessed through sampling and laboratory analysis, visual inspection of the interior and exterior walls, and examination of the wall interior cavity. Dave Dechka PhD (D.C. Dechka Consulting Engineers) and Paulo Bomben (PhD in Chemistry) and Bill Bergman, P.Eng.

(both from St Pius X Building & Maintenance) removed sections of the interior wallboard layers under an east and a west window, removed small sections of the paper backed insulation, and photographed the wall cavity.

Both the east and the west walls of the halls are in the same condition. The end walls were not opened for sampling.

The wall cavity is insulated with mineral wool insulation that includes a bonded tarred paper backing. The edges of paper backing were intended to be unfolded and stapled over the wall studs to create a rudimentary vapour barrier. This relies on wall studs being perfectly spaced to match the insulation batts width as well as sufficient staples being used and care that the paper backing is not torn.

A section of the Parish Hall's east and west walls were opened to examine the interior of the wall cavity. The structural framing appeared visually and with a sharp probe to be in good condition. There was no evidence of recent water ingress, although water had entered the wall previously. No evidence of active mould was found on the wood framing, although mould was observed on the paper backing of the insulation.

The wood framing studs and sill members under the areas that were opened under the two windows were generally sound and showed only some aging/water discoloration. The wall sheathing boards on the outside of the framing studs appears to be in reasonable condition with minor water damage.

In response to this finding, samples of the insulation paper backing were taken for analysis. AirVironment Canada was hired to test the air quality in the Parish Hall. Testing was performed in the common hall area, as well as upstairs in the two offices. The openings were covered with two layers of 3/8" drywall to make up the total of the drywall and hardboard removed for sampling.

Air quality results showed good circulation of air throughout the main floor of the building. Particulate counts were substantially lower than outside. Mold levels in the air were also much lower than those outside. The examiner concluded that "*Based on the results of testing for total airborne fungal particulates, the indoor air quality in the Parish Hall is considered acceptable in accordance with the Alberta Health Services guidelines. The assessment of particulate concentration suggest that the building is well-ventilated.*"

Testing of the insulation paper found moderate amounts and various forms of mould present on the paper.

1. The current state of the Parish Hall is such that mould is contained within the walls, the air quality is within acceptable guidelines.
2. In late 2016, the exterior stucco was analyzed and determined to NOT have asbestos in the stucco. In early 2017 asbestos testing was performed on the Parish Hall interior wall.
3. *The Parish Hall exterior walls do NOT contain asbestos, but do contain a high amount of lead in the paint – 670 mg / kg.*

The integral paper backing associated with the minimal amount of insulation in the walls does not create and effective or long lasting vapour barrier. It should be noted that a layer of building paper (tar paper) was installed on the inside of the building next to the insulation If double framing members were used. Neither product produced an effective vapour barrier since they are both manufactured of stiff paper

and are difficult to install and completely seal. However, the wallboard with its many coats of paint provides a reasonably good barrier to interior moisture moving into the insulation.

The insulation is approximately two (2) inches thick providing no more than R6 insulation; however, it has places, at least under the examined windows, where the insulation does not even completely cover the outside wall.

Photo 54 - Wall Insulation that is Sagging, Unsupported and Incompletely Covering Wall

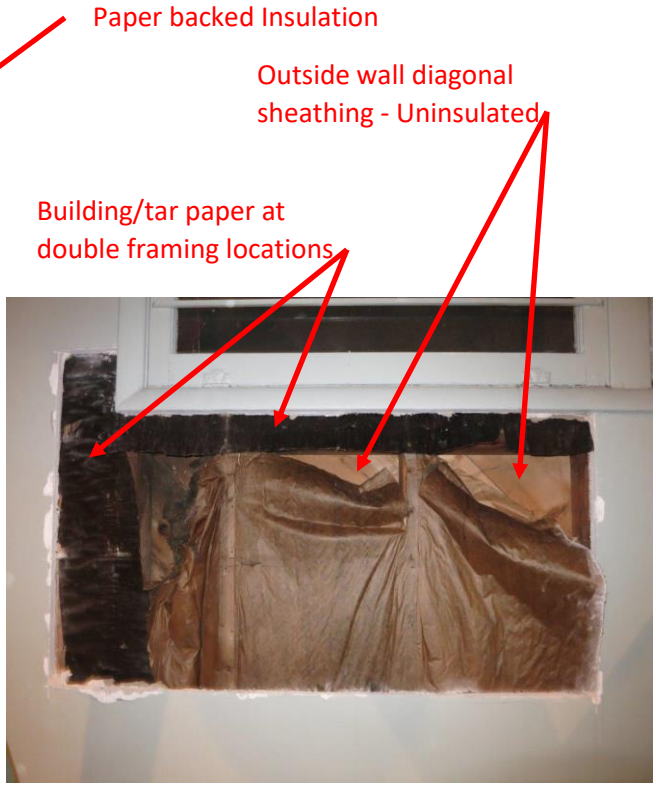

Photo 55 - Paper-Backed Insulation and Building (Tar) Paper Form Vapour Barrier on Inside of Insulation

Photo 56 - Top right side of west wall under window. Minor damage on outside wood sheathing. Very incomplete vapour barrier. Tar paper over double framing members.

Photo 57 - Mould on Paper-Backed Insulation in Wall Cavity

6 Building Interior

6.1 Main Hall

Seating capacity is insufficient for many current parish functions. The arch rib construction and multiple storage cabinets restrict the usability of the hall floor area.

Lighting is old, uses 500 W incandescent light bulbs and is therefore inefficient to operate causing higher expense. The lighting now installed is not the original from when the hall was constructed in 1955. [See Photo 3 and Photo 4]

The Calgary Fire Department Maximum Occupant Load is shown below.

Calgary

CALGARY FIRE

MAXIMUM OCCUPANT LOAD

DINING AND BEVERAGE (With Alcohol): 150 Restriction No Fire Alarm

SPACE WITH NON-FIXED SEATS AND TABLES: 197 Restriction Area

SPACE WITH NON-FIXED SEATS: 249 Restriction Area

Licensed Premise:
ST PIUS X CHURCH
(Church Hall)

Address:
2424 24 AV NW

Signed by:

Fire Marshal:

Mike Baker

Date of Issue: July 21, 2017

OC17-0436

Posting of room capacity: Any room having an occupant load of 60 or more where fixed seats are not installed, and that is used for assembly purposes, shall have the capacity of the room posted in a conspicuous place on an approved sign near the principal entrance. The sign shall be maintained legible by the owner or the owner's authorized agent and shall indicate the number of occupants permitted for each room or floor space in use.

Determination of occupant load: The number of persons in a building or portion thereof shall not exceed the amount determined as referenced in the Alberta Fire Code.

Overcrowding: Overcrowding and admittance of persons beyond the approved occupant load of a place of assembly is prohibited. The Fire Marshal or his representative, may upon finding overcrowding conditions or obstructions in aisles, passageways or other means of egress, or upon finding an overcrowding condition that constitutes a serious threat to life, is authorized to cause the performance, presentation, spectacle or entertainment to be stopped until such condition or obstruction is corrected.

Non compliance with the fire and life safety requirements of the Alberta Fire Code could result in fines of not more than $100,000 and in the case of a continuing offence, to further fines of up to $1,000 a day. In addition, Fire Department approval of the current business license could be withdrawn.

TO BE POSTED AT THE PRINCIPAL ENTRANCE

Photo 58 - The Calgary Fire Department Maximum Occupant Load

6.2 Table and Chair Storage

The current chairs and their carts came from St. Pius X school back when they removed the stage in their gymnasium.

Stacked tables and chairs are stored and then setup for each tope of event being held. This requires considerable manpower since the chairs must be manually moved to frames in a storage room that won't allow these wheeled frames to move into the room when fully loaded. Tables are leaned vertically against the wall between arch ribs and secured with bungie cords. Both situations area a manpower and safety concern.

Although better stacking chair and table dollies are available, there isn't the room to maneuver these dollies into the tight storage spaces.

6.3 General Storage

There are cupboards, file cabinets, boxes and other storage either built-in or free standing throughout the hall including the main hall, the upstairs office, the lower meeting room and the area above the former front entrance.

The storage cabinets are generally built into areas along the arch ribs that can't be used effectively as part of the main hall. However, there are many free-standing cabinets and other items that are not secured. The tables, in particular present a falling hazard.

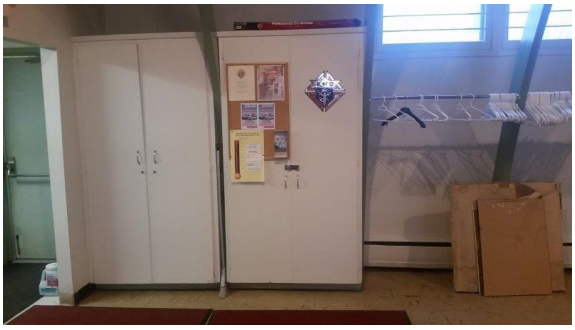

Photo 59 - Built-In Storage (between arch ribs)

Photo 60 - Tables Stacked Against the Wall in Somewhat Precarious Arrangement

Photo 61 - Combination of Shelving between Arch Ribs and Free Standing.

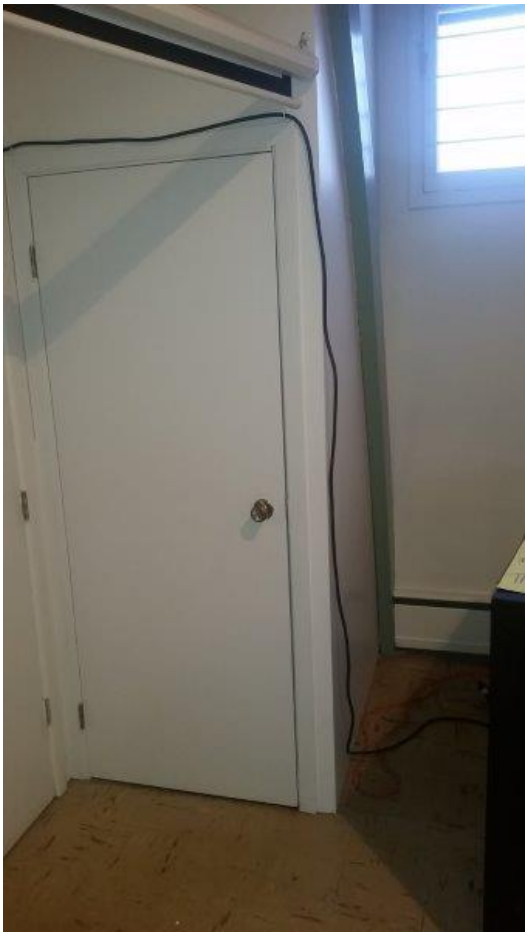

Photo 62 - Totally Enclosed A/V System Storage

Note that some shelving units are not attached to the walls and could be pulled down accidentally. The tables are not well secured in their "storage positions"; however they are held in position with small bungie cords

Photo 63 - Storage of Tall/Long Items at Stairway

Photo 64 - Storage Wherever Possible in Main Hall

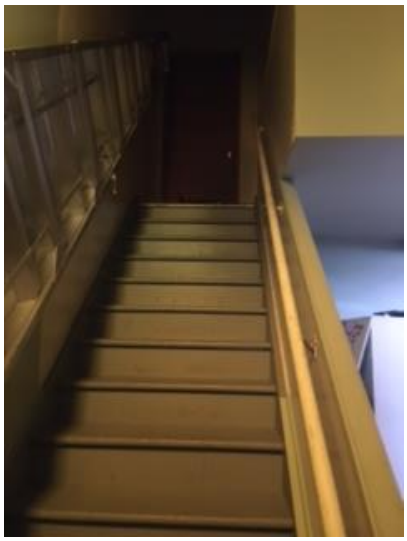

Photo 65 - Stairway to Storage Area over Original Church (Hall) Entrance

Although this might be taken as a criticism, these comments on storage should be taken as an indication that this parish and the many groups that conduct activities in the parish, both for the good of the parish and for the community at large, do require storage many forms of space.

However, it should be noted that each of these forms of storage, block the hot water heating radiators. The hall heating system is therefore operating at a suboptimal basis of heat transfer from the heating radiators and the required heating of the hall interior spaces.

6.4 Janitorial Storage Room

The original front entrance was closed off and a room created for Janitorial supplies.

Although this room is intended for janitorial supplies it has accumulated many other items than the brooms, mops and pails, vacuum cleaner and many cleaning chemicals.

It does not have a water supply or large sink to assist with mopping up spills or floor washing. Users have to obtain water from the kitchen which is not set up for filling mop pails, etc.

While a sink and drain could be arranged somewhere over the existing boiler room basement, the location would not be convenient to those cleaning the main hall. In addition the sink would intrude into the main floor office/meeting room.

Photo 66 - Storage in the "Janitorial Room" of Paper Files, Food Freezer and Cleaning Supplies

6.5 Upstairs Office & Washroom

The room in the upstairs was originally the bedroom for the parish priest. It was later converted to an office when the new church was built in 1964 and before the offices were added to the church in 1979. The parish priest then lived in a residence adjacent to the west of the hall. The washroom accessible to this bedroom was converted to a storage closet.

The bath tub room was converted to a large closet

Photo 67 – View of Hall from NE Corner of the Hall (showing upper and lower meeting/office rooms)

We reviewed the window in the upstairs office is in quite a deteriorated condition, especially on the outside. The wallboard under the window appear to be in fair condition, especially considering the condition of the outside window frame [See Photo 17]. The outer screen and the window brick

mould/trim are in dire need of replacement.

Photo 68 - Upper Office Original Window

The upper office has a double “look-out” window providing light to the original bedroom and stair areas. This window is also showing considerable signs of deterioration.

Photo 69 - Upper office "Look-out" Window

Photo 70 - West side Wall of Main Hall showing Arch Ribs, Windows, and Relocatable Stacking Tables and Chairs

6.6 Kitchen

The existing kitchen space is the result of combining the original rectory kitchen and a newer kitchen adjacent to the main hall room.

The existing kitchen no longer meets Alberta Health Services (AHS) requirements for food preparation. It also would not meet the existing fire codes where exhaust and fire extinguishing systems must be built in to the kitchens.

The kitchen is small, inefficient and not to current health standards thereby impacting parish programs such as special receptions; Stampede breakfast, weddings and funerals, parish suppers, parish gatherings after various services, etc.

Mice are entering the building at unknown location(s), perhaps where the north and west walls are buried below the ground surface.

The kitchen is equipped with a 240 volt dishwasher/sterilizer, which has served well.

The kitchen houses one freezer, three refrigerators, two conventional 240 V residential style stoves, one commercial 240 volt dishwasher/sterilizer, and another freezer in the storage area at the original hall entrance from 24 Ave NW. The freezers and two refrigerators are not nearly as energy efficient as new products of today.

The women (and some men) of the parish do an admirable job in such a cramped galley style kitchen.

6.7 Washrooms

Original rectory bathroom appears to have served the church as well. It was later converted to a men's washroom. The side door to the hall (immediately to the north of the existing double entry doors) was closed off and stucco applied over the former door. This allowed construction of a women's washroom, although it had to fit between the building arch rib supports.

Neither washroom meets accessibility standards or requirement of today [Nor do the washrooms in the church meet accessibility requirement of today].

Photo 71 - Men's Washroom is Former Rectory Main Level Washroom. Tub was where Garbage Can is in Photo

Photo 72 - Men's Washroom is Former Rectory Main Level Washroom.

These washrooms were never constructed with today's accessibility goals. To achieve accessibility goals, the washrooms would require complete rebuilding and a considerably larger footprint. In addition, access to both washrooms is via quite a narrow hallway.

Photo 73 - Women's Washroom was former Church/Hall Washroom

Photo 74 - Narrow and Restricted Non-Accessible Stalls in Women's Washroom

Photo 75 - Deteriorating Fixtures in Women's Washroom

6.8 Meeting Rooms

The parish requires significantly more and better meeting spaces since there are too few in the church at times and they are quite dated.

Outreach programs such as the St Vincent De Paul program use a meeting room in the hall on a full time basis.

6.9 Furnishings

The hall has a large number of folding tables and chairs that must be taken down and stored when other events require a different configuration. This activity is very manually intensive, requires handling of tables and chairs individually and presents some risk of injury to those doing the work. Storage for these tables and especially chairs is not efficient.

Some furnishings require periodic maintenance and are not well designed. An example of this is that some of the tables have no lateral stability Refer to Photo 76Photo 76 - Tables with no Lateral Stability.

Photo 76 - Tables with no Lateral Stability

Photo 77 - Repairs to Table Legs

Photo 78 - Multiple Patches on Table Legs

6.10 Sound and Acoustics

Particularly during larger events, noise levels are quite high due to multiple hard interior surfaces and the associated sound reflections. The sound reflectance and room configuration make the hall audibly uncomfortable for many users especially in a larger group setting. Some form of sound dampening is desirable.

In 2017, The University of Calgary, Faculty of Environmental Design conducted a complementary Acoustics Analysis of the St Pius X parish hall.

We must recognize that the acoustic analysis was performed as an educational exercise and used an iPhone acoustic sound meter app rather than industrial acoustic instruments, they concluded that there were several strengths and weaknesses of the hall.

To quote from the U of C report:

- *Strengths*
  From our observations, it is evident that the weaknesses outweigh the acoustical strengths of the building. The strengths are seen within the kitchen, where the mineral fibre ceiling has soundwave diffusing qualities. There is a significant opportunity to use materials with the same qualities throughout the hall to mitigate excess reverberation.
- *Weaknesses*
  The primary weaknesses observed are the hard surface materials used throughout the hall, the high ceiling orientated in an inverted shell shape, and the open kitchen which contributes to more noise in the hall.

Experience with large group settings

7 Building usage set up

7.1 Furnishings

The hall uses a large number of folding tables and chairs that must be taken down and stored when other events require a different configuration. This activity is very manually intensive, requires handling of tables and chairs individually and presents some risk of injury to those doing the work. Storage for these tables and especially chairs is not efficient as there are no dedicated special purpose handling and storage carts for either the tables or the chairs.

The arch rib design intrudes into the sides of the main hall usable area.

Many cupboards are built into the hall, both in the main hall area and other available areas.

Seating capacity is insufficient for some current parish functions.

8 Mechanical Systems

8.1 Boiler

The entire hall is heated with a hot water boiler and thermostatically controlled heat radiators. There is no air conditioning. There is no supplemental heating source.

Photo 79 - Hot Water Heating Boiler in Hall Basement

The most critical part of the hall heating system is the hot water piping which is buried and generally inaccessible. In the event of a failure with this style of boiler, typically a repair can be made reasonably quickly. If a repair cannot be effected in sufficient time to prevent freeze up of the piping, there generally are rental boilers available. However; a water leak in the piping network could be serious,

difficult to locate and even more difficult to repair. It is very important to focus on the condition of the heating water. Testing, treatment and maintenance of the chemical condition of the boiler water is very important. An evaluation by a water treatment company and likely a re-installation of the pot feeder is recommended if the hall is to continue in use.

The original boiler was a 2-pass vertical boiler, with 2 different sized circulation pumps. One pass with the smaller circulating pump was for the rear living quarters and upstairs. The second pass was for the main Hall (or Sanctuary) at that time. There are several clues to this in the piping in the boiler room and the positioning of the thermostats in the building and of course the two different sized pumps.

At some point, probably in the 1960s or 1970s, that boiler was replaced with a single pass boiler. The current boiler was installed in 2010 and is now approximately 11 years old. There is no zone valve controlling temperature in the Hall. Hot water is uncontrolled flow or "wild flow".

Also, at some point the Hall thermostat either quit operating or was abandoned for a single thermostat mounted at the main entrance. The 3 thermostats to the living quarters were also replaced and operate electrically. There is no operating thermostat in the Hall and the temperature is only controlled by the thermostat at the main entrance. Whoever did this wiring at that time also wired in the Boiler Master switch to that thermostat. This results in the situation where if the thermostat is turned down to below the set point, there was no power to the boiler at all.

This unorthodox control scheme: however, does work. Once it is known that the main thermostat needs to be set to 25°C or higher, the Hall is able to stay at a comfortable 70-72°F, even in -30 weather and wind cooling.

About 5 years ago, the boiler was fitted with an automatic, pilotless ignition and a TeK Mar digital controller. In cold weather, i.e. 0 °C and colder, with a main thermostat setting of 25 °C, the boiler Master has power to it most of the time and below -10 °C, power is continuous. The Tek Mar digital controller then takes over and regulates the boiler heat to a set minimum of between 140 °F and 170 °F, depending on the season. While this is an unorthodox way to control the boiler and the water distribution temperature, it works fine.

Further the Tek Mar measures outdoor temperature and if it rises above 15 °C, the boiler will not fire.

There was a chemical pot feeder on the boiler but it seized up and was taken out 2 years ago. A replacement was not ordered because the Hall was expected to be torn down. Passive chemical treatment is introduced into the piping via the filter chamber.

If a replacement boiler system were to be used in the renovated Hall, a glycol 2 pass system would be preferable. Thermostats in key rooms and areas should be used with zone valves. It should come with a chemical feed system and the boiler should controlled by demand heat (that is the outside temperature plus thermostat settings). It should also have telemetered signals to an operations person off site, since the building is unoccupied for large periods of time.

Parging on the chimney is missing exposing the chimney concrete blocks. Flashing at the chimney should be repaired at the next roofing opportunity. There is no indication of chimney liner perforation.

8.2 Heating Piping and Radiators

The hot water heating piping and radiators are original. Radiator piping is buried (likely in sand) at the interior edge of the concrete floor slab with no insulation to the exterior and difficult access to heat piping. [Refer to Photo 8]

Despite the many instances of blocked or restricted air circulation around many of the heating radiators, the flow through the piping appears to be relatively uniform when scanned with an infrared camera [SeePhoto 59, Photo 62, Photo 64, Photo 66]. The walls are cooler above the radiators than what might be expected.

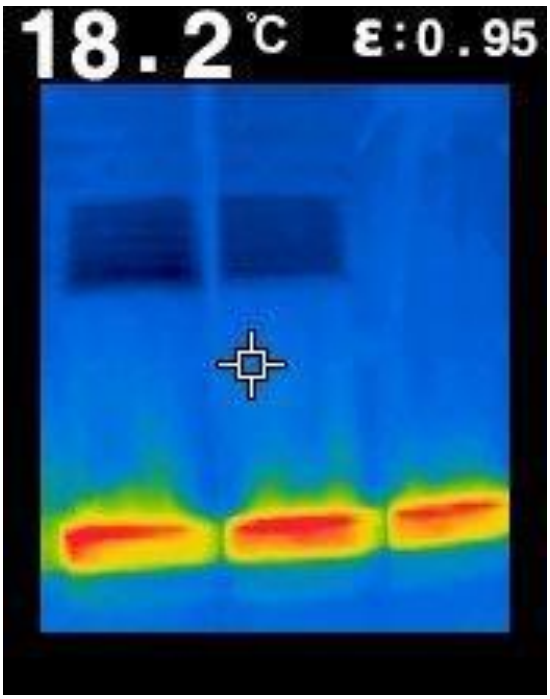

Photo 80 - Infrared Image of Hot Water Radiators on West Side of Hall with Wall Temperature at 18.2C

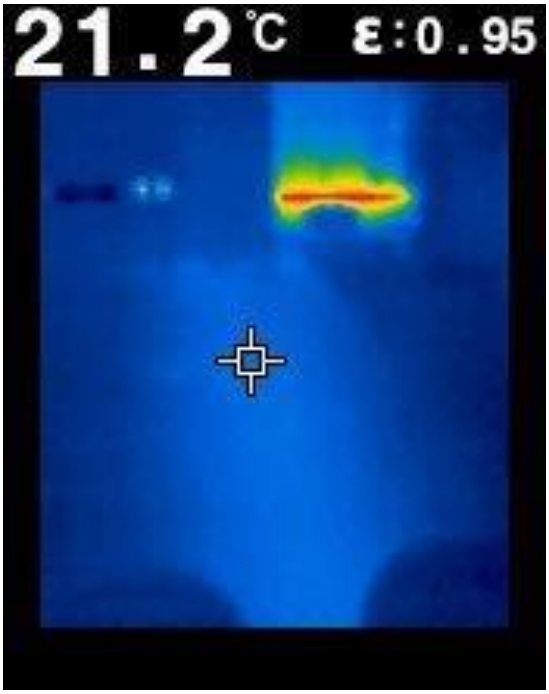

Photo 81 - Infrared Image of Single Radiator with Floor Temperature at 21.2C

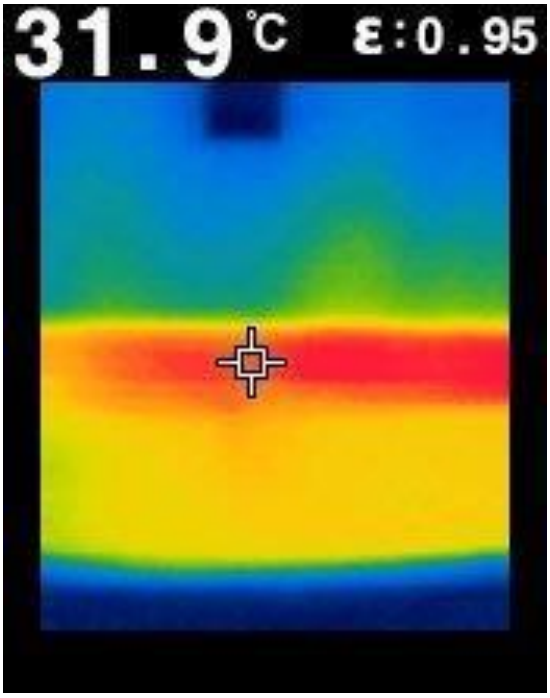

Photo 82 - Infrared Image of Hot Water Radiator Surface Temperature = 31.9C

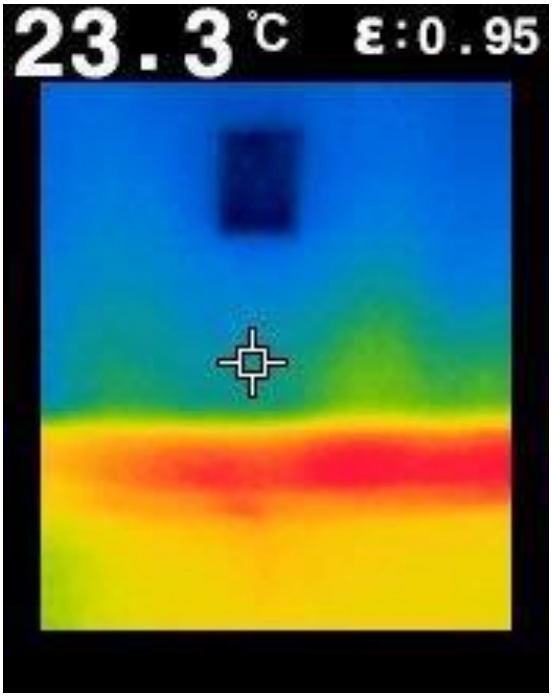

Photo 83 - Infrared Image of Exterior Wall (Temperature 23.3C) Immediately above Hot Water Radiator

There is a reasonable temperature difference of 8.6 °C between the top of the hot water radiator and the wall immediately above this radiator. There is of course, heat being transferred to the interior hall space by radiation and convection and heat being lost through the external wall by conduction.

Heating system failure would soon freeze these pipes unless antifreeze were to be pumped into the piping network or a separate heating system was temporarily installed to maintain building heat. Hot water piping is buried (likely in sand) under the edges of the concrete floor and generally where the arch ribs are fastened and supported.

A water leak in the piping network could be serious, difficult to locate and even more difficult to repair. It is very important to focus on the condition of the heating water. Testing, treatment and maintenance of the chemical condition of the boiler water is very important to prolonging the life of the hot water heating piping, radiators and the boiler itself.

An infrared scan with a FLIR thermal imaging camera indicates relatively even heat distribution along exposed heat radiators. However, there are many objects in front of some heat radiators, which block heat transfer into the main room of the hall.

Photo 84 – Looking Down on Deep Freeze Blocking Hot Water Heating in Janitorial Storage Room

Photo 85 - Kitchen Appliances and Cupboards Blocking Hot Water Heating Radiators

Photo 86 - Looking Down on Kitchen Material on Top of Hot Water Heating Radiators

8.3 Plumbing

Over time, the sewer line between the kitchen and the two washrooms on the main level had to be cleaned out due to either blockages or tree roots. There is a floor cover over a drain clean out along the east interior wall of the hall.

A bib-type faucet supplies water to a hose connection on the outside of the east wall. It does not have an interior shut off or drain for freezing weather. Heat loss through the wall has been sufficient to prevent this pipe and valve from freezing or bursting. This tap is also accessible to vandals and vagrants.

Washrooms have been converted from their original configuration and do not provide for those with accessibility requirements.

8.4 Sump Pump

A sump pump was installed when the hall was constructed. That sump pump was replaced some five to ten years ago.

The sump pump has automatically operated several times since it was installed, attesting to its need.

8.5 Heating, Ventilation and Air Conditioning (HVAC)

There is no air conditioning in the building.

There is no active air circulation system in the hall other than several overhead fans to recirculate air in the main hall area and by opening windows. It is not uncommon to have doors propped open during mild weather parish events.

There is no source of auxiliary heat in the event of a boiler or hot water piping/radiator failure.

9 ELECTRICAL

9.1 Main Electrical Systems

The original hall was supplied with its own dedicated electrical service. At some later time, between when the church was constructed in 1964 and when church office space was added in 1979, the hall

electrical supply was converted so as to be supplied directly from the church via a dedicated fused disconnect switch in the church electrical supply room.

The building exterior receptacles use a two wire system (hot and neutral) with no ground and no GFCI protection [Refer to Photo 13]. This type of electrical system was the norm in the 1950s.

In 2020, the supply cables from the church to the hall short circuited along their underground path. The cables could not be pulled back to the church or to the hall to allow new cables to be pulled in. Subsequent investigation of the church drainage system showed that these cables were installed in steel conduit as they left the church boiler room wall, in No-Corrode or Orangeburg Root-Proof pipe (a form of cardboard and tar derivative (bituminized) pipe used for direct burial sewer service). It was developed to expedite post WWII housing construction and resulted in several hundreds of thousands of miles of pipe failure in sewer service.

Photo 87 - No-Corrode Sewer Pipe Used for Electrical Cables from Church

Photo 88 - Circuit Breaker Panel Supplying Hall from Church

The dishwasher/sterilizer, the two kitchen stoves and the boiler room are connected to 120/240 V circuits.

Photo 89 - New (2020) Independent Electrical Supply from Utility

Photo 90 - Fused (200 A) Disconnect Switch to Isolate Hall Electrical Load from Utility

Photo 91 - New 200 A Panel Installed to Connect to Existing Hall Electrical Panel

Photo 92 - Utility Required Fused Disconnect Switch to Allow their Linemen to Isolate the Hall Electrical Load from the Utility Supply

The new service is supplied directly from an overhead ENMAX service line to a master fused safety fused interrupter switch on the exterior north wall of the hall (see Photo 89 and Photo 90).

This panel also supplies the emergency exit signs/lights and the external security lights through a timer.

9.2 Telephony, Communications and Data Networking

The telephone cables between the church and hall were severed during drainage remedial work at the church.

Communications is now by Wi-Fi or personal cell phones. No data networking provisions have been made for the hall. A secure, wired connection would be an asset to support parish staff and allow access to sensitive parish communications only by authorized users.

The Wi-Fi connection does not provide a reliable electronic communication for overflow crowds in the hall.

9.3 Fire and Life Safety Systems

Exit lighting is provided at each external exit.

Smoke detectors are installed in the kitchen area (1) and at the top of the stairs to the upper office (1).

Fire extinguisher are located in the boiler room (1), kitchen (2), main hall (1) and upstairs (1) areas.

There is no fire alarm central annunciator panel to determine the location of any initiating smoke detectors and no connection to the church annunciator panel.

A “vagrant-started” fire could progress significantly before it would be detected by interior smoke detectors and then heard and investigated by a person who happened to be outside. There is no outside audible alarm.

There is an AED defibrillator in the kitchen area of the hall.

10 SECURITY

10.1 Vandalism

High intensity, timer activated LED lighting has been installed on the east and west side of the hall. The parish also has purchased pole mounted street light along the alley and north sides of the hall and the church, all in an effort to discourage vagrants and vandals. There is an ongoing cost for electrical energy for both the hall and pole mounted lighting.

The east side main entry double doors, their hinges and general fit into the door frame were repaired when the entrance floor was replaced. These are steel doors.

A single entry door on the east side was “vigorously shaken” open by a vagrant as seen on a church security camera. Some considerable damage was done to the kitchen area of the hall. Police took the individual into custody. The exterior handle was removed from this door after the event.

The steel door on the west side of the hall has not been opened by vandals and it’s fit into the frame is good. There is no handle on the outside of this door.

All doors are equipped with panic hardware released from the inside.

None of the doors are alarmed, leaving the possibility that a door may be closed but not fully latched.

There is no centralized security (or fire alarm) system for the hall.

Photo 93 - Vagrants (6) Smoking Adjacent to the Hall West Wall

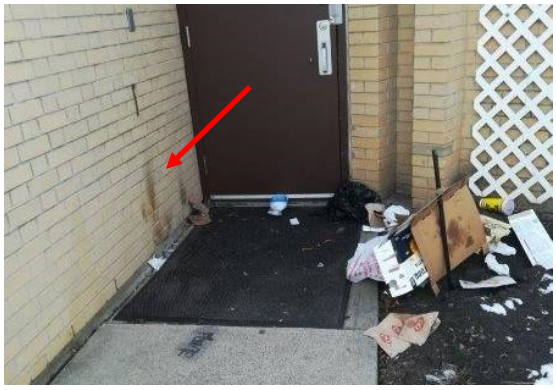

Photo 94 - Vagrant started fire Outside Church

Vandals have previously started small fires outside and adjacent to brick walls of the church, likely in an attempt to keep warm. There haven't been fires started outside the hall so far.

There are no cameras around the hall, particularly on the west side that is well hidden from the parking lot, the north side alley and from 24 Ave to the south.

10.2 Rodents

Mice entry into the hall have been an ongoing issue that is managed by a pest control company (and its ongoing expense. There are several locations where mice can enter the building including but not limited to:

- damaged and rotted walls particularly at the northwest end of the hall where the walls are actually buried below the surface grade level, and
- doors that are propped open in the summer to allow air flow. One door commonly propped open is close to the kitchen and an open grassed area on the west side of the hall.

It is interesting that since Covid started two years ago and the diocese banned the use of the hall, the hall has not had a single mouse infestation. This probably shows the building is sealed, when the doors and windows are properly closed and that there is no food supply for rodents left from parish activities. Further, Orkin Pest Control monitors the hall with several traps outside and inside. There are three large outdoor poison traps which are very effective in keeping mice from around the building.

11 PARKING

Vehicular parking is shared with the church, although there is parking along both the east and west sides of the hall.

12 LANDSCAPE and DRAINAGE

12.1 Eaves trough

Eaves troughs drain adjacent to foundation. The low levels of roof insulation cause snow to melt from the roof, run into the eaves trough and freeze. The weight of the ice filled eaves trough cause the eaves trough to pull loose from the building. [See section 5.6]

Photo 95 - Eaves trough Damage from Ice Filling Eaves Trough

12.2 Storm water drainage

Storm water comes from the roof, from the gravel parking lot and from water flowing down the alley. There is some overspray water from the flower gardens that runs down along the east side of the hall.

At the northwest corner of the hall, the building walls, north wall bottom sill plate, arch ribs and concrete floor are below grade. On the west portion of this area, the buried wall extends from the northwest corner southwards almost to the door on the west wall. [See Photo 15 and Photo 16].

Unfortunately, the NW corner of the hall is lower than the surrounding terrain and significant regrading would be required to correct this issue.

Site grading along the west wall of the hall is not consistent with good practice. The parking lot is higher than the floor of the hall and may drain towards the exterior wall. Grades should be adjusted to provide positive drainage away from the walls and create a swale that drains surface runoff to the south of the property.

12.3 Parking Lot drainage

The City of Calgary has granted temporary approval for a gravelled parking lot, pending finalization of the Interchange at Crowchild Trail and 24 Ave NE.

As such, there has been no drainage implemented and no landscaping. Water generally flows into the alley eastward to the hall and church and usually down to 23 Street NW.

13 Banff Trail Redevelopment Plan

13.1 Proposed Crowchild Trail and 24 Ave NW Interchange

The City of Calgary has determined that a full interchange is required at the intersection of Crowchild Trail and 24 Ave NW.

Design of the interchange will significantly affect the areas around this intersection, including St Pius X Hall and parking lot on the east of Crowchild Trail, the LDS (Mormon) church, and Foothills Athletic park to the west of Crowchild Trail.

St Pius will have a road ramp from westbound 24 Ave NW to northbound Crowchild Trail very close to the front of the existing hall. This ramp will extend diagonally northwest across the southern and western portions of the gravelled parking lot. St Pius X is expected to lose approximately 22% of the existing parking lot area; however, the remaining parking lot will result in the ability to park significantly fewer cars than the 22% loss of surface area would indicate. An independent assessment indicates that three adjacent lots across the alley (north of the parking lot) would be required to make up for the loss of parking spaces, landscaping, and curbs required by The City of Calgary land use bylaws. It is not known how The City of Calgary will compensate St Pius X parish in terms of financial support to purchase replacement parking lands perhaps on the north side of the alley, lessening the requirement for 1 parking spot for every 4 seats in the church, continuing with the present acceptance that the church and hall are not occupied (nor counted in the parking requirement) simultaneously, relaxing the onerous landscaping requirements due to proximity to the six lane Crowchild Trail, or some other form of compensation.

Work on the Crowchild Trail Bridge, the northbound off ramp from eastbound 16 Ave NW, and the double ramp from eastbound 24 Ave to Northbound Crowchild Trail are initial traffic measures almost complete. The next phase included the interchange at 24 Ave NW and Crowchild Trail, which The City of Calgary suggested four years ago that the design of the interchange will not begin for 7 years, and construction will not be completed for 10 years. This projection was based on the then-current city budget and traffic priority projections. This estimate is now at least four years old.

It must be recognized on the positive side, that The City of Calgary did more preliminary design work at the discussion stage to assist St Pius X in preserving as much as possible. An example is moving the overpass further south on 24 Ave NW than originally envisaged. In contrast, the LDS (Mormon) church across Crowchild Trail from St Pius X will be eliminated to make way for the interchange. The design is complicated by having the roof of the Calgary Transit LRT tunnel about a foot below the paved surface of Crowchild Trail as it now exists. Any support piers for the bridges over Crowchild Trail need to avoid this twin rail tunnel and interruption to commuter traffic. Covid-19 has changed the way commuting requirements certainly in the short term and possible in the longer term.

After the church was built in 1964, the “old church” became the parish hall. The parish bought the house adjacent to the west side of the hall as the new rectory. Of the remaining four houses west of the rectory, three were purchased by the parish and rented out. The fifth house was purchased by The City of Calgary and rented out. The houses were eventually demolished by St Pius X to provide for the

parking lot. The City of Calgary and the Catholic Diocese traded The City of Calgary lot for a triangular strip of land on the south edge of the parking lot adjacent to 24 Ave NW. Than land was subsequently used for the retaining wall and right turn lanes from eastbound 24 Ave NW to northbound Crowchild Trail.

13.2 Interchange Effect on St Pius X Parking and Land Configuration

The proposed Crowchild Trail and 24 Ave NW interchange is shown below. Note that it also shows a very approximate portion of the St Pius X parking lot that will be taken for this project. With the resultant loss of land and the triangular configuration of the parking lot, St Pius X will lose the ability to park sufficient vehicles to meet the church seating capacity while adhering to The City of Calgary bylaws

The City of Calgary recently amended Land Use Bylaw LAND USE BYLAW 1P2007 requires in Part 2, clause 121.1 Group B (for Places of Worship) 4.0 motor vehicle parking stalls per 100.0 square metres of gross usable floor area for all Places of Worship, regardless of size. Part 4, clause 261 defines medium Places of Worship is “where the largest assembly area of the use is greater than 300.0 square metres and less than 500.0 square meters. It also requires specially configured bicycle parking stalls.

In view of this perceived parking shortage, St Pius X had discussions with The City of Calgary Transportation and Transit committee (responsible for roadways and interchanges) who recognized the situation that St Pius X would be placed, despite all the good works the church does for its members and the larger community surrounding the church.

Figure 6 - Proposed Interchange at Crowchild Trail and 24 Ave NW

As now planned, the westbound 24 Ave NW ramp to north bound Crowchild Trail will start on city owned land at about the front of the St Pius X church. It will then pass less than two metres from the front of the existing hall and follow a diagonal route across the existing gravel parking lot.

13.3 The City of Calgary Resolution to Assist St Pius X with Required Compensation Lands

The City of Calgary Transportation and Transit commission passed a resolution on March 15, 2017 as follows:

> *APPROVE, AS AMENDED, Moved by Councillor Farrell, that the Administration Recommendations contained in Report TT2017-0329 be approved,* ***as amended,*** *as follows:*
>
> *That the SPC of Transportation and Transit recommends that Council:*
>
> 1. *Approve the Crowchild Trail Study, including the short-, medium-, and long-term plans for Crowchild Trail, from 17 Avenue SW to 24 Avenue NW, inclusive;*
>
> 2. *Direct Administration to acquire, on an opportunity basis, property required to accommodate the medium- and long-term plans for Crowchild Trail;*
>
> 3. ***Direct Administration to acquire and redesignate, on an opportunity basis, adjacent property to replace lands which will be lost by the St. Pius X Parish as identified in the medium-term plans for Crowchild Trail.***
>
> 4. *Direct Administration to bring updates to affected Area Redevelopment Plans (ARPs) to align with the Crowchild Trail Study; and*
>
> 5. *Direct Administration to document lessons learned from the Crowchild Trail Study, and develop an education strategy to sustain stakeholder awareness and knowledge of project decisions.*

CARRIED

Note the highlighting is in The City of Calgary minutes for this meeting

The City of Calgary council accepted this recommendation at the Combined Meeting of Council held on May 8, 2017.

> *ADOPT, Moved by Councillor Keating, Seconded by Councillor Pootmans, that the SPC on Transportation and Transit Recommendations contained in Report TT2017-0329 be adopted, as follows:*
>
> *That Council:*
>
> 1. *Approve the Crowchild Trail Study, including the short-, medium-, and long-term plans for Crowchild Trail, from 17 Avenue SW to 24 Avenue NW, inclusive;*
>
> 2. *Direct Administration to acquire, on an opportunity basis, property required to accommodate the medium- and long-term plans for Crowchild Trail;*

3. Direct Administration to acquire and redesignate, on an opportunity basis, adjacent property to replace lands which will be lost by the St. Pius X Parish as identified in the medium-term plans for Crowchild Trail.

4. Direct Administration to bring updates to affected Area Redevelopment Plans (ARPs) to align with the Crowchild Trail Study; and

5. Direct Administration to document lessons learned from the Crowchild Trail Study, and develop an education strategy to sustain stakeholder awareness and knowledge of project decisions.

CARRIED

The City of Calgary have been advised by St Pius Parish Council of four houses that have been listed for sale, across the alley from the existing parking lot. The City of Calgary Land Department has failed to act on any of these purchase opportunities.

St Pius X obtained 17 residential parking permits for the area around St Pius X church in accordance with The City of Calgary parking bylaw that allows churches certain number of on-street parking permits in a parking-by-permit neighbourhoods. The issue is that a method of registering and deregistering vehicle licence plates has to be developed. The on street parking permits were issued just prior to Covid restrictions and have never been used. The St Pius X office has the account and password.

13.4 Crowchild Trail, 24 Ave NW and University Drive Traffic Lanes

The City of Calgary plan for Crowchild Trail enhancements provides for the following number of lanes

Crowchild Trail	3 lanes in each of north and south direction and a dividing boulevard
University Drive	2 lanes in each of north and south direction and a dividing boulevard
24 Ave NW [West of Crowchild Trail]	2 lanes in each of east and west direction and a dividing boulevard
24 Ave NW [East of Crowchild Trail]	1 lanes in each of east and west direction with bike lanes and sidewalks on both sides, traffic calming curbs, parking restricted to one side, residential houses on both sides of 24 Ave NW and with no dividing boulevard.

It is somewhat difficult to see the need for a full turns interchange access to 24 Ave NW [East of Crowchild Trail]

14 Conclusions – Condition and Function

1. As with any structure built for a specific purpose and then modified many times over time, the result is a building that is suboptimal for its present use. The original design was for an interim

church and living quarters (rectory) for the parish priest. Even so, the building has serviced St Pius X parish quite well for many functions. It is now becoming a tired building.

2. The hall is very important to the Parish of St Pius X.
3. The parish requires significantly more and better meeting spaces;
4. Seating capacity is insufficient for many current parish functions;
5. The hall condition is deteriorating although the structure does not currently exhibit any evidence of distress. As noted in the report there is a risk that poor drainage and building envelope deficiencies could be impairing the structure in locations that are not readily accessible for inspection.
6. The exterior building envelope including stucco, windows and some doors are in very poor condition.
7. Any coating of painting on the stucco exterior must not seal the wall and prevent moisture from leaving the wall, unless it also prevents all water from entering the wall cavity through stucco, windows, doors, and other openings.
8. The exterior stucco on the western half of the north wall and the north third of the west stucco walls are buried underground, with the probable associated issues of an untreated wood frame wall being underground with no drainage. Remediation of this condition will involve cutting and replacing the pavement around this portion of the building and installing drainage; Site drainage along the entire west wall should be adjusted to provide positive drainage of runoff away from the building.
9. The existing arch rib construction has these ribs restricting the usability of the hall floor area;
10. The kitchen is small, inefficient and not to current health standards thereby impacting parish programs such as Inn From the Cold, special receptions; Stampede breakfast, weddings and funerals, parish suppers, etc.;
11. There is no convenient water supply or large sink for janitorial cleanup
12. No data networking provisions have been made for the hall. A secure, wired connection should be available to support parish staff and authorized users.
13. The washrooms are not up to today's building code or minimum public expectations, with no handicapped facilities, old fixtures, etc.;
14. Lighting is old and inefficient to operate causing higher expense;
15. Mice are entering the building at unknown location(s);
16. Noise levels due to multiple hard surfaces and the associated sound reflections make the hall uncomfortable audibly for many users. Some form of sound dampening is desirable;
17. The building contains some toxic lead, asbestos material (which are not dangerous if not disturbed); and toxic mould (which is not dangerous if not disturbed and will not grow if kept dry);

18. The hall is very thermally inefficient (large heat loss). Most windows and some doors are original and not functioning, which impacts the cost of heating, the quality of the interior environment and security issues. Leaks are also contributing to failure of the stucco exterior and mould inside the interior walls;
19. There are no drawings available for the original hall;
20. Water leaks in the roof to the interior were observed at the recent time of interior painting (at the junction of the curved and flat portions of the roof and above the upstairs office);
21. The interchange at Crowchild Trail and 24 Ave NW will alter the shape of the parking lot thereby restricting the location and type of new development allowed on St Pius X property. The loss of parking area and the change in lot shape very definitely restrains the size, shape and nature of future parish facilities;
22. The City of Calgary has not pursued or followed the direction of the Transportation and Transit committee or that of The City of Calgary Council resolutions to purchase property for St Pius X parish to use as replacement parking;

15 Life Expectancy and Financial Estimates

Every improvement to the hall's infrastructure would extend the building's potential lifespan by some duration. Unfortunately, a building's true lifespan is only as good as its weakest component. The wood frame hall is now 67 years old. The basic structure is sound; however, most components are at their end of life (windows, stucco, insulation, kitchen, washrooms, meeting rooms, sound quality, etc.). The condition of other areas (roof, heating radiators and piping, etc.) can only be with significant effort and cost to sample, sometimes destructively.

The challenge is to decide what the desired lifespan of the current building is (and therefore what repairs or improvements can be cost-effectively implemented to meet that goal) or to embark on the process of a new hall that satisfies the parish needs. These improvements are over and above the expenses of routine maintenance of the church and hall.

Any major renovation/upgrade will require engaging an architect and engineering consultants to undertake the design and prepare construction drawings necessary for the building permit. Any design professional undertaking this work will have to complete their own evaluation of the building's condition. It would be prudent to have a discussion with an architect to help establish the scope of possible renovation work and prepare a high level cost estimate before the parish makes any decision on the future of the hall.

An additional challenge is how to host parish events during renovation of the existing hall or the construction of a new hall.

The following table is an example of what might be developed to estimate costs the remediation of the existing hall deficiencies.

Option	Anticipated Life Expectancy	Action Required in immediately	Actions Required during Next Five (5) years	Actions Required during Next Ten (10) years

Do nothing				
Minimal maintenance to preserve building shell		Replace exterior windows and doors ($75K) Repair or replace stucco, cracks, holes, surface preparation for painting ($100K) etc.	Repair eaves trough $10K Repair obvious water leaks$15K Washroom renovations for accessibility use $80K. etc.	Re-roofing insulation, repair roof leaks and shingles ($60K) etc.
Complete building renovation		$456K		

Columns on benefits and detractions of each alternative could be prepared

16 Potential Options for the Future of the Hall

This report is intended to assess the condition of the hall in its present situation. However, the Parish of St. Pius X still remains in need of a functional hall.

The following non-comprehensive list of potential options are offered to accommodate the needs of the Parish of St. Pius X into the future of the Parish.

1. Continue to patch, repair and operate the hall

   It must be recognized that these costs will not be recoverable and will only delay the demise of the hall.

2. Gut the hall and rebuild to a more efficient layout of the building main and upper floors.

   It must be recognized that the arch ribs will continue to intrude into and diminish the availability and quality of the space along the interior walls of the church. A potential benefit of this option is that it might be considered as a maintenance project by The City of Calgary and therefore may only require permits for electrical and other such services as no structural revisions need be done.

3. Investigate space availability at nearby hotels, etc.

   Investigate arrangements that might allow long term use of large meeting/ball room usage at nearby Motel Village. All of the requisite accessible washroom facilities would be available; however, such space may not always be available due to other events at the hotel, it is several blocks away from St Pius X church and it is unlikely that they would allow use of their kitchen facilities.

4. Demolish the existing hall and build a new hall.

A single or two-story building could be arranged on the property to be more convenient to the church. This option will entail considerable development and permitting effort with The City of Calgary.

It will almost certainly trigger a requirement from The City of Calgary for additional and very expensive landscaped parking space. Potentially offsetting this requirement could be a logical delay in the parking requirement until The City of Calgary finalizes the interchange requirement at Crowchild Trail and 24 Ave NW.

5. Determine if a second floor could built above the existing main hall

   Determine if a second floor level could be suspended or supported above the main floor at a height:

   - just above the main hall side windows or the flatter portion of the main hall above the windows, or
   - at the same height as the floor in the upstairs office. [See Photo 70]

   The floor area would be much less than the main hall area but might be sufficient to accommodate all storage needs, thereby freeing up space in the main hall and the rest of the building. It may also have sufficient space for a small meeting room.

   A structural engineering design would be required since no data or drawings exist for the original hall.

   This option will require building permits since the structure of the building is being altered, new wiring and perhaps plumbing is being added or modified. There are sure to be surprise findings above the kitchen and washroom areas of the existing hall.

   This option would continue the external view of the original building and hopefully garner no resistance from adjacent landowners if a development permit is also required.

6. Partner with a developer or contractor and building operator to construct an apartment style building.

   There would likely be a demand for seniors (or student) accommodation in this area that is close to the LRT transit system. Such a building might incorporate some light commercial ground level space and with near-ground or second floor hall space available either exclusively or on a priority basis for St Pius X use. Parking would have to be included in the design to accommodate the higher density of apartment.

   Funding for such a building might come from a combination of various government's grants, support from seniors' organizations or even by pre-selling apartments to those who might choose to live there. Many contract options are available to ensure the continued operation of an apartment building. Some parishioners may be in a position to contribute financially to this new hall.

7. Add on to the west side of the hall

The need for additional space is a difficult problem given the existing conditions and configuration of the hall. It may be possible to build an extension building section along the entire west side of the hall, perhaps up to about 20 ft wide. This room or rooms could provide the additional space needed for storage or even meeting rooms. It may be possible to add an AHS/Building Code/Electrical Code compliant kitchen or space for part of the kitchen.

It likely could be heated from the same boiler system we have now and could certainly be supplied with electrical power from the newly installed panel.

8. Rent or purchase a temporary building

   Temporary or relocatable structures are available from several suppliers. A temporary Covid ward has constructed at the Peter Lougheed hospital as part of the world pandemic measures.

   The advantage of such a building is the short delivery time, while a distinct disadvantage in the neighbourhood is potential vandalism.

17 Appendixes

The following laboratory and on-site reports describe various aspects of the St Pius X Hall in terms of chemical and biological issues.

Appendix 1 - Walls - Exterior

Appendix 2 - Air Quality

Appendix 3 – Mould

Appendix 4 - Property Surveys

Appendix 5 - Crowchild Trail Enhancements

Appendix 5 – Walls - Interior

Appendix 9 – St Pius X Building & Maintenance Committee

Name	Designation	Expertise
Tim Walsh	(Co-Chair)	Commercial real estate
Jim McLaughlin	(Co-Chair)	Maintenance systems
Dwain Babiak	M.Eng., P.Eng.	Civil and structural engineering
Bill Bergman	M.Eng., P.Eng. (retired)	Electrical power, drainage
Joe Cortes	member	Chemical systems, IT
Mike Hardy	P.Eng.	Automation
Mike Jubenville	P.Eng.	Communications systems, IT
Joe Klassen	P.Eng. (retired)	HVAC
Dan Violini	RET, Power Eng 3rd class, Journeyman Instrument Mechanic	Boiler heating and control systems
Mike Verbisky	P.Eng. (retired)	HVAC, instrumentation