

Heritage Conservation Plan

Christ Church - Fernie, BC - 1910



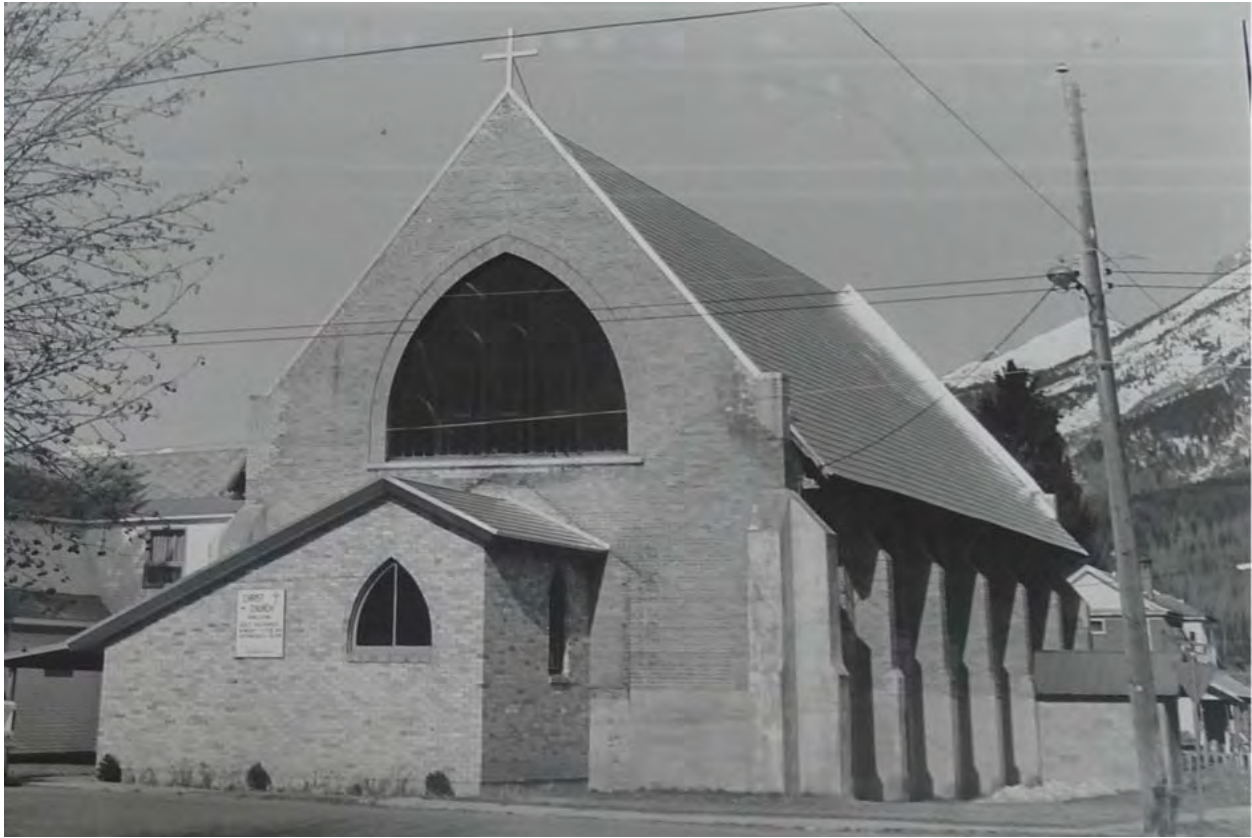
Elana Zysblat, CAHP - Ance Building Services :: John Atkin, History + Research
November 2018

Contents

Statement of Significance.....	3
Maps.....	5
Background & Construction Chronology.....	6
Historic Photographs.....	7
Current Photographs.....	10
Condition Assessment.....	14
Conservation Objectives.....	20
Recommended Conservation Procedures.....	20
Research Resources.....	26

Statement of Significance

Christ Church, 591 4th Avenue, Fernie BC



Description of Historic Place

Christ Church is a simplified Gothic Revival Anglican church built of tan coloured bricks with buttresses and a prominent pointed arched window facing the street. The church is situated at the south west corner of 4th Avenue and 6th Street, and along with the two other churches on the street is locally known as 'church row' on 4th Avenue between 5th and 7th Street in Fernie, BC.

Heritage Value

Constructed in 1910 to replace the previous wooden church lost in the 1908 Great Fire, Christ Church is valued for its simplified Gothic Revival style, as one of three buildings in the city designed by the short-lived architectural partnership of Egg and Haldane and as one of six historic church buildings in Fernie and one of only three that still operate as places of weekly worship and social fellowship.

Christ Church is valued as a surviving example of the many brick buildings built to replace wooden structures lost in the 'Great Fire' of 1908. This post-fire building activity is responsible for most of Fernie's historic downtown. After the fire, the Vestry Committee began making plans to rebuild Christ Church. It would be the third building for the congregation since their organization in 1898 - previous buildings having been lost in the two town fires. The delay in

erecting the new church was in part the congregation's desire for a brick church instead of another wooden structure and prioritizing a new rectory as soon as possible. Funds initially allowed a concrete basement to be constructed in 1909 which was roofed over and used for services and Sunday school. The cornerstone for the actual church was laid in August 1910 and the completed building was dedicated in January 1911.

Heritage value is found with the Gothic-revival design by Fernie-based firm of Egg and Haldane which features an exterior of buttressed walls of tan coloured brick from Sandpoint Idaho punctuated by pointed arched windows above pairs of basement windows. Facing 4th Avenue is a large pointed arched window that is echoed with a blind arch with inset pointed arched window at the rear. The interior is a simple design of exposed brick walls and a hammer beam ceiling with tongue and groove panels inset into the exposed rafters.

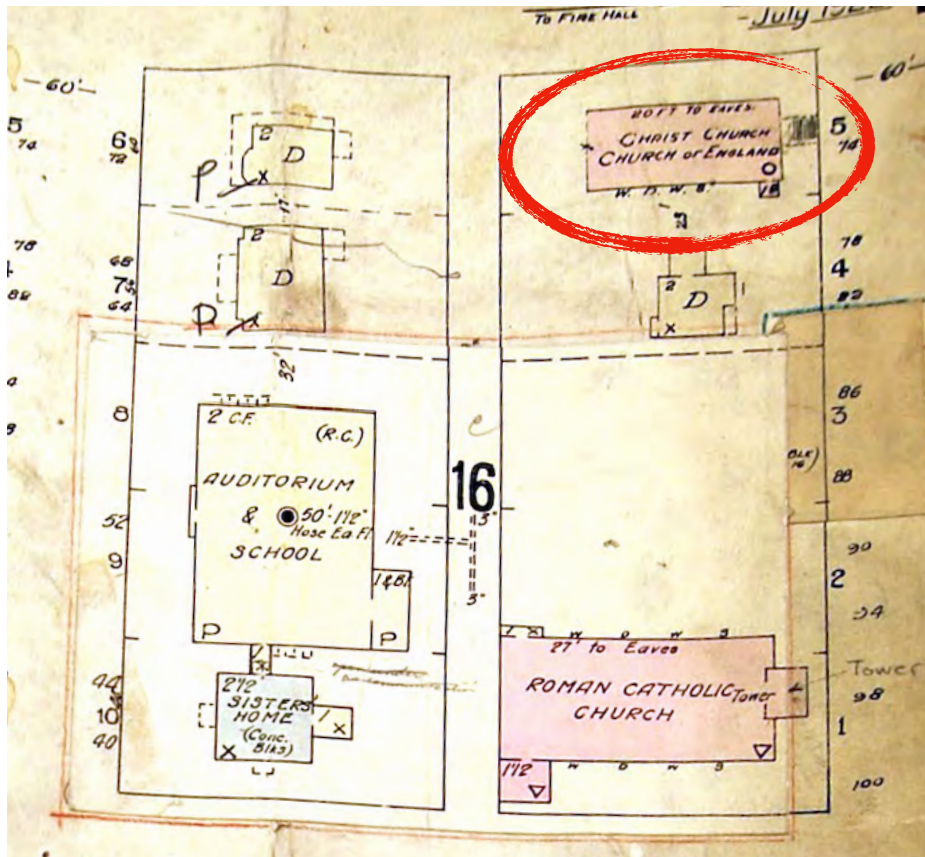
The original design envisioned an offset steeple at the rear on the south side of the building, but as cost was always a concern, the steeple was never completed.

Additionally, social and cultural value is found with Christ Church's continuous role of service and caring to Fernie since 1898 and its adaptation to the changing needs of the community.

Character Defining Elements

- prominent location at the corner of 4th and 6th Street
- buttressed walls of tan coloured brick punctuated with pointed arched windows
- prominent partial above ground concrete basement with pairs of windows between the buttresses
- large pointed arched window facing 4th Avenue echoed with a blind arch at the rear of the church with smaller inset arched window with stained glass panels
- window assemblies gothic tracery set with plain glass
- steep pitched gabled roof with open soffits and decorative rafter ends
- original gothic style doors with metal strap hinges lead into the church
- entrance porch of Fernie brick salvaged from the former firehall with commemorative stained glass window
- metal cross at the roof peak
- interior elements include:
 - large open sanctuary space
 - hammer beam ceiling with tongue and groove panels inset into the rafters
 - wood pews
 - altar rail crafted by Keith Macken (1968)
 - two fonts: a stone font and a wooden font originally from St. Paul's , Michel
 - wooden pulpit

Maps



Christ Church shown on a 1922 fire insurance map.
Source: BC Archives 10476A



Christ Church shown on a 2015 aerial.
Source: Apple Maps

Background and Construction Chronology

The original church built in 1898 at 3rd Avenue and 5th Street was destroyed in the Fernie fire of 1904. The new current site, was secured at the corner of 4th Avenue and 6th Street where a new church and rectory were built in 1905. They served the community until they too were consumed by the 1908 conflagration.

Having lost two wooden churches to fires, the parishioners wanted to rebuild in brick, but the increased cost of such a structure delayed the construction of the new church. Funds were initially raised to complete a concrete basement in May 1909, which was then temporarily roofed to serve the congregation as a home for services and Sunday School. In later years, when finances were tight and with the congregation unable to afford to heat the full church, the basement was yet again used for services.

In 1910 the Fernie-based firm of Egg and Haldane were hired to design the new brick church. The two architects had just formed their partnership when they received the commission.

George Charlton Egg was born in Chicago in 1883 but his family moved to Montreal in 1891. He joined the Victoria Rifles that same year. His architectural training is unknown. Egg moved to British Columbia in 1908 and in October that year he announced his partnership with the Scottish-born William Haldane. Egg married Constance Shaw in Fernie at Christ Church in May of 1910 - presumably in the stand-alone basement as the church building had not yet been constructed at this time.

William Haldane emigrated to Canada in 1903 and settled in Montreal, where he worked for the leading firm of Edward & W.S. Maxwell (in 1903-05), and for Hutchison & Wood (in 1905-06). In early 1907 he moved to Vancouver, B.C. and worked as an assistant in the office of Parr & Fee in 1907-08 before moving to the Interior in late 1908.

Local contractor Herbert Davies got the job of building the church. Specifications called for the use of Sandpoint bricks. Sandpoint Idaho had three brick works in production, and with easy transportation connections into British Columbia with Great Northern railway, their price would have been competitive with similar Alberta products.

The corner stone was laid in 1910 and the church celebrated Christmas services in December of that year, with a formal dedication in January 1911.

Minor external alterations have been done over the years that have included an enclosed porch in 1921, later replaced in 1980 with the current porch built with Fernie bricks salvaged from the demolition of Fernie's former fire hall, and an enclosed basement exit/entrance on the north west corner prior to 1970. At various times the walls, buttresses and gable ends have been repaired, including repointing the brickwork on the front and south sides of the church in the 1990s.

Inside, changes have included the enlarging of the altar, removing the rood screen (1957), adding an office to the hall (1980s), and adding an elevator to ensure accessibility for all (2005).

Historic Photographs

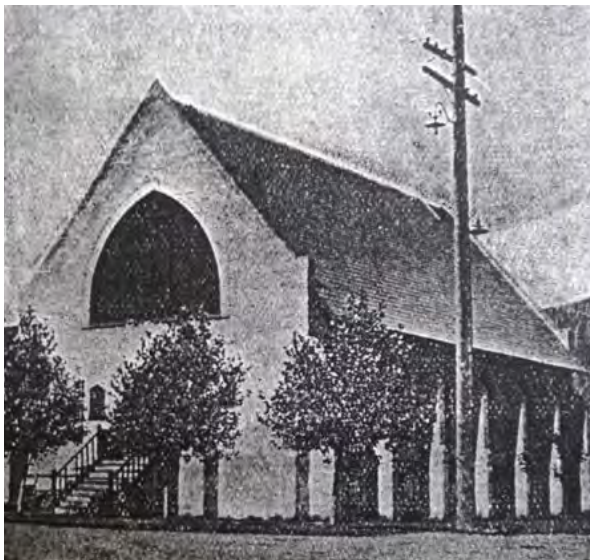


The original Christ Church in Fernie constructed in 1898 and destroyed by fire in 1904, which stood at the approximate location of today's Scotia Bank at 3rd Ave and 5th St. Source: Fernie Free Press 1902 Christmas Edition (UBC Special Collections)



Postcard photographed by Spalding of the second Christ Church in Fernie constructed in 1905 and destroyed by fire in 1908, with rectory next door, both standing in the location of today's church and rectory. Source: Fernie Museum 3712

Four historic views of the current church:



Top: the basement of the church under construction in 1909, marked with an arrow and the rectory already completed. Source: Fernie Museum 0103-01

Middle left: the church in the 1920s. Note, there is no cross at the gable. Source: Fernie Christ Church Archives.

Middle right: with the covered entrance, added in 1921 shown in the 1970s. Note the second cross at the entrance peak. Source: Fernie Christ Church Archives.

Bottom: with the brick entrance built in the 1980 with brick salvaged from the former firehall. Source: Fernie Christ Church Archives.





Photo of one of the 1910 blueprints for Christ Church drawn by Egg & Haldane. Note, many informative details are evident in this rare, surviving set of drawings. Source: Fernie Christ Church Archives.

Current Photographs



Facing 4th Avenue with the covered entrance constructed in 1980 and a roofed entry to prevent snow sliding off the roof in front of the entrance.



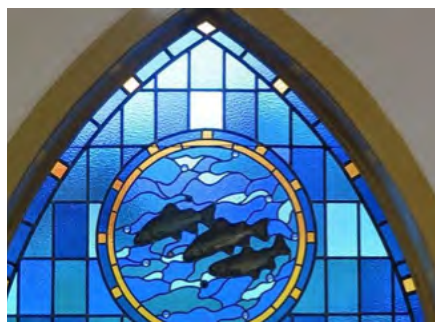
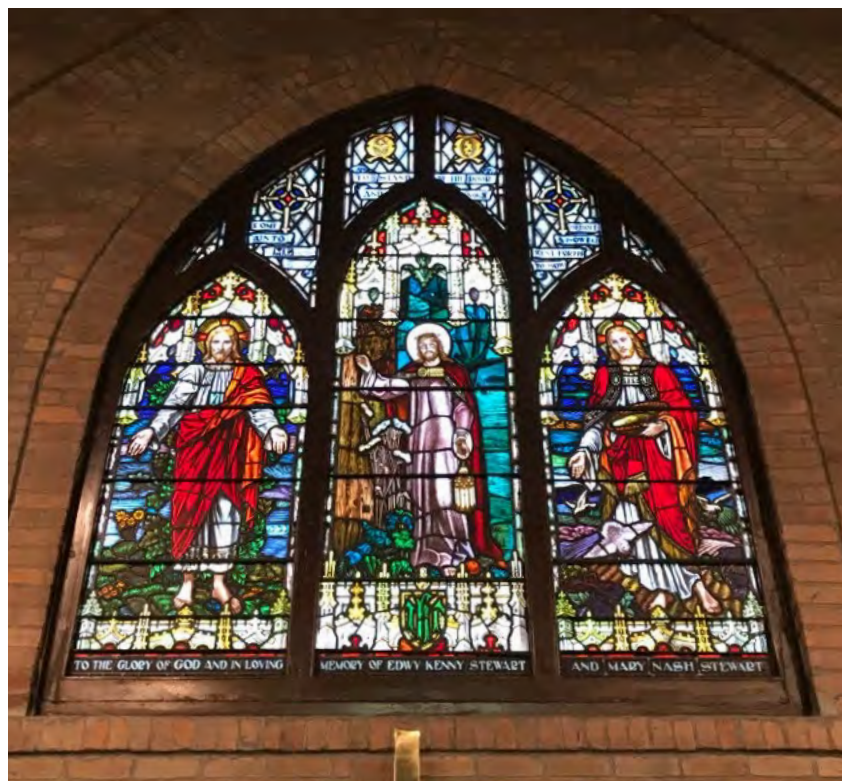
6th Street side of the church with addition for the basement entrance/exit likely added in the mid-1970s



Above: south side of the church

Left: Rear and south side of the church

Current Photographs - Interior

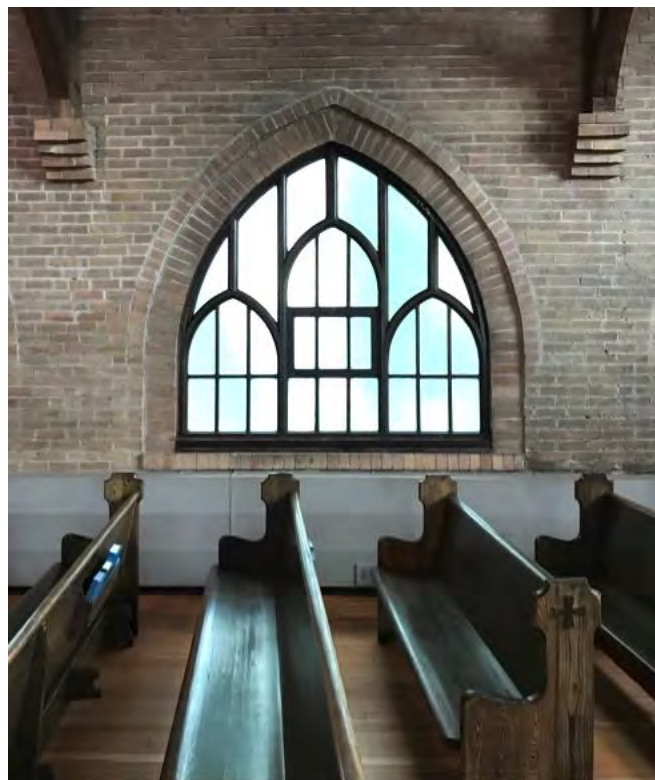


Top: The interior's spare undecorated brick walls, wood pews, hammer-beam ceiling, and gothic tracery window assemblies

Bottom left: Art glass triptych above the altar, dedicated in the memory of Edwy Kenny and Mary Nash Stewart, generously donated by Mrs. E.K. Stewart in 1946

Middle right: ceiling detail

Bottom left: Three fish window dedicated in 2015 to the memory of Wilfred Robert Williams, Eric Arthur Williams, and Mark Alexander LaGroix



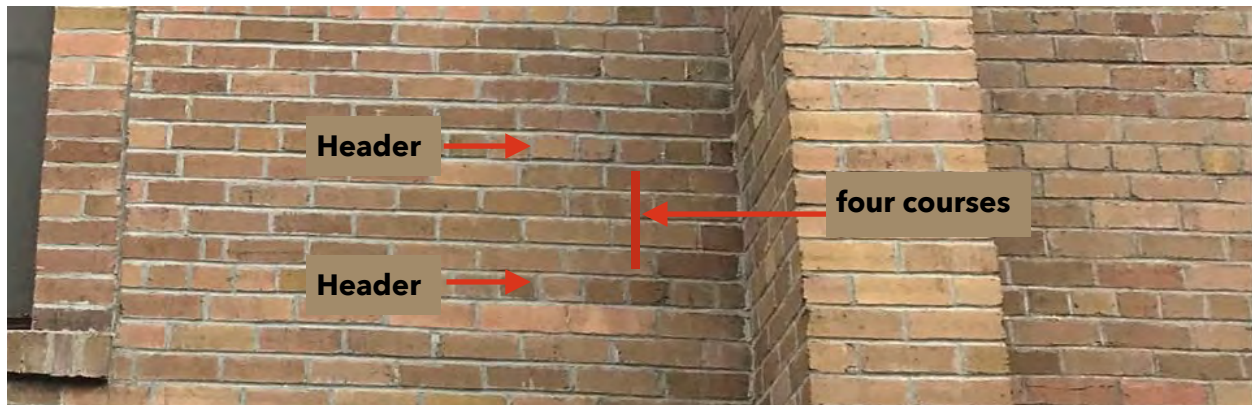
Ceiling detail, window assembly, sanctuary doors, elevator and basement stairs, and the parish hall in the basement



Condition Assessment - Overall the church is in good condition.

Brick

The exterior load bearing walls of Christ Church are constructed of tan-coloured brick from Sandpoint, Idaho laid using a variation of common bond with a course of headers inserted every four courses instead of the usual fifth or sixth course.



The exterior walls are in generally good condition, though there are specific areas that exhibit some damage, notably the base of the buttresses and the end gables of the east and west faces of the building. Substantial repairs were undertaken in 1996 with the repointing and sealing of the east and south walls of the church. Prior to 1980, repairs were made to some of the bases of the buttresses atop the concrete foundation with a cream coloured brick. For the most part these repairs have failed. Bricks have come loose with broken and heaving mortar, and in some cases this has caused some damage to the concrete foundation. Incompatible mortar used in the repair work along with water from specific points on the roof appears to be the primary cause of failure.



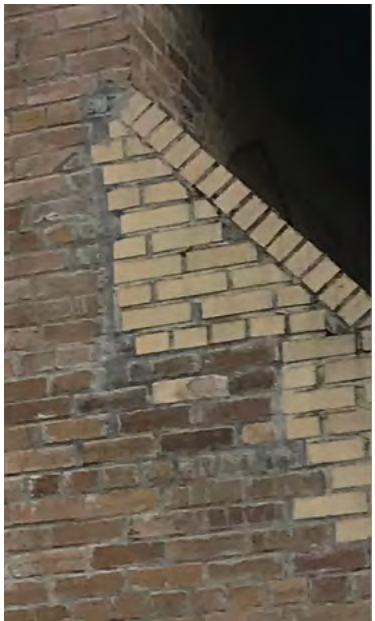
Examples of brick failure and damage due to inappropriate mortar, water. The bricks used in the repairs are not the same dimension as the originals resulting in large mortar joints and inconsistent brick work. What appear to be newer repairs have been sloppily executed.



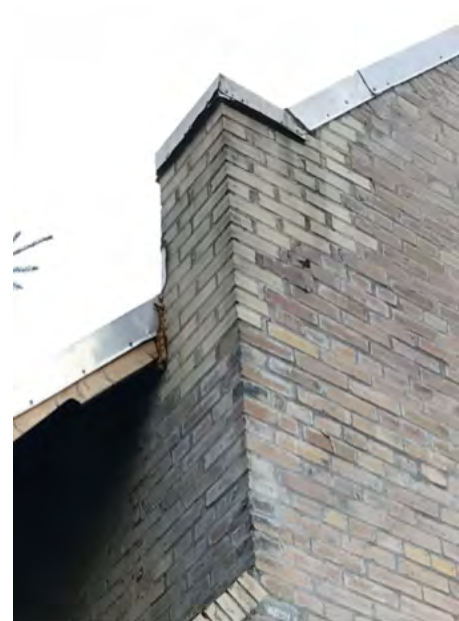
Missing, broken and spalled bricks on the chimney because of incompatible mortar and bad flashing details. Water is directed off the gable against the chimney and the wall resulting in spalling of the brick surface and erosion of the mortar and water stains in the inside wall of the church. (see description of flashing on page 16)



Incorrect installation of flashing on the gable end results in staining and future water damage. (see description of flashing on page 16)



Unsympathetic mortar repairs with wide joints and gaps. Water damage and staining.



Bad flashing installation sends water down the brick face causing staining, disintegration of the mortar and spalling and cracking of the bricks. (see description of flashing on page 16)

Concrete

The basement of the church is constructed of concrete covered in a cement stucco, half of which is above ground. It is in good condition overall. Water is a problem with staining found on all sides of the building. There has been some patching on the concrete with a cement stucco that has stained from water coming off the main roof and the entrance to the basement. In some places there are a variety of patches applied over time. Some have cracked and moisture appears to be trapped behind the material.



Broken concrete under a failed brick repair on a buttress, a result of water and incompatible mortar stucco



Extensive staining from water on the concrete and a variety of stucco patches on the original foundation



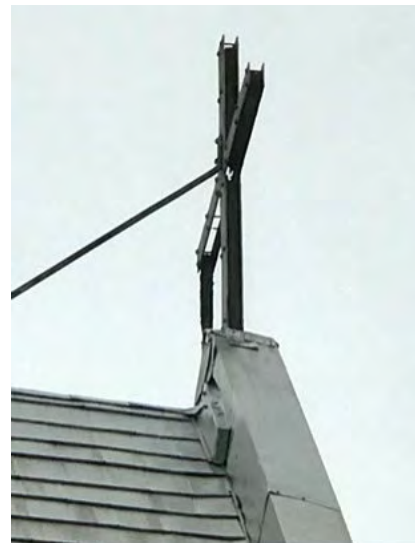
Run off from the roof onto the stuccoed buttresses has caused significant staining



Run off from the roof of the basement fire exit stairs has caused significant staining on the concrete foundation and eroded the mortar of the bricks

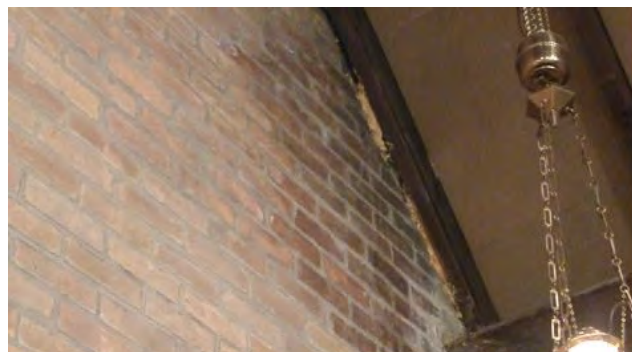
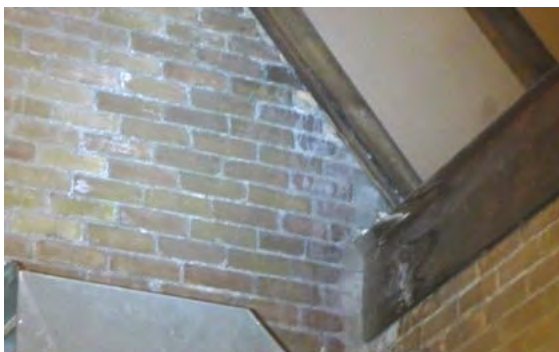
Roof

The original slate roof was replaced with the current metal shingles in 1968 and it is showing its age. There is damage along the ridge where the wind has lifted the shingles in places. The cross, a riveted metal construction infilled with wood components has deteriorated and partially disintegrated. Flashing repairs have exacerbated water issues on the exterior and for the interior brick work. The flashing is screwed onto the brick and is made up of several pieces, creating seams which channel the water down the brick face. Additionally the current flashing installation does not take into account the capillary action of water and snow up against the flashing enabling moisture to travel up against the pull of gravity. This action has led to the staining seen on the interior of the church at each of the corners where the brick meets the ceiling - notably where the cream coloured brick repairs have taken place.



Above: An example of the flashing installation showing the gaps and seams that lead to water penetration of the structure

Roof damage and the metal cross with missing wood



Water staining on the inside walls because of incorrect flashing details on the roof.



Wood Elements

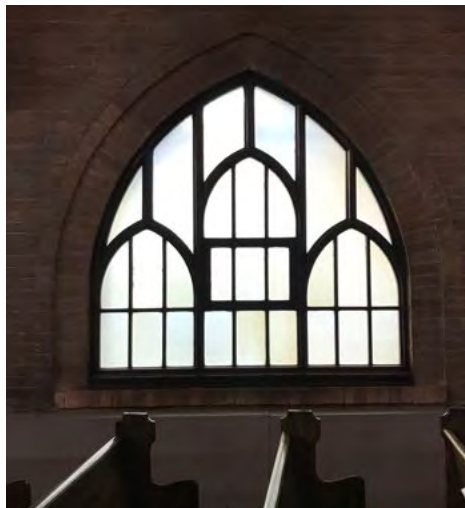
The church features wood sash windows at the basement level, large wood Gothic tracery windows, wood doors and open wood soffits. Considering their age, the wood components are in good condition overall. There is the need for some minor repair and maintenance of the painted surfaces.

The wood soffits need attention including checking for water damage and painting. There are areas inside where spray foam has been used to close gaps between the brick work and the rafters.



Windows: The basement sash windows are in good condition and are covered on the outside with Lexan protective panels.

The wood Gothic tracery windows in the sanctuary are in good condition. They are covered with Lexan protective panels screwed into the woodwork. Every window has an awning style opening in the centre but the Lexan has been cut to facilitate the operation of alternating windows. The panels appear to be in good shape though they have discoloured with the exposure to the sunlight, but don't appear to have caused any problems for the historic wood windows of Christ Church.



Art Glass Windows: The art glass triptych set in a large wood assembly above the altar appears to be in good condition with no obvious cracks, missing pieces or signs of slumping. It too, is protected with a Lexan panel screwed in to the woodwork. At the front of the building is the new 'Three Fish' window installed in 2015.



Ceiling: The ceiling is a grand set of beams, braces and rafters that rise above the brick walls. Apart from dust and a few places where there is some staining from water leaching through the bricks, this is in good condition. Sitting between the rafters are foam panels added for insulation which are held in place by clips. These hide the diagonal tongue and groove ceiling underneath.

Interior

The interior of the church is in good condition and is regularly maintained. There are two forced-air furnaces at the rear of the sanctuary that provide heating but are ineffective overall and are not well integrated into the space. The furnace ducts are large, bulky and a relatively dominant, distracting element in the church's otherwise very historic interior. When operating, the furnaces are noisy and the general sense is that the sanctuary space is uncomfortably cold, notwithstanding the furnaces and the insulated ceiling. Access is made available to the basement and sanctuary by stairs and by an elevator that is housed in an extension of the small entrance vestibule.

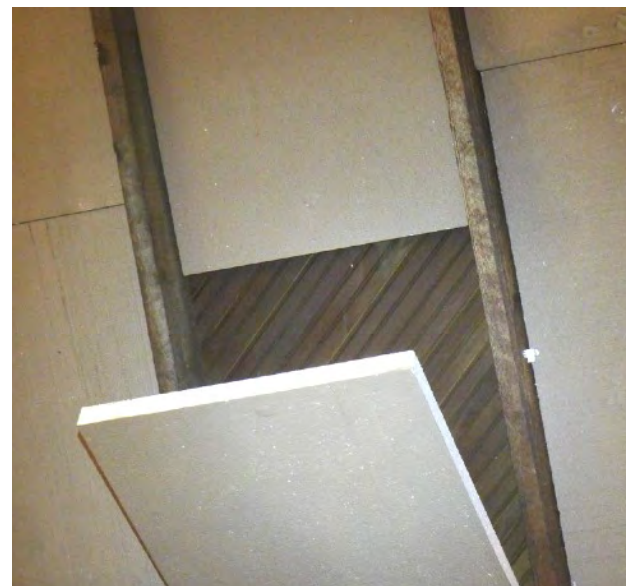


Top left: the new, high efficiency furnace installed in the last few years.

Top middle: the older of the two furnaces which live at the back of the church taking up significant space.

Top right: the furnace ducts run along both walls of the nave, taking up room, making noise and not heating the space effectively.

Bottom: a 'sneak-peek' of the tongue & groove ceiling under the foam panels.



Conservation Objectives

Restoration is the overall conservation objective for Christ Church.

A new roof is the top priority, and needed to replace the 1968 metal one presenting an opportunity to return the church closer to its original 1910 look. Restoration and repair of the brick walls is also a top priority, along with the improvement in how water shedding from the roof and other surfaces is handled to minimize damage in the future. Some rehabilitation will be considered for the interior to better adapt the sanctuary space for flexible and inclusive public uses.

The church will continue on its original site at the corner of 4th Avenue and 6th Street. No additions are currently proposed for the site. All Character Defining Elements as identified in the Statement of Significance will be Preserved or Restored.

The conservation treatment definitions below are taken from the Standards & Guidelines for the Conservation of Historic Places in Canada (2nd edition):

Preservation: The action or process of protecting, maintaining and/or stabilizing the existing materials, form and integrity of a historic place or of an individual component, while protecting its heritage value.

Restoration: The action or process of accurately revealing, recovering or representing the state of a historic place or of an individual component, as it appeared at a particular period in its history, while protecting its heritage value.

Rehabilitation: The action or process of making possible a continuing or compatible contemporary use of a historic place or of an individual component, through repair, alterations, and/or additions, while protecting its heritage value.

Recommended Conservation Procedures

For all work use experienced trades with proven experience working on historic buildings.

Please note that the surviving original set of blue prints held in the church archive are invaluable information for any work or maintenance to be conducted on the building, as minor as it may seem. Have large copies made of all pages in the set and consult them before any interventions are made.

Brick walls - Restoration and Rehabilitation (Priority # 2 within 2-3 years)

The loose bricks with broken and missing mortar on the buttress base need to be remediated by rebuilding those areas following the procedure below:

- a. Remove the incompatible mortar currently used
- b. Reset the original bricks using the correct mortar and match the style and width of existing mortar joints

- c. For areas that have been repaired using the cream brick, strong consideration should be given to sourcing bricks that closely match the dimensions and colour of the original Sandpoint bricks. This will eliminate the large areas of mortar between these bricks and the obvious and distracting looking repairs which take away from the church's overall appearance.
- d. The stuccoed columns at either side of the front of the church should not be intervened with, as they are performing well and who knows what the stucco hides.

The repairs on the gable ends using the cream brick should be examined for loose mortar, gaps and other issues. Strong consideration should be given to rebuilding those areas using a brick that closely match the dimensions and colour of the original Sandpoint bricks. The obvious and distracting looking repairs in such prominent locations take away from the church's overall appearance and heritage value. The repointing in some areas is sloppy with mortar sitting on top of the brick surface and is inconsistent in its application, this needs to be remedied. The mortar should be checked carefully to see how deep the repointing has been as incorrect mortar will cause damage in the future.

Keep in mind the following guidelines when repointing or repairing brick:

Correctly matching mortar extends well beyond just matching colour. In order to confirm the degree of compatibility between any new mortar and the historic mortar and/or masonry units that it bonds, the following characteristics should also be tested/examined and matched:

- Texture
- Physical Properties
- Hardness
- Water Vapour Permeability
- Tooling (Shape of the Mortar Joint)

It is important that repair mortar be matched so that it is compatible with both the surrounding masonry units as well as the contiguous mortar. **Use mortars that will ensure the long-term preservation of the brick assembly.** Mortar should be compatible in strength, porosity, absorption and vapour permeability with the existing bricks. Bedding and pointing mortars should be less durable than the bricks themselves (i.e. a bit softer) .

If new mortar is not matched and compatible, you run the risk that the **new repair mortar may contribute to the deterioration of the wall** instead of protecting it; or, that the visual impact may be unacceptable if the colour, texture or tooling does not match the historic mortar or is not compatible with the historic bricks. All repointing work on historic masonry buildings should be preceded by an analysis of the mortar and by an examination of the bricks and the techniques used in the original construction of the wall. Except for pure conservation work, the exact physical and chemical properties of the historic mortar are not of major significance as long as the new mortar:

- matches the historic mortar in colour, texture, and detailing
- is softer (measured in compressive strength) than the brick; and

- is as soft, or softer (measure in compressive strength) than the historic mortar

Water damage: The current flashing constructed and installed with numerous seams and attached to the brick with screws is contributing to the damage and staining for both the exterior and interior of the church. The flashing needs to be redone to eliminate the seams with a new cap flashing over brick wall, embedded in brick with gum lip, covering waterproof membrane, made up of a single piece with no seams except upright seams at corners only.

Concrete: Restoration and Rehabilitation (Maintenance - within 5 years)

The above ground basement concrete's stucco and its integrity needs to be closely examined by a masonry contractor in light of the variety of patches and the water and staining to ensure it is bonding properly to the concrete.

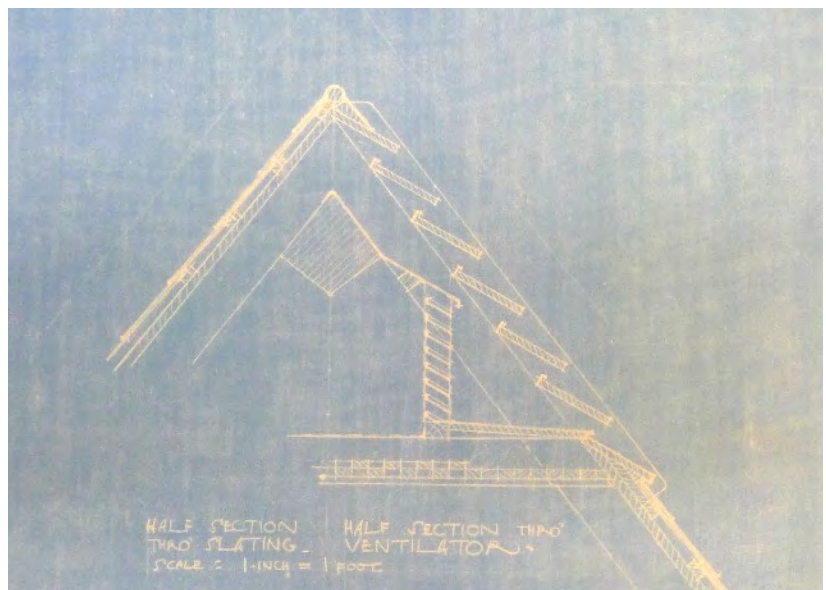
Roof: Restoration (Replacement) (Priority # 1 within 1-2 years)

When built, Christ Church had a slate roof that was replaced in 1968 with the existing metal shingle installation. A new roof needs to be installed. Holy Family Church on the same block offers an example for the new roof with their synthetic roofing slate installed in 2007, using Galveston Light Grey 'full slates' manufactured by Authentic Roof which is made of a proprietary thermo-polymer olefin compound to look like natural slate. (<http://www.authenticroof.com/cms/products/general>)

A new roof would allow corrective action to be taken on the flashing details at the gable ends to stop the water damage seen on the exterior and interior of the building.

Within the structure of a new roof better, effective insulation could be introduced for the sanctuary, justifying the removal of the interior foam panels on the ceiling which have not proven to help in heating costs or comfort level since they were installed. These panels could be reused in the rectory or in any future accessory buildings behind it. Removing the foam panels would reveal the original diagonal tongue and groove ceiling.

In reroofing, study the 1910 blueprint that illustrates roof vents on the north roof plane (see photo on the right) and look for them underneath the metal roof. Ideally, these or a similar venting system should be reinstated by the roofing contractor in the new roof.



Cross: Preservation and Restoration (linked to Priority # 1 within 1-2 years)

When redoing the roof, remove the cross temporarily to inspect its condition better. The original plans for the church call for a stone cross at the gable peak which appears to never have been installed. The current metal-clad wood cross illustrates the design specified by Egg & Haldane, but is a much lighter construction. Remove wood portions from the metal-bolted frame and paint the cross with rust-retardant paint. Consider installing LED lights to internally illuminate the metal shell. Ensure the cross is solidly bolted to the new roof. Consider restoring a second cross to the peak of the covered entrance, as seen in the archival photo from 1970.

Soffit: Restoration (Repair) (Maintenance - within 5 years)

Inspect the soffit and refasten any loose boards and replace any missing trim pieces in-kind, in the same profile and dimension as the original, in pre-primed and painted wood. Prep, prime and paint the entire soffit area.

Windows (Restoration) (Maintenance - within 5 years)

Inspect wood window sash on the interior and exterior. Ensure that all openable portions of all windows are functioning properly and are not painted shut. Repair and repaint any sash areas that require it with the aid of an experienced historic window contractor or carpenter. If any windows are identified as needing major repairs, have them removed to a window repair shop with experience in historic windows, for proper attention. The Lexan coverings have aged due to exposure to sunlight but are in good condition overall. These should be checked to ensure they are fastened securely and are free of cracks.

The art glass windows should be given a careful inspection to confirm their condition. It is important to work only with a stained-glass professional for any assessment, testing, cleaning or repair interventions. Do not allow non-specialized trades or parishioners to have any physical contact with the windows without consulting such a professional, even for routine cleaning.

Consider restoring and enhancing the visibility of the two feature windows on the facade elevation, by illuminating the art glass window in the covered entrance and uplighting the large painted arch window at the gable. Certain lighting treatments at that large window could even illuminate the wood ceiling structure and be seen outside at night.

Any replacement of the Lexan panels in the future should be done with careful consideration to achieve good protection of the historic windows without creating condensation or damage. Condensation was a concern when the current Lexan panels were installed, so 1/6" rubber washers were used to space the Lexan slightly from the wood at each screw to permit airflow. No condensation has been observed.

Protective panels for stained-glass windows

A variety of protective glazing materials are available. They include polycarbonates, acrylics, laminated glass, plate glass, and tempered glass. The plastic products are very strong, lightweight, and relatively easy to install, but will scratch, haze, and yellow over time, despite UV inhibitors. They also have a high coefficient of expansion and contraction, so the frames must be designed to accommodate change induced by temperature fluctuations. Poor installations in restrictive frames cause distorted reflections from bowing panels and often damage the historic frame. Protective panels of glass are heavier and more difficult to install, making them more expensive than plastic. However, glass will not bow, scratch, or haze and is usually the best option in aesthetic terms; laminated glass provides additional impact resistance.



A common error in installing protective glazing is to create a new window configuration (see photo above). Insensitive installations that disregard the original tracery destroy the window's aesthetics—and the building's. On this pair of neo-gothic church windows, the aluminum frame grid used for protective glazing disregards the original tracery of the window on the left. The grid mars the appearance of the window inside and out. It also impairs the overall historic character of the building. The plastic storm glazing has been removed from the adjacent window to restore the original window appearance. When protective glazing is added, it should be ventilated. If a window is not ventilated, heat and condensation may build up in the air space between the ornamental glass and the protective glazing (creating a "greenhouse effect").

Protective glazing should be installed in an independent frame between $\frac{5}{8}$ " (16mm) and 1" (25mm) from the historic glass. This allows the protective panel to be removed for periodic maintenance of both the historic window and the new glazing. The conditions of the air space

between the two layers should be monitored on a regular basis; condensation should never collect on the window.

No ideal formulas have been developed for venting the air space between the ornamental glass and the protective glazing, but it is typically vented to the outside (unless the building is air conditioned most of the year). Generally, a gap of several inches is left at the top and bottom when glass is used, or holes are drilled in the protective glazing at the top and bottom when polycarbonates and acrylics are used. Small screens or vents should be added to keep out insects. Finally, it is important to realize that most original plating was “rough plate” or “ribbed” and never had a modern polished reflection. Some glass tinted the transmitted light intentionally, as originally designed: in this case any new or replacement plating should simulate this effect to respect the artisan’s intention.

Church Interior: Rehabilitation and Restoration

Heating - (Priority # 3 within 3 years)

Replace old furnace with high-efficient boiler and install radiators along the south wall in place of the old furnace duct. Radiant heat is the original form of heating for this building and the only effective method to heat such a large space. Radiant heat is also silent, while the current furnaces are very disruptive to the churches activities and services. Consider installing a boiler that will have the capacity to heat the north side as well when the newer furnace comes to the end of its life. When the second furnace needs replacing, convert the north side to radiators as well.

Ceiling - (Priority # 3 within 3 years)

Restore the visibility of the original wood ceiling by removing the foam panels, once one of the furnaces is replaced with a boiler. Reuse foam panels in other church projects.

Research Resources

BC Archives: Archival photographs, Fire Insurance Plan for Fernie 1922-1956.

British Columbia directories

Canada Census for 1901, 1911 and 1921

Christ Church 75th Anniversary (1973) booklet

Christ Church archive: Historic documents, photos and original blueprint drawings for the church building

Fernie Historical Association. 1967. Backtracking With Fernie Historical Association.

Fernie Museum: Archival photographs, Inventory listing for Christ Church and Rectory

Fernie Free Press Souvenir Editions Christmas 1902 and 1905. UBC Special Collections.

Fernie Progress magazine. 1909. Vancouver Public Library Special Collections.

Fernie and Idaho archival newspapers (newspaper articles from Fernie Ledger, Fernie Free Press and other archival editions)

Lambeth Jeune Dang Research Group. 1979. A Survey on Heritage Buildings in Fernie.

NPS National Historic District evaluation form for Sandpoint, Idaho

Preservation Brief #33 - The Preservation and Repair of Historic Stained and Leaded Glass (Technical Preservation Services—US National Park Service)

Saskatchewan Heritage Foundation Brick Masonry Conservation Bulletin

Site visit September 11, 2018

Vancouver Daily World - archival newspaper