

April 28, 2021

Re: Engineers Report on Facility Structure  
with a maintenance and repair schedule



Dear Parishioners,

Attached is a 4 page document which is a condensed version of the original 16 page structural engineer's report regarding the current state of repair of the structure of St. Peter's facility. The report details damages to St. Peter's and suggests a schedule for maintenance and repairs over the next 10 years. Thank-you to all who were able to contribute to assist paying for this report.

Below is the complete list of the recommended repairs and maintenance, beginning with the most urgent:

- Installation of a temporary supports for center roof beam to prevent structural failure before and during repairs. This needs to be erected **as soon as possible before any work begins.**
- Reframing of north sanctuary wall must be completed **before next winter.**
- Window replacement program is recommended to be completed **within 3 – 5 years** in conjunction with the full building re-cladding program.
- A full building re-cladding program is recommended within the **next 3 - 5 years.**
- When the roof requires re-shingling next it is recommended that a new roof assembly be designed to mitigate condensation. A full hygrothermal analysis may be conducted at that time to determine the appropriate design. At that time the existing eavestrough should be replaced with 5" gutters including upstand flashings to adequately collect water runoff from the roof.

Anyone wishing to obtain a copy of the full 16 page engineer's report can contact [Norbert](#). This project requires careful coordination with multiple agencies and various trades. Some of the work will be undertaken by parish volunteers. As this project gets underway we will keep everyone apprised of the decision process as it unfolds during the various stages of construction.

In regards to the urgent reframing of the north sanctuary wall, JRS Engineering has been contacted for the required engineering and construction oversight, they estimate their costs to be \$18,100. We have contacted the Diocese to assist with funding of this unexpected urgent repair. The construction costs of the repair will be an additional expense.

We invite you prayerfully consider how you can cheerfully assist with these unexpected urgent structural repairs, with:

- A donation clearly identified for the CAPITAL FUND, and
- Time and talents as there are opportunity.

Still in One Peace,

A handwritten signature in black ink, appearing to read 'Norbert Haukenfrers'. The signature is fluid and cursive, written over a light blue background.

The Rev. Dr. Norbert Haukenfrers  
On behalf of the Corporation and Council

## STRUCTURAL ENGINEER'S REPORT – CONDENSED – ST. PETER'S ANGLICAN CHURCH, OKOTOKS

This document is an **extremely** condensed and simplified version of the 16 page engineer's report regarding damage, deficits and remedy recommendations for the structure of St. Peter's Anglican Church, Okotoks. Please refer to the original document for full professional details written in industry nomenclature which is available upon request.

### **SECTION ONE – QUICK OVERVIEW OF MAJOR STRUCTURAL COMPONENT ISSUES**

(1) AREAS ASSESSED: gypsum wallboard, vapour barrier, studs, plywood, sheathing, building paper, stucco

(2) ENGINEER'S OBSERVATIONS:

\*It was observed that the stucco is replaced with exterior insulation and finish system (EIFS) which **varies from the original design**. The walls also feature architectural build-outs using varying depths of expanded polystyrene (EPS) rigid construction. In addition to this, no through wall flashings exist at transitions to build-outs.

\*The result of all the above alterations is that the **top surface of the build-outs have been exposed to water and are deteriorating significantly**. Deterioration and staining were also observed on the face of the build-outs emphasizing the degree of damage currently in progress (see Photo #1 in original report).

\*The wall base parging on the rigid insulation is also deteriorating.

\*The observed stucco finish and rigid insulation has been significantly damaged due to woodpeckers at various locations on the exterior.

\* The South Courtyard Elevation shows dark discoloration on interior gypsum at wall base in isolated locations. **Elevated moisture readings of 19 to 24% (normal is 8 to 14%)** were found. **THIS REQUIRES URGENT ATTENTION**. There is also an observed ant infestation in this area.  
(See Photos #1,2,3,4)

(3) EXPLORATORY OPENINGS:

\*Opening #1 (Photo #5) – Test holes showed **ALARMINGLY HIGH MOISTURE READINGS** (21.5 to 24%), so an opening was made to examine building envelope components. What was seen is as follows:

- 1 layer of 30-min building paper behind a minimum 1 inch thick insulation.

-Vycor self-adhering membrane was applied from the sheathing to window frames at the sill and jambs, and was applied over the leading edge of the through-wall flashing at the head (see section 2.3 Windows). Rigid insulation and building paper extends up behind soffits at the soffit to wall transition.

-Sheathing was removed next to the window in order to examine Wood Framing.

**DETERIORATION OF WOOD STUDS AT THE BUILDING CORNER WAS OBSERVED.**

-More ant activity seen here also

-Wall framing and fasteners also observed to be corroded under sheathing next to window (Photos #6 and 7).

(4) OVERALL IMPRESSION AND FINDINGS OF STRUCTURE:

- High moisture
- Significant water damage to structure in specified areas
- Insect and woodpecker damage

(5) OPINION/ASSESSMENT RE: STRUCTURAL COMPONENTS:

EXISTING WALL ASSEMBLY:

- (a) Does not handle moisture
- (b) is showing signs of deterioration in cladding components and wood framing
- (c) will continue to degrade significantly.

**A FULL RE-CLAD SHOULD OCCUR IN THE NEAR FUTURE (3-5 years)**

THE NEW WALL ASSEMBLY:

(a) Must be designed to adequately shed water from the exterior and to manage interior condensation from moisture laden air (There is robust evidence of water contact on wood framing). (b) Wall assembly must also be designed to shed water from the exterior using PROPER through wall flashings and detailing at transitions. A cladding material such as fibre cement or metal cladding should be used for this purpose. This will also ELIMINATE woodpecker damage.

MAJOR STRUCTURAL RECOMMENDATIONS: **A full building re-cladding program should be undertaken in next 3 to 5 years.** It must manage moisture. The program should coincide with window replacement for cost efficiency and ensure adequate transition detailing.

**SECTION TWO - QUICK OVERVIEW OF WINDOW ISSUES**

(1) DESCRIPTION OF WINDOW SITUATION – The current window units are aluminum-clad wood and are 28 years old with an expected life span of 30 years. Replacement is imperative.

(2) EXPLORATORY OPENINGS – (Wall behind Altar and stained glass) **Significant water damage** was found beside the windows at the ‘peaked’ north -east building corner (Photo #10). The wood here was found to be **saturated and crumbling**. Wood studs here are structurally compromised.

- Water paths were observed running from failed window seals with resultant water staining and deterioration on the east and west side of this building corner indicating compromise to structural framing (Photo #11)
- Paper and caulking were **improperly done** leaving no opportunity for drainage outside the wall assembly. (see Photos # 10,11,12 to view extent of damage)

## (3) ENGINEER'S OPINION OF WINDOW AREA (NORTH-EAST)

- Current ganged windows are at high risk of significant leakage at transition between window sections
- Leaking plus zero drainage to exterior is causing damage to wood framing beneath sills
- **SEVERE DAMAGE** is currently evident in north-east building corner via exploratory openings suggesting **structural compromise** of the north-east building corner at varying levels of severity.(wall behind altar)

## (4) URGENT PROFESSIONAL RECOMMENDATIONS FOR WINDOW AREA AND AFFILIATED STRUCTURES

- It is recommended to **replace deteriorated framing WITHIN SIX MONTHS**. The corner post which supports the central roof beam is compromised and roof loads are currently being improperly transferred. This situation must be rectified or else excessive wind/snow could cause **structural failure**. A temporary central roof beam support should be considered, and will also be needed before work begins.

**SECTION THREE – A QUICK OVERVIEW OF ROOF ISSUES**

## (1) ENGINEER'S VISUAL OBSERVATIONS OF ROOF:

- The roof was viewed from the ground level, from the attic and from drywall openings.  
THE NORTH-EAST CORNER of the CONGREGATION AREA VAULTED CEILING:
- Batt insulation was installed tightly to the underside of the roof sheathing leaving NO AIR SPACE for air movement between soffits and ridge vents (Photo #15). Exacerbating this is the extension of exterior wall sheathing in such a way as to prevent/eliminate ventilation in the roof system.
- Water staining is evident on wood rafters and fascia framing at end of roof eave (Photo #17) indicative of heavy condensation running down the sloped roof.
- The original design called for wood shake shingles which would have allowed for a higher drying potential and longer roof life. As is, the asphalt shingles counter this process.
- Subsequent addition of rafters and sheathing to extend eaves does not represent original design and the four inch metal eaves trough installed at roof edges is INADEQUATE to properly manage runoff from such a highly sloped roof.
- The interior of vaulted ceilings in the congregation area shows frank evidence of drywall staining (Photo #19). This occurs in colder weather and high condensation conditions
- Truss surfaces also show similar staining.
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## (2) ENGINEER'S OPINION OF ROOF

- The existing roof assembly DOES NOT MITIGATE the potential for condensation
- There is no ability for existing air to flow freely in the roof area due to

- (a) complete lack of air gap between insulation and sheathing,
- (b) the relatively high slope (12:12) encourages condensation to flow down sheathing
- The existing roofing can be expected to perform with only relatively minor damages for the foreseeable future. A NEW ROOF DESIGN should be implemented during the next re-roof (pending further review to determine appropriate design for new roof).
- N.B. \*\* It is recommended that the new roof design replaces eavestroughs with 5 inch gutters and upstand flashings to adequately collect run off.

#### **SECTION FOUR – QUICK OVERVIEW OF GENERAL CONCLUSIONS AND RECOMMENDATIONS**

##### (1) SUMMARIZED FINDINGS

- URGENT – Structural remediation and a full re-cladding of east and west walls at the North-East corner MUST BE COMPLETED IN IMMEDIATE FUTURE (within 6 months).
- CENTRAL ROOF BEAM – Needs to be provided prior to start of work to reduce risk of structural failure.
- Full building recladding within 3 to 5 years (in conjunction with window replacement)
- New wall must be designed to handle moisture
- During next roof replacement – implement a new roof assembly with adequate ventilation and condensation mitigation

\*\* Remedial repair strategy – several options available with several issues to consider. See Engineer's original report Section 3:1 page 13.

##### (2) NEXT STEPS

- Design development, construction, documents, building permits, tendering (it is at this point the board can request a special assessment in order to vote on raising funds required to complete the repairs)
- Field services and contact administration, project close out.

The ORIGINAL report was prepared by JRS Engineering for St. Peter's Anglican Church. Findings are based on visual review – more structural deficits may exist that were not observed.

Lmv-l