**Komri Engineering**
166 Douglas St, Unit 2
Sudbury, Ontario
P3E 1G1

**May 20th, 2024**

**Work Order: KSI-024-110**

**St. Stephen Martyr Church**
64 W Arlington Drive,
Dowling, ON
P0M 1R0

**Attention:** Diane Laurin

# 1. Introduction

Komri Engineering was retained by Diane Laurin to perform an assessment of the roof of St. Stephen Martyr Church located at 64 W Arlington Drive in Dowling, Ontario. It is our understanding that the building was renovated in 1998 and has been leaking since shortly after renovations were complete.

We have reviewed the structural components directly referenced in this letter and have provided some conclusions. No recommendations are provided for any structural or aesthetic components not explicitly listed in this report.

This letter shall be read in its entirety and no individual elements shall be taken out of context of this letter. Only approximate calculations were performed with regards to building code requirements. These calculations are not all inclusive and, due to incomplete design information, may not be fully representative of the actual conditions. No material testing was performed as part of this scope.

## 1.1. Documentation

Drawings from the renovation which was completed in 1998 have been provided for our review, along with images taken during the construction process. Provided photographs from construction with significance with respect to the roof leaking are included in Appendix A.

## 1.2. Site Investigation

An initial site visit was performed by Karim Omri of Komri Engineering and Diane Laurin. This visit took place on April 15th at 2:00 pm with an average temperature of 11°C and partly cloudy weather.

During the visit, visual inspections of the structures were performed in which photographs were taken and are included in Appendix B.

# 2. Summary of Visual Inspection

## 2.1. Construction Photographs

1. Metal roofing was installed on the building around the steel framing of the bell tower *(Figure 1).*
2. There is no flashing around the steel columns supporting the bell tower *(Figure 2).*
3. At the time of installation, there were no snow stops installed to the metal roofing *(Figure 2).*

4. Members of the community of Dowling volunteered to assist in the construction and renovation of the church in 1998.

### 2.2. Site Visit

1. There was no visible flashing installed around the 8" steel columns which support the bell tower.
2. The building had snow stops installed to prevent snow and ice from sliding off the roof.
3. Water damage was visible in multiple spots in the south of the building beneath the bell tower *(Figures 3-8).*
4. There is a crack in the gypsum board at the ridge and various locations of the building *(Figure 9).*

## 3. Discussion

### 3.1. Construction Prints and Photographs Discussion

When the building was renovated in 1998, it was finished with metal roofing. The support structure was installed before the metal roofing was installed as seen in *Figure 1*. Due to the order of construction, the metal roofing would have been cut to fit around the steel columns. This method of installation is susceptible to leaking at the seam where the roofing was cut if not sealed and flashed properly. In *Figures 1-2*, there is no flashing visible around the steel supports for the bell tower.

When reviewing the photographs from 1998, and discussions with patrons of the church, it is evident that the renovation was done by members of the community. It is likely that not all who assisted in the construction were experienced nor qualified to perform the work required. This may have led to inconsistencies in installation such as missing flashing and caulking, improperly installed or placed metal roofing fasteners.

### 3.2. Site Visit Discussion

When discussing with the client on site, it was mentioned that the building began to leak shortly after the renovations were completed in 1999. The leaks have historically been concentrated in the southern end of the building, close to the steel columns which support the bell tower. Due to the continuity of the channels through the roofing, there is reasonable likelihood that many of the leaks in the metal roofing stem from this area.

Snow stops, which were not seen in the original installation in 1998, had been installed at some point between the renovation in 1998 and the time of inspection by Komri Engineering. The addition of snow stops may result in additional loading which the building was not originally designed for, as well as allows for snow and ice to pile on the roof. The quality of the installation of the snow stops are unknown as well due to a lack of record of the installation date, contractor, or inspection.

A crack was observed at the peak of the roof on the interior of the church, although not visible while on site, it was mentioned that the crack extends the length of the building. Without removing some of the interior finish it is difficult to determine the origin of the crack.

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## 4. Conclusion

Based on our assessment at this time, the roof of the church is leaking due to a combination of poor installation of the waterproofing materials and metal roofing. The leaking is concentrated in the south of the building below the bell tower due to the likely lack of adequate flashing between the bell tower supports and adjacent metal roofing, but the poor installation is likely seen throughout.

Komri Engineering suggests having a competent contractor repair the metal roofing to ensure proper installation and no leaks as well as provide adequate flashing in all locations, especially around the bell tower. This contractor shall be experienced and provide Komri Engineering information about the existing roof to ensure that water damage has not extended to cause structural concern. During the repairs, Komri Engineering or another licensed professional engineer shall be retained to ensure the adequacy of the structure to keep performing.

Report written by Carter Michaud


Report reviewed by Karim Omri, M.A.Sc., P.Eng. – Consulting Engineer

### Disclaimer

Every effort has been made to produce this report with the most current information at the time of its writing. The professional opinions put forth are based on the best engineering judgement based on the available information. Where information was lacking, reasonable assumptions were made. Komri Engineering can not be held liable for any errors or omissions in this report and cannot provide any warranty in connection with the use of this report. Komri Engineering reserves the right to amend or change the report should any further information become made available.

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# 5. APPENDIX A – Construction Photos (1998)

*Figure 1 - Installation of metal roof (1998)*

*Figure 2 - Installation of metal roof (1998)*

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# 6. APPENDIX B – Site Visit Photos

*Figure 3 - Previous repair / leak in south-east corner of church*

*Figure 4 - Previous repair / leak in south-west corner of church*

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*Figure 5 - Previous repair / leak on south wall of church*

*Figure 6 - Previous repair / leak on south wall of church*

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*Figure 7 - Previous repair / leak in south-east corner of church*

*Figure 8 - Previous repair / leak at emergency exit of church*

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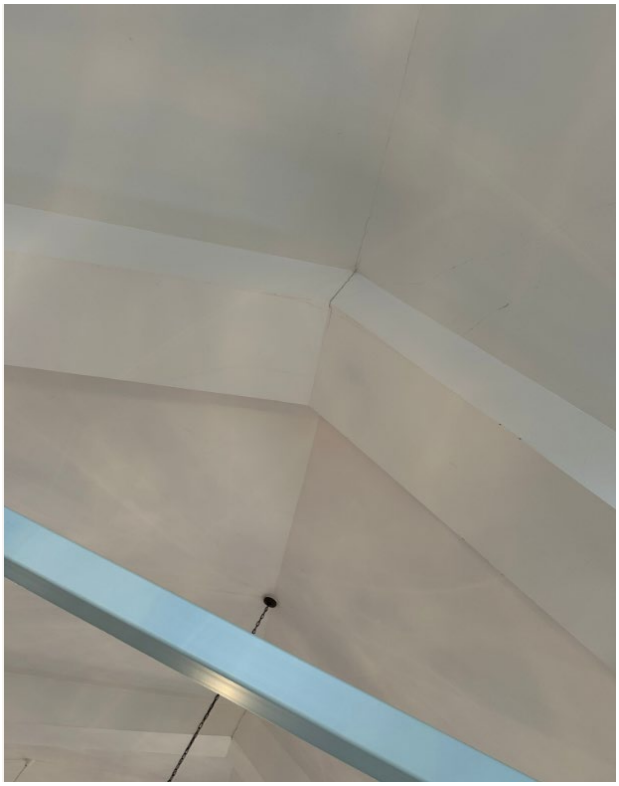

*Figure 9 - Crack at ridge of building*