

Attn: Brian McKay, LKDSB Associate Director & Treasurer
Lambton Kent District School Board
200 Wellington Street
Sarnia, Ontario, N7T 7L2
Date: November 21, 2022
Re: **Brooke Central PS – Structural Upgrades**
BGAI Project No: 222727

On November 16, 2022, Burkhart Gilchrist Architects Inc. (BGAI) issued a structural evaluation report done by DC Buck Engineering for a roof membrane replacement project intended for the summer of 2023 at Brooke Central Public School. In this report it was determined that the 1960s and 1967s portions of the school roof do not meet current code design criteria and it was stated that the roof supports must be upgraded. This report initiated a number immediate follow up conversations and meetings which has led to the decision to close the school to upgrade the roof supports.

How we got here:

The original 1960s and 1967s buildings were built in an era without enforced building codes in Ontario. These portions of the building roofs were designed without snow loads or safety factors being accommodated in the designs.

In 2002 the school board commissioned a roof structure evaluation of the 1960s and 1967s roof areas. The results of this report led to partial structural upgrades in a small portion of the 1960s roof area. This report would have been based on the 1997 Ontario Building Code. There have been two code revisions since this report, the 2006 and the current 2012 codes, in which the snow load requirements have been increased. The Ontario Building Code does not require existing buildings to be upgraded to current code when the building codes change.

Earlier this year (2022), LKDSB commissioned BGAI to lead the design and tendering of replacing the roof membrane and insulation of the 1960s and 1967s portions of the building. Due to the recent supply chain issues of materials, the school board requested changing the roof membrane type to a material that might be more readily available and to upgrade insulation to current environmentally sustainable code requirements. This system includes a heavier membrane, insulation, and a ballasted roof system. Due to this planned increased load, BGAI commissioned DC Buck Engineering to do a structural analysis to determine if the existing structure could handle the additional loads. In the evaluation, DC Buck determined that the existing structure with the existing roof membrane does not meet current design criteria, even without any changes. It is postulated that the reason this roof system has not seen any issues is due to the lacking insulation, the snow is melting from the escaping heat of the building and draining the water away from the roof.

The establishment of codes and the changing of codes to address increase severe climate changes has been a leading factor in highlighting the current issue. At this point it is preemptive action that is recommended to avoid a potential future problem.

Immediate Actions:

On the same day this structural report was issued to LKDSB, a follow-up meeting was held between LKDSB representatives, BGAI, and DC Buck Engineering. The level of concern and safety in continuing to operate within the building was discussed.

A short-term roof monitoring approach was proposed by LKDSB to facilitate moving students to other locations, emptying the school of contents, and to get the architect, engineers, and contractors in to do the work to fix the problems. This short-term monitoring is a reasonable approach to address the issues, but not recommended for a long-term solution. It was recommended that these roof supports be upgraded as soon as possible.

LKDSB and BGAI agreed that a General Contractor should be engaged to approach this project as a design-build project. This is the most reasonable approach to move this project forward quickly and efficiently. Once LKDSB can empty the school, the General Contractor should be in place to start removing ceiling tiles to assist the architect and engineers in further site investigations.

Proposed Next Steps:

BGAI will engage meetings early this week with the engineers and contractor to discuss the work. Existing documentation, further reports, and meetings are required to determine the best approach for the project. This discussion will include assumptions for design work, ordering materials, supply chain delivery expectations, and construction work schedules.

As a precautionary measure, the DC Buck Engineering is evaluating the remaining roof structures in the building. These areas are the raised roof portion in the 1960s section of the building and the roof of the 2007 addition of Gymnasium and Daycare. Results of these reports will assist LKDSB in decisions regarding the daycare program.

We are in the early days following the discovery of the problem. We want to assure LKDSB and the families of Brooke Central that, as far as it depends on us, we are prioritizing this project to remedy the problem and to restore the Brooke Central families back to this school in the shortest time possible.

Best Regards,



Ruth Burkhart
Architect | OAA | RAIC | M.Arch. | LEED AP