



# K. SMART ASSOCIATES LIMITED

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February 4, 2022

File No. 22-065

Mark Jeffery, C.E.T.  
Senior Engineering Technologist  
Township of Wilmot  
60 Snyder's Road West  
Baden ON N3A 1A1

**RE: STRUCTURE 34/B-T9 (BRIDGE STREET BRIDGE)  
RECOMMENDATIONS FOLLOWING EMERGENCY CLOSURE  
TRAFFIC ACCIDENT AND FIRE ON BRIDGE**

Dear Mark;

As a follow-up to your request to complete an emergency inspection of Structure 34/B-T9 (Bridge Street Bridge) following a traffic accident on the bridge, we offer the following.

It is understood that a collision involving two vehicles took place on the bridge on the morning of February 2<sup>nd</sup>. The bridge was affected by the collision and vehicle fire. The road was closed under emergency order at the time of inspection. After the inspection we confirmed via e-mail and telephone conversation that the bridge should remain closed unless significant repairs are made.

Our inspection in the morning of February 2<sup>nd</sup> revealed the collision and fire caused damage as follows:

**South Side**

- Second bay from east: some damage to the railing
- Third bay from east: railing is completely destroyed
- Third bay from east: diagonal structural members are severely twisted and deformed. The inner diagonal structural member is broken near the bottom connection
- Seventh bay from east: has heavy damage to the railing

**North Side**

- Third bay from east: the railing panel is bent outwards
- Fourth bay from east: heavy damage to railing with broken pieces
- Fourth bay from east: structural members blackened by fire
- Fifth bay from east: minor damage to railing panel
- Fifth bay from east: minor damage to vertical structural member

**Deck**

- The concrete deck has a large black area from the fire. Much of this area is covered in fuel absorbent material so observation was limited to several hammer soundings.

Unrelated to this accident, the overhead portal bracing has seen impact(s) again since its repair in October 2021. There is a bend in one member at the northwest. Most of the signs have suffered from various impacts.

In closing, the vehicle impact caused major damage to a main load carrying member of this bridge as well as to the barrier / railing system at several locations. The damage inflicted to the diagonal members at the third bay from the east on the south side severely reduces the structural capacity of the structure. The areas of severe railing damage make the bridge unsafe for public use. The concrete deck does not appear to have suffered damage, however it was covered with fuel absorbent so the inspection was very limited. Any possible damage to structural members from exposure to direct heat from the fire cannot be assessed through a visual inspection alone.

Minimum repairs required for a re-opening of this crossing would involve placing new steel railings at two areas of the most severe damage and the replacement of the diagonal structural members at the third bay from the east on the south side. Reinforcing the vertical member on the north side should also be considered. We propose that the new railing need not match the lattice work steel for this temporary repair. The estimated construction cost for these repairs would be approximately \$35,000 to \$50,000. The estimated engineering fees for design, preparation of drawings and specifications for tender, and review of repairs is estimated at \$10,000 to \$15,000. (The ranges are due to the very preliminary nature of the scope of work required at this time)

Given that this bridge is scheduled to be replaced and that replacement could start as early as July 2022, the Township needs to decide if repairs are even warranted. In addition, the Township also needs to decide if they wish to pursue an insurance claim.

It is our recommendation that this bridge remain closed to traffic and the public until repairs are completed or the bridge is replaced.

Please find following this page several photos of some of the damaged areas.

If you have any questions concerning the above, please contact the undersigned at any time.

All of which is respectfully submitted.

Yours truly,



Trevor Hoard, C.E.T.

cc Jeff Molenhuis, P. Eng. Director of Public Works



South Side, third bay from east end - Severe damage at railing panel and diagonal structural member.



South side, third bay from east end – damage at diagonal structural member. Interior angle is completely broken above connection plate location.



North Side, fourth bay from east end – heavy damage to railing panels. Also note blackened area at deck and structural members.



North side, fourth vertical from east end – note blackened areas from vehicle fire



North side, fifth vertical from east end – minor deformation of vertical member from impact