



September 19, 2023

Project No.: 23-026

Municipality of Lakeshore
Operations – Public Works
419 Notre Dame Street
Belle River, Ontario
N0R 1A0

Attention: Mr. Jeff Wilson, Division Leader – Public Works

Re: Shanahan Park Gazebo – Structural Inspection & Assessment

Dear Mr. Wilson:

Further to our recent discussions, this is to confirm that we have completed our inspection and assessment of the Municipality of Lakeshore's gazebo structure in Shanahan Park, on the west side of Lakeshore Road 203. Our findings and recommendations are presented for your consideration below.

Background

Based on our discussions with Lakeshore staff, it is our understanding that the existing timber-framed gazebo structure in Shanahan Park (1465 Lakeshore Road No. 203) was originally constructed by a local volunteer group approximately 30 years ago (i.e., circa 1993). Since the time of construction, there has been minimal maintenance and/or modifications made to the structure. We understand that recent concerns regarding the condition and structural integrity of the gazebo framing have led the Municipality to erect temporary fencing around the structure in an effort to limit public access.

In an effort to address the Municipality's concerns regarding the condition of the gazebo structure, Landmark Engineers was retained to carry out an inspection and structural assessment. Our findings and recommendations are outlined for your consideration below.

2280 Ambassador Drive
Windsor, Ontario
Canada
N9C 4E4

Phone:
[519] 972-8052
Fax:
[519] 972-8644

www.landmarkengineers.ca



Professional Engineers
Ontario

Inspection & Observations

On 31 August 2023, we attended the subject site in Shanahan Park to carry out an inspection of the existing gazebo structure and assess its structural condition. A series of photographs, documenting our observations are appended to this report for reference purposes.

Over the course of our inspection, we noted the following:

- This existing gazebo structure generally consists of a round-timber frame, supporting a cut-timber and plywood roof structure, covered with asphalt shingles (see Photo #1);
- The four timber posts that serve as the primary supports for the existing structure were embedded into the ground as part of the original construction, with a concrete surface slab poured around each post (see Photo #2 & Photo #3);
- The embedded timber posts are exhibiting significant rot and loss of section at ground level – with the two posts on the north side of the gazebo having the most severe deterioration (up to 3” in depth). Gentle probing of the wood near the base of the northwest post (using a ballpoint pen) resulted in significant splintering of the existing timber surface (see Photo #3);
- The horizontal round-timber framing members and strut supports generally appear to be in fair condition, with significant cracking and checking noted in several members (see Photo #4, Photo #5, Photo #6 & Photo #7);
- The existing steel bolts and plates that form the primary connections between the round-timber framing members of the gazebo are exhibiting moderate corrosion over their exposed surfaces, but generally appear to be intact (see Photo #4 & Photo #5).
- The existing roof structure generally appears to be in good condition, although significant weathering of the rafters and plywood roof sheathing was noted (see Photo #4, Photo #5 & Photo #6); and,
- The existing roof shingles generally appear to be in good condition (see Photo #1).

Based on the above, we concur with the Municipality’s decision to fence off the existing gazebo until the structure can be made safe for public use.

Discussion

Based on the findings of our inspection, it is our opinion that the primary structural concern regarding the existing gazebo is associated with the rot that is occurring in the primary post supports at (and immediately below) ground level. Generally speaking, it is not recommended to embed structural timber posts directly into concrete, as a gap will typically form at the interface between the wood and the concrete and allow moisture to get trapped against the post. This tends to promote rot and leads to the deterioration of the timber over time.

To address this issue, the existing gazebo structure could potentially be repaired by temporarily supporting each post and then casting new concrete footings below, from a point approximately 600mm above existing grade down to frost depth. The deteriorated post bottoms would be cut off and then re-attached to the new footings using galvanized or stainless-steel sleeves bolted into the concrete.

While such a strategy would be feasible and would serve to address the primary structural deficiency with the existing gazebo, we would question the long-term value of pursuing such an approach. Given the cracking, checking and weathering that has been observed in the existing framing and sheathing members – and noting that the life expectancy of an outdoor timber structure can range anywhere from about 10 to 40 years, it would appear that the existing structure is already nearing the end of its usable service life.

Given the above, we would not recommend that the Municipality of Lakeshore proceed with the considerable expense of designing, constructing and maintaining a new foundation system for the gazebo in an effort to preserve an existing structure that realistically has less than 10 years of remaining service life. It is our opinion that the Municipality would be better served by simply demolishing the existing structure and constructing a new gazebo that would be in full compliance with current building code standards.

Closing Remarks

Thank you for the opportunity to work on this assignment. We trust that the above will be sufficient for your purposes.

If you have any questions or concerns regarding the above, please do not hesitate to call.

Yours truly,

Landmark Engineers Inc.



David T. Killen, M.A.Sc., P.Eng.

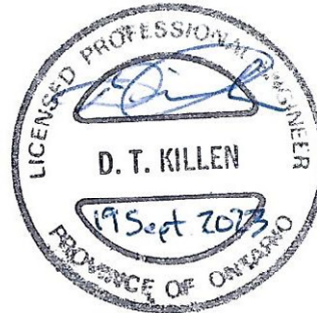




Photo #1: Shanahan Park Gazebo - General View (looking west)



Photo #2: Timber Rot at base of Southwest Post Support



Photo #3: Substantial Timber Rot at base of Northwest Post Support



Photo #4: Typical Top-of-Post Connection



Photo #5: General View – Gazebo Framing along South Face



Photo #6: General View – Typical Roof Framing



Photo #7: Significant notching, abrasion & checking on horizontal framing member