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August 17, 2023
220705-102

City of Elliot Lake
Director of Public Works
Attn: Mr. Bill Goulding
45 Hillside Drive North
Elliot Lake, ON P5A 1X5

by e-mail: bgoulding@city.elliottlake.on.ca

RE: Westview Park - Pavilion

Dear Bill,

At the request of the City of Elliot Lake, Tulloch Engineering, Inc. (TULLOCH) attended the Westview Park on August 15, 2023 to inspect a pre-engineered, steel-framed pavilion/picnic shelter which has been recently closed to the public. Our inspection aimed to identify visible signs of structural distress, determine their causes, and offer opinions as to the viability of structural rehabilitation.

From what files were available in Records (enclosed), we determined that the GAME-TIME pre-engineered shelter was erected around 1986. No drawings or details pertaining to the structure's design loads or foundation were found.

During our field investigation, we observed that the structure had a noticeable lean (4-in over 96-in of column height) to the east, along the structure's narrower axis. Excavation of a column base failed to uncover a foundation, such as a concrete pier. The column bases, which were cold-formed steel sections of tapered profile, were embedded in granular material, and were moderately corroded. The structure's purlins and roof deck had a noticeable sag, especially in the valleys of the "W" style roof profile.

Based on our observations, TULLOCH concludes that the structure has become unstable due to excessive environmental loading (snow and/or wind), inadequate or failed foundation support, loss of strength of embedded column bases due to corrosion, or a combination of these factors.

Our preliminary analysis concludes that, in the east-west direction, the pavilion would rely almost entirely on the capacity of the embedded columns to act as cantilevers, similar to a pole-barn structural system. However, an out-of-plumb condition in such a system creates increased bending stresses in columns under gravity (snow) loading, possibly exceeding the stresses for which the columns were originally designed. With cold-formed columns now leaning and bending along their weak axis (as is the case here), a sudden, catastrophic failure of columns due to buckling is possible while moderate rooftop snow loads are present.

Also, since the roof structure has been overloaded to the point of permanent deformation, it has failed in a design sense. Replacement of the roof deck and secondary framing elements would be required to ensure that ponding and premature deterioration of the roof system did not occur.

This pavilion is an early example of computer-aided structural steel design, using proprietary cold-formed steel sections. As such, post-construction analysis of such a structure would require a large amount of engineering effort to “re-create the model” to determine the pavilion’s structural adequacy when subjected to Code-prescribed environmental loading. Even if this costly analysis were to be completed, the bracing and strengthening options for such a structure, which has failed along its weakest axis, are limited. Thin-walled cold-formed steel sections are prone to localized failure and buckling, making traditional knee-bracing or cross-bracing methods unsuitable.

Based on the above, it is the opinion of the undersigned that the Westview Park Pavilion is unsafe for occupancy and should remain closed to the public until such time as it may be safely deconstructed. It is also our view that structural rehabilitation of the pavilion would require extremely costly analysis, disassembly, foundation design/construction, replacement roof decking and frame reinforcement to ensure an outdoor public structure that is safe in all climatic conditions and has a reasonable remaining service life. This investment would likely exceed the cost of a replacement structure.

We trust that this letter is sufficient for your needs at this time, but please do not hesitate to contact us if any further questions or concerns arise.

Sincerely,

TULLOCH Engineering, Inc.



Jeff A.T. Allen, CD, MAsC, P.Eng.
Structural Engineer

JA/ja

Enclosures (1)

GameTime[®]
of Canada (1984) Inc.

57 Simcoe Street South, Suite 2E
Oshawa, Ontario
L1H 4G4
(416) 433-4212
1-800-263-3774

August 19th, 1986.

Mr. Roger Pigeau,
Chief Building Inspector,
Town of Illiot Lake,
45 Hillside North,
ELLIOT LAKE, Ont.
P5A 2Y4

Dear Mr. Pigeau,

Further to our conversation regarding GameTime metal building recently purchased by City Parks Department. Unfortunately our engineer is on holiday, and I cannot get any information you require until he comes back in early September.

When I get the required information I will forward it to you.

Yours truly,


Donald G. Wemyss,
President.

DGW/sd

Inter-Office Memorandum

FROM Roger Pigeau TO Terry Abraham, Director of
Parks and Recreation

DATE September 15, 1986 COPY TO _____

FILE NO. Westview Park COPY TO _____

SUBJECT RE: Park Shelter

Attached is a copy of the correspondence, as received from
Mr. Wemyss. Please respond to his inquiry.

/Somerton

re: reconfirming

RP/sw
Attachment

Roger Pigeau
Chief Building Official

TOWN OF ELLIOT LAKE
PARKS AND RECREATION DEPARTMENT

W. H. COLLINS COMMUNITY CENTRE
120 HILLSIDE DRIVE NORTH
ELLIOT LAKE, ONTARIO
P5A 1X6



October 17, 1986.

Game-Time of Canada,
57 Simcoe Street South,
Suite 2E
Oshawa, Ontario
L1H 4G4

Dear Mr. Wemyss,

Westview Park

The following letter is in response to your correspondence dated September 10, 1986 to Mr. Roger Pigeau (Chief Building Official) pertaining to the "Game-Time #2460 Contemporary Park Shelter".

At the present time the picnic shelter has been erected but the base foundation is of a granular material.

The Parks & Recreation Department will be budgeting to either asphalt or cement a pad beneath the shelter in the spring.

In hope the above information is what you require.

Thank you,

Yours truly,

A handwritten signature in dark ink, appearing to read "T. Abraham".

T. Abraham,
Director of Parks & Recreation

TA/mh

c.c. R. Pigeau