TORONTO

Memorandum

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To: John Livey, Deputy City Manager

From: John Heggie, Acting Chief Building Official and Executive Director Toronto Building

Re: **Review of Trump Tower Spire Response**

PURPOSE

The purpose of this memorandum is to provide a full accounting of the following facts:

1. Initial report of an unsafe building;
2. Emergency response;
3. Unsafe building order;
4. Response to unsafe building order; and,
5. Decision to re-open the roads.

This memorandum also provides a short introduction to the legislative framework that Toronto Building operates under and a brief overview of the Trump Tower building.

[redacted]

LEGISLATIVE SCHEME

The *Building Code Act, 1992*, S.O. 1992, c. 23 ("BCA") sets out the legal framework for building construction regulation. The statute establishes the duties and powers of those responsible for enforcing construction regulations, and the duties and rights of those subject to the construction regulations. Among other things, the BCA provides enforcement tools that may be used to promote compliance with the BCA. For the

purpose of reviewing the Trump Tower spire incident, it is important to note section 15.9 of the BCA, the relevant portions of which are as follows:

Inspection of unsafe buildings

15.9 (1) An inspector may enter upon land and into buildings at any reasonable time without a warrant for the purpose of inspecting a building to determine,

(a) whether the building is unsafe; or

(b) whether an order made under subsection (4) has been complied with. 2002, c. 9, s. 26.

Interpretation

(2) A building is unsafe if the building is,

(a) structurally inadequate or faulty for the purpose for which it is used; or

(b) in a condition that could be hazardous to the health or safety of persons in the normal use of the building, persons outside the building or persons whose access to the building has not been reasonably prevented. 2002, c. 9, s. 26.

...

Order

(4) An inspector who finds that a building is unsafe may make an order setting out the reasons why the building is unsafe and the remedial steps necessary to render the building safe and may require the order to be carried out within the time specified in the order. 2002, c. 9, s. 26.

...

Order respecting occupancy

(6) If an order of an inspector under subsection (4) is not complied with within the time specified in it, or where no time is specified, within a reasonable time, the chief building official,

(a) may by order prohibit the use or occupancy of the building; and

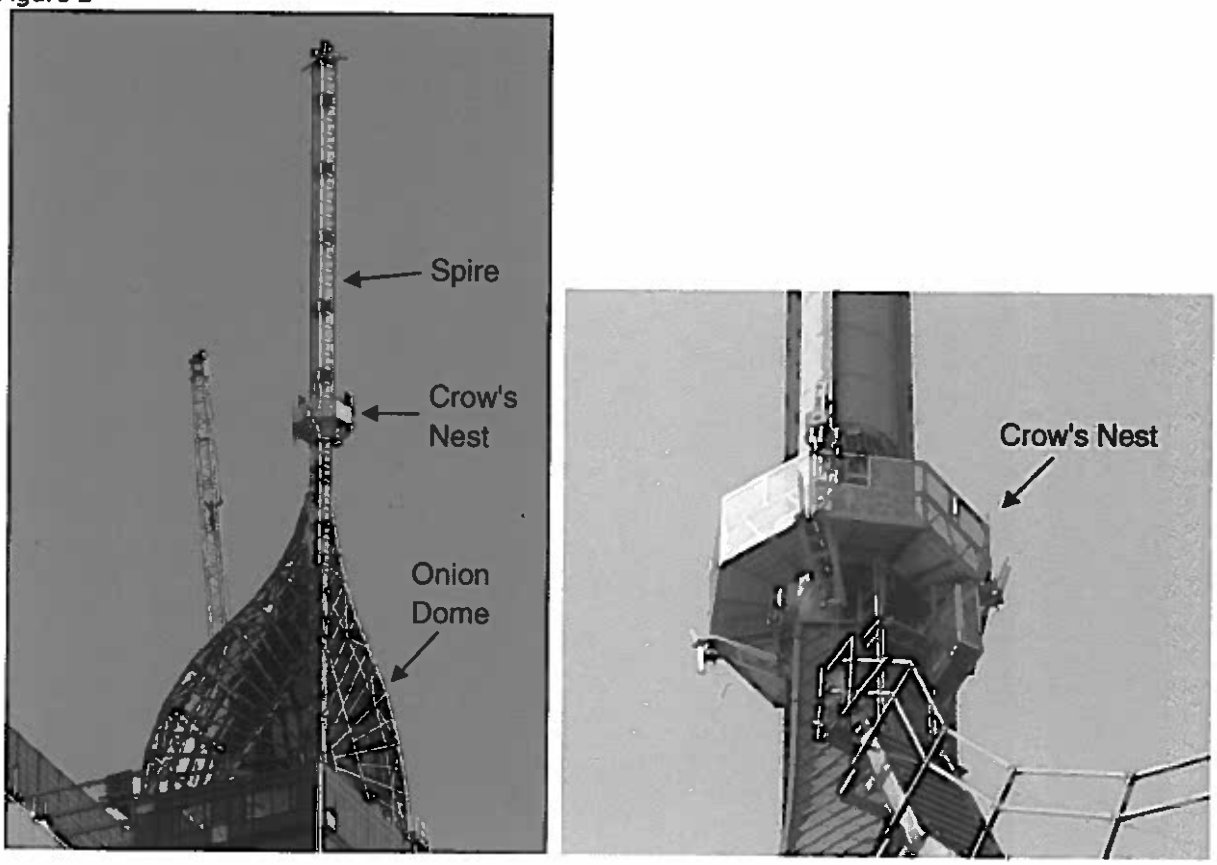
(b) may cause the building to be renovated, repaired or demolished to remove the unsafe condition or take such other action as he or she considers necessary for the protection of the public. 2002, c. 9, s. 26.

THE TRUMP TOWER BUILDING

The location and recent history of the Trump Tower in downtown Toronto is widely known. While it is assumed the reader has a general knowledge of the building, the following elements are worth noting: i) the Tower consists of 57 floors of residential occupancy; ii) the lower 34 floors are hotel use and the upper 23 floors are condominium use; and, iii) the element in question is the "spire" located on the roof level of building. (See Figure 1)

The building was originally designed by the engineering firm Halcrow Yolles which has since become CH2M.

Figure 1



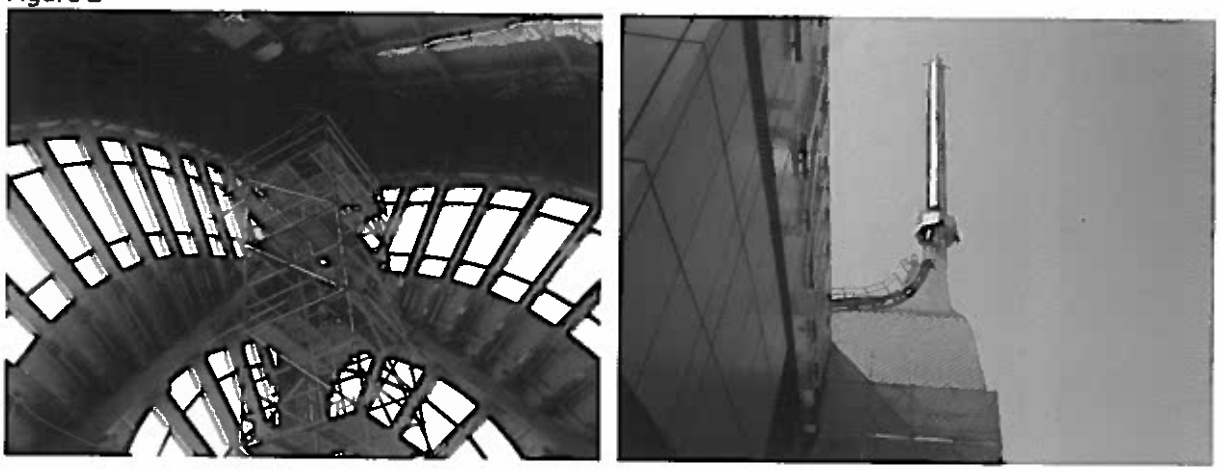
The spire is approximately 25m in height from the top of a skylight structure called the onion dome, and extends approximately 20m down to the attachment point on the roof of the building, for a total height of 45m. It is constructed of structural steel components whose design was engineered by Halcrow Yolles and fabricated, including shop drawing preparation, by Beauce-Atlas, a firm based in the province of Quebec.

1. INITIAL REPORT OF AN UNSAFE BUILDING

On August 31st at approximately 9:15 am, Toronto Fire Services (dispatch) contacted Toronto Building staff. Toronto Fire Services advised of the road closures at Bay Street and Adelaide Street West in the vicinity of the Trump Tower (311-325 Bay Street) due to concerns over the structural stability of the antennae (spire) at the top of the tower.

Concern regarding the spire was first reported by a crew hired by the building operators to carry out repair work to the roof flashing on the onion dome. The crew initially reported hearing a loud metallic scraping noise while they were inside the building under the onion dome area and around the location of the spire of the 57th floor penthouse suite. (See Figure 2)

Figure 2



The crew exited the suite to the balcony area (see Figure 2) where they witnessed the spire structure swaying and immediately reported it to the building's chief engineer. Upon conferring with the crew who reported witnessing the spire sway approximately 1.2m (4'0"), and his own eye-witness account of the spire, the Trump Tower's maintenance engineer, [redacted] proceeded to contact and advise the building's security director of the issue. In the interest of public safety, the security director contacted City of Toronto emergency services. Toronto Police Services have confirmed that they received the initial call at 7:30 am.

2. EMERGENCY RESPONSE

Toronto Building Inspection Manager, Andrew Wild, was first contacted by Toronto Fire Services ("TFS") communications at 9:15 am. He then followed up with the TFS crew chief on site. TFS requested the attendance of a Building Inspector.

Andrew Wild contacted the area Building Inspector (who was the Building Inspector during the construction phase), asking him to attend the site. The Building Inspector arrived on site at approximately 10:00 am to investigate and determine whether further action was required.

Trump Tower staff advised that the building's original design engineer [redacted] had been called to the site earlier and was in the process of following-up with engineering firms having more specialized knowledge.

3. UNSAFE BUILDING ORDER

Toronto Building staff reviewed the information available to it and issued an Order to Remedy an Unsafe Building (the "Order") pursuant to section 15.9 of the Ontario Building Code Act, 1992. The Order required the building owner and operator to immediately retain professional engineers to review the spire structure and comment on any remedial actions that may be necessary to alleviate an unsafe condition. The urgency of the matter was verbally communicated to the building owner and operator throughout the process.

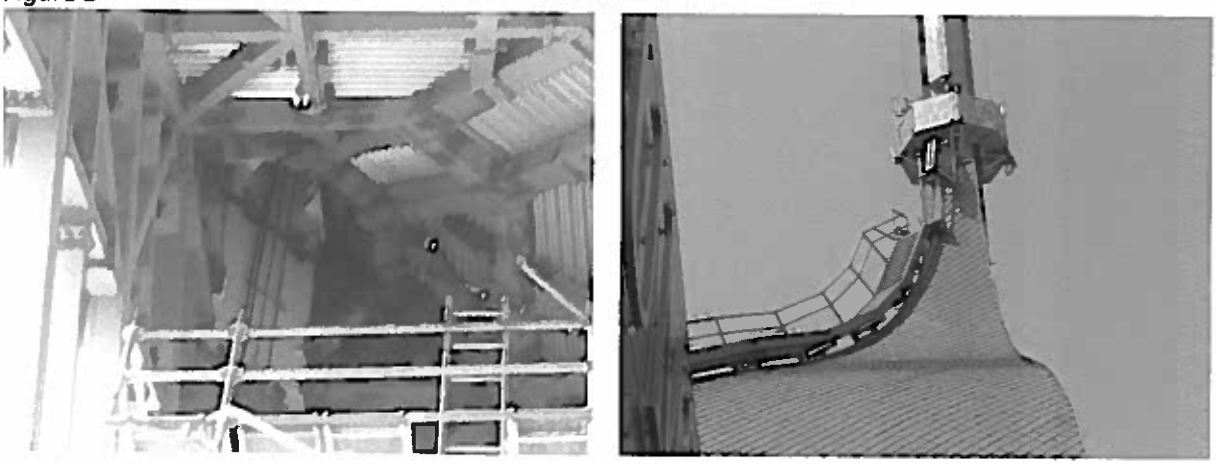
4. RESPONSE TO UNSAFE BUILDING ORDER

Several engineering firms were separately involved in the complex design, fabrication and construction processes of the Trump Tower and its spire. Since construction, these firms have undergone significant changes in both ownership and staffing. As a result, the coordination and inspection of multiple elements as part of the investigation required the involvement of several professional engineers with specialized knowledge of the building elements.

Initially, [redacted] (on behalf of Talon) advised that since the original engineering firm (Halcrow Yolles) for the spire no longer existed, he was unable to comply with the order. After Toronto Building staff re-iterated the importance of the need to comply with the order, engineers from Beauce-Atlas were contacted to inspect the spire and engineers from CH2M to evaluate the onion dome and ring beam that connect the spire to the building. The engineers from Beauce-Atlas had to travel from Quebec. Both companies were on site conducting their inspections in the morning of Tuesday September 1, 2015. Beauce-Atlas engineers determined that it was necessary to review the welded connections of the spire to ensure that there had been no failures. Accordingly inspections of the numerous welded connections were undertaken.

In order to properly inspect the spire within the onion dome, the Beauce-Atlas engineer needed to erect additional scaffolding to complete his review. The Beauce-Atlas engineer was limited in their ability to conduct visual inspections due to the design of the onion dome. The height of the dome exceeded the reach of the scaffold and the inspection of the exterior portions of the spire was delayed due to concerns with the access ladder to the crow's nest. (See Figure 3)

Figure 3



5. DECISION TO REOPEN THE ROADS

The various parties (Beauce-Atlas, CH2M, Butler Welding) reviewing the structural components were becoming increasingly confident that they did not see any damage that one would expect to see if the incident had occurred as reported.

At approximately 2:30 pm on September 1st 2015, the welding inspector from Butler Welding reported verbally to Toronto Building that there were no visual signs of any deformities on the inspected welds.

Toronto Building's senior management team met with Andrew Wild at approximately 3:15 pm to review the findings and the various interim reports. The group determined that an unsafe condition was not present and that the streets should be re-opened. At approximately 4:00pm, Toronto Police and Transportation Services were advised that work on re-opening the streets could commence. The roads re-opened at 4:15 pm.

Toronto Building staff have reports from the engineering consultants who reviewed the incident. These reports are consistent with the determination that the unsafe condition was not present.

CONCLUSION

The Trump Tower is a large, complex building. The design and construction of building elements such as the spire and onion dome required a number of engineering firms with specialized knowledge. Similarly, the investigation of the spire incident involved a number of engineers with particular areas of expertise. It was also necessary for one firm to travel from Quebec. In addition, the size and construction of the spire and onion dome structures complicated access to the spire for a full inspection.

The observations of the original witnesses from the maintenance crew were not supported by the inspections and the findings of the professional engineers and may not have been as significant as they initially reported. In order to comply with the City's order and provide an opinion on the safety of the Trump Tower spire, the professional engineers determined that a thorough inspection of that building element was necessary. Throughout this process, Toronto Building reinforced the need for an opinion as quickly as possible to facilitate re-opening of the adjacent roads.

After reviewing the facts, Toronto Building and Legal Services staff believe that the City's response was appropriate and necessary to satisfy municipal obligations set out in the Building Code Act for public safety.

John Heggie
Acting Chief Building Official and
Executive Director