



BUILDING DEPARTMENT MEMORANDUM

Page: 1
File:
Pending #:

TO: MAYOR J. LEHMAN, AND MEMBERS OF COUNCIL

FROM: M. JANOTTA, P. ENG
CHIEF BUILDING OFFICIAL / MANAGER OF BUILDING

NOTED: A. MILLER, RPP
GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT

M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RE: JULY 2021 TORNADO – UNSAFE BUILDINGS UPDATE

DATE: AUGUST 9, 2021

The purpose of this Memorandum is to provide an update to members of Council on matters relating to the recent tornado in the City of Barrie as it relates to the repair of damaged structures and matters related to the *Building Code Act*.

The Event and Immediate Response

On July 15, 2021, an EF2 tornado touched down in the southeast area of the City with maximum speeds reaching 210 kilometers an hour. Hundreds of homes were damaged as well as some small businesses. The tornado created extensive damage to many of the houses in the area which may have compromised the structural integrity of the buildings.

The Building Department's role is to ensure that these buildings are safe prior to being reoccupied. Unsafe orders were issued, within the first 24 hours after the incident, to seventy (70) homes that suffered extensive structural damage and were deemed to be unsafe. These orders provided instructions requiring:

- Restricted occupancy;
- Engineer's assessment of the structures and provide necessary emergency shoring to prevent collapse;
- Engineer's further assessment of the structure to determine the full extent of damage;
- Reporting to the Building Department for final damage assessment; and
- Preparation of drawings and application for permits to repair or rebuild the damaged portion of the houses.

This is the City's obligation under the *Building Code Act*.

Work on resolving and removing these orders continues as information is provided by the engineers. A summary of the status of these orders is provided below.

The Ontario Building Code

The Ontario Building Code (OBC) defines the minimum standards for building construction. These minimum standards do not include resisting loads created by the effects of a tornado. The tornado event created loads on structures that are in excess of what they are intended to withstand. There is a difference between meeting the Building Code; which defines minimum construction requirements and building to be tornado resistant; which is a standard much higher than specified in the Building Code.

The OBC consists of different parts which apply to different building types based on size of building and occupancy type. Some buildings are required to be designed by professional engineers for the loads specified in the Code. These are performance standards which are applied to engineered buildings. Other buildings are not required to be designed by professional engineers as there are prescriptive requirements which are in lieu of engineered design. These prescriptive requirements are found with Part 9 of the Building Code.

Houses fall into the category of buildings that are built based on prescriptive standards. As such, most houses will be built with no specific consideration of wind loading. Construction based on the prescriptive requirements in Part 9 is deemed to comply with structural requirements listed elsewhere in the Building Code. As a result, there are currently no predetermined load paths identified in this type of construction to deal with lateral loads and uplift loads which are both caused by the effects of wind loading.

The OBC does specify different wind loads for different parts of Ontario. Climate change plays a part in increased frequency of severe weather, and this may be further justification to adjust design loads specified in the Code. Since most houses are not designed to meet the performance standard of resisting a specific wind load, modifying the wind load in the Building Code would not affect how they are constructed within the current framework of the Building Code. Modifying the wind load would affect how engineered buildings are constructed.

Roofing and Shingle Installation

The installation of roofing in small buildings, including houses, is regulated by Section 9.26 of the OBC. The installation of asphalt shingles is regulated by Section 9.26.7 for roof slopes greater than 1 in 3. These requirements would apply to almost all newly constructed houses. There are different requirements in the OBC for different materials and different roof slopes.

The relevant provisions are listed below:

- Shingles must conform to listed material standards;
- Nails must conform to listed material standards;
- Nails must be sufficiently long to penetrate through 12 mm sheathing;
- There are no provisions for installing roofing paper or other materials below shingles on the entire roof; and
- There are requirements for eave protection for the first 900 mm of the roof in certain circumstances. This is a material placed over the roof sheathing below the shingles. This depends on the geometry of the roof and the soffit.

The Building Department will not perform any inspections directly related to the installation of shingles and sheathing. Inspectors do not go onto roofs and this work can only be seen from above the roof. These are not mandated inspections by the OBC, nor are they practically possible nor part of industry standard.

City of Barrie Process – Building Residential Structures

The City follows a robust process to review drawings, issue permits and inspect construction.

The Building Code specifies mandated inspections which the constructor is obligated to call the City to initiate and conduct.

The City's process meets the obligations under the *Building Code Act* and reflects industry best practices. The Building Department is always interested in participating in finding ways to build better buildings and Building Officials have historically been involved in some of those discussions. However, more stringent building requirements cannot be legally enforced until modifications are made to the Ontario Building Code to mandate different construction techniques.

The City is not in a position now, after the tornado, to verify firsthand/on site the physical state of damaged homes for the following reasons:

- The City can only enter a home to issue an Unsafe Order and does not have the authority to enter the home for an after the fact inspection.
- Property owners/Insurance companies will be getting reports from their own engineering companies to address an Unsafe Order or other concerns.
- The City's responsibility is to review and assess the Engineering Report.
- It is likely that interior finishes will need to be removed to fully assess any structural damage. The City is not able to do that work.
- Inspection jurisdiction for repair work is limited to the repair and not broader investigations.

The City will respond by reviewing the engineer reports and issuing building permits for the affected homes, as requested through the appropriate process, although this will take time to retrieve archived files.

Options for Voluntary Standards

It is clear a tornado imposes loads much more severe than those specified in the OBC.

The building industry (including designers, engineers, Building Officials and code researchers and writers) recognize this. There are continuous efforts to update and upgrade the Code. The building industry works with the Province to review and update the OBC. The work like that being done by the Northern Tornadoes Project researchers will certainly be valuable as the Province considers updates to the OBC.

The City of Barrie does not have the authority to change the OBC which defines the minimum construction standards for the Province. The OBC is created and amended by the Province, however there is always opportunity to engage with the Province to ask them to make changes at any time.

Builders can build to standards which exceed the minimum requirements in the OBC, however they do so voluntarily. Any voluntary exceedances cannot be legally mandated and, even if agreed to by a particular developer, such agreement cannot be enforced by the municipality. There is no scope in the current legislation to include such provisions in development agreements. As such, a voluntary agreement would not be enforceable.

Building with hurricane clips (or something similar) will make buildings stronger, but not necessarily strong enough to resist tornado induced loads. Hurricane clips deal with one weak link in the framing system, but do not create a continuous load path to resist the applied loads. Discussion on this topic needs to be comprehensive to ensure modifications made achieve the expected results. While hurricane clips (used in addition to the regular connection techniques) will make buildings stronger, to suggest their use alone will eliminate the damage seen during the recent tornado may set an unrealistic expectation of how these buildings will perform in the future.

Staff will provide technical input to future discussions on the use of hurricane clips, as appropriate.

Ongoing Efforts to Support Affected Homeowners

The Building Department continues to work with insurance companies, engineers and homeowners to assist in repairing the extensive damage created by the tornado. This includes the following:

- Waiving all building permit fees for tornado-related reconstruction;
- Clarifying a scope of work which can be completed without a building permit;
- Continuing to review engineering reports;
- Reviewing and issuing building permit applications for the repair and reconstruction work;
- Attempting to issue repair permits in one to two days; and



BUILDING DEPARTMENT MEMORANDUM

Page: 4
File:
Pending #:

- Ongoing daily inspection patrols to monitor construction and deal with potential construction being done without a building permit.

Status of Unsafe Orders

As of July 30, 2021, the following is the status of Unsafe Orders and resulting action for repairs and rebuilding:

Assessment of Engineering reports:

- 85 engineering reports have been received and reviewed.
 - 51 apply to houses with unsafe orders
 - 34 apply to houses without unsafe orders, but may still require a building permit for repairs

Status Of the original 70 unsafe orders:

- 39 houses are permitted entry by the occupants and/or contractor
- 12 houses are deemed safe for continuous occupancy
- 6 building permit applications have been issued for repair of existing houses
- 2 demolition permits have been issued to homes that will need to be rebuilt

It is anticipated that staff will be involved with work on the tornado affected houses for a period of 3 months in assessing reports, reviewing drawings, and issuing permits and for a period of 12 to 16 months in inspecting the reconstruction.

In addition to the work of the Building Department, the Operations Department continues with clean up assistance in the affected area. We expect that work will end this week.

For any questions, please contact Andrea Miller, General Manager of Infrastructure and Growth Management at x4485 and andrea.miller@barrie.ca or Michael Janotta, Manager, Building Department at x4501 and michael.janotta@barrie.ca.