ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

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January 19, 2018

Ministry of Municipal Affairs
Building and Development Branch
Attention: Building Code Consultation
777 Bay Street, 16th Floor
Toronto, ON M5G 2E5

Response to the Ontario Ministry of Municipal Affairs' Potential Changes to the Ontario Building Code (OBC): Parking Structures

Introduction:

The Ontario Society of Professional Engineers (OSPE) is pleased to provide feedback to the Building and Development Branch of Ontario's Ministry of Municipal Affairs (MMA) regarding the Fall 2017 Consultation Paper: "Potential Changes to Ontario's Building Code: Parking Structures."

At a high-level, OSPE supports the proposal developed by the Ministry of Municipal Affairs to impose mandatory maintenance and evaluation requirements on the owners of parking structures in Ontario.

It is OSPE's objective to assist the MMA to develop a robust regulation for the benefit of all Ontarians. Involving engineers in discussions regarding proposed amendments to Ontario's Building Code (OBC) helps to ensure that changes are fully informed, optimized, technically and economically feasible and enforceable. OSPE values the opportunity to share the voice of Ontario's engineers in this important discussion and appreciates that our input will be seriously considered.

Consultation Discussion Items:

1. *Prescribed Types of Buildings*

MMA's proposed changes to the OBC are described as ***"scoped to specifically capture those types of parking structures that have characteristics similar to the Algo Centre Mall."*** Consequently, the proposed changes would apply only to those buildings that have the following feature(s):

a) ***"Contain parking on the roof or part of a roof of the structure and that also have levels beneath the parking with non-parking uses."***

b) ***"All above-ground, multi-storey parking structures that are not fully enclosed within the building envelope and were constructed or received a building permit before May 20, 1988."***

Studies published by the Canada Mortgage and Housing Corporation and the National Research Council in the late 1970's and early 1980's involving the Ontario Government and the *1988 Report of the Advisory Committee on the Deterioration, Repair and Maintenance of Parking Garages* prepared for the former Ontario Ministry of Housing illustrate that the safety risks posed by the deterioration of parking structures in Ontario extend beyond those specific types prescribed by the MMA as warranting building condition evaluations and mandatory building maintenance.

Moreover, the quotation from the Building Safety Technical Advisory Panel (BSTAP) report cited on Page 5 of the MMA Consultation Paper applies to **all types of parking structures**, not just to those specific types to which the proposed prescription would apply.

Therefore, it is suggested that MMA err on the side of public safety and accept the findings and recommendations of these early studies, as well as the BSTAP report and **expand the proposed mandatory maintenance and evaluation program to include all types of parking structures.**

Regarding whether the MMA should prescribe a size threshold for parking structures, OSPE recommends that no such prescription be made. The rate and severity of corrosion and freeze-thaw damage caused to the structural components of parking structures is not unique to large parking structures. Consequently, a size threshold for mandatory maintenance and condition evaluation protocol is not based on any credible scientific basis.

2. Maintenance Standards Criteria

The proposed maintenance standards are focused on requiring building owners to maintain and operate prescribed parking structures so that they are capable of supporting ***"any reasonably anticipated loads that may be applied to it"*** and so that ***"moisture is prevented from causing deterioration, degradation or any other adverse impact on the integrity of the building's structural components, connectors or other elements essential to the structural integrity of the building."***

These proposed maintenance standards merit the following comments.

a) Requiring that a parking structure be maintained so that it is capable of supporting ***"any reasonably anticipated loads that may be applied to it"*** appears to impose a higher structural standard on **existing** parking structures than those imposed on **new** parking structures by current and previous editions of the OBC, as demonstrated by the following hypothetical scenario statements:

    i. It can be ***"reasonably anticipated"*** that snow removal equipment will be operated on rooftop and ground level parking decks and that snow will be stockpiled on these decks after heavy snowfall events. Nevertheless, the OBC does not require that new parking decks be designed or built to support such loads.

ii. It can also be ***"reasonably anticipated"*** that global warming will cause more extreme weather. Nevertheless, building owners cannot be reasonably expected to upgrade the loading capacity of existing parking structures exclusively, without upgrading the loading capacity of every other occupancy, type and classification of existing building.

iii. The OBC does not require new buildings to be built or retrofitted to a **subjective** structural design standard, but to the standard of sufficiency prescribed in Part 4.

b) Experienced and prudent structural engineers and their professional liability insurers are unlikely to accept the liability risks associated with performing building condition evaluations for parking structure owners based on a subjective loading standard.

c) The deterioration and degradation of parking structures is not attributable solely to moisture, but to the de-icing salts, sand, snow, ice and rain that is carried into parking structures by cars. In the summer, hot, humid air is drawn into the cooler interior of parking garages by their required ventilation system. This causes widespread condensation to diffuse into the concrete and other permeable building materials. Structural connectors, anchorages, post-tensioning systems, reinforcing steel and other structural elements embedded (and therefore concealed) within concrete cannot be remediated by the application of protective coatings. Chlorides that have diffused into the concrete with moisture cannot be extracted and will accelerate the corrosion of the embedded metal structural components; regardless of how carefully a parking structure is maintained.

Taking into account the above-mentioned observations, it is recommended that the MMA clarify the scope of its proposed building maintenance standards criteria. It is also suggested that the MMA consider expanding the scope beyond the conditions required to minimize the safety risks posed exclusively by structural failures. The safety risks posed by deterioration, degradation and damages to fire protection, electrical, drainage and ventilation systems should also be evaluated.

3. The Role of Government in Prescribing Building Condition Evaluations

The current role of our provincial government in prescribing the minimum design and construction standards for new buildings and the renovation of existing buildings has been to define objectives and the criteria employed by building designers, builders and code officials to confirm that these objectives are being satisfied.

The Consultation Paper issued by the MMA regarding its proposed mandatory building condition evaluation and maintenance standards for parking structures lacks the clarity required by the design professionals who prepare drawings and specifications for the implementation of the structural maintenance work. To avoid misinterpretation and/or misrepresentation of the objectives and scope of the proposed mandatory standards, it is recommended that the MMA clarify the following:

a) Is the objective to minimize only the public safety risk posed by a failure of the structural components of a parking structure, or of other building components and systems, as well? (e.g. fire protection, electrical, ventilation, etc.)

b) What is the minimum prescribed scope of the ***"building condition evaluation"*** proposed by the MMA for parking structures? To what engineering and architectural systems is it intended to apply?

c) If it is only intended to minimize the safety risk of a structural failure, would it not be more accurately described as a **structural condition evaluation rather than a building condition evaluation**?

d) The Consultation Paper states that the proposed changes to the OBC regarding parking structures will ***"focus primarily"*** on the structural sufficiency of the building, and that professionals who undertake a building condition evaluation will use the **Structural Condition Assessment of Existing Buildings and Designated Structures Guideline recently published by Professional Engineers Ontario (PEO).** However, it does not define the other (non-primary) focus or scope to which its proposed OBC changes are intended to apply.

It is reasonable for the MMA to rely upon PEO and the Ontario Association of Architects (OAA) to prescribe technical standards and guidelines that regulate how their members are to perform the tasks required of them in their specific areas of professional practice.

4. Who Can Conduct a Building Condition Evaluation

It is recommended that MMA define the roles and responsibilities of the licensed Architects and Professional Engineers who will be permitted to conduct the proposed building condition evaluation for parking structures as detailed in the Consultation Paper.

5. Frequency of Initial and Subsequent Building Condition Evaluations

The time period of three years for an initial evaluation and six years for subsequent evaluations proposed by the MMA appear reasonable. However, this will depend upon how many licensed professionals are willing and able to supply the services required to meet the demand of parking structure owners for such evaluations.

6. Documentation Retention

It seems appropriate to require building owners to retain copies of building condition as well as building maintenance records to demonstrate compliance with these proposed mandatory OBC parking structure requirements. However, for security reasons, it may be prudent to require that these important documents be kept off site where they cannot be damaged or misplaced.

Consideration should also be given by the MMA to the obvious benefits of requiring the design professionals who provide General Review services for new buildings and renovations to existing buildings, to prepare and submit accurate As-Built drawings to the Chief Building Officer (CBO) and to require that the CBO preserve these drawings, so they can be accessed at the request of future building owners and design professionals.

In so far as the CBO will likely be tasked with the responsibility of ensuring compliance with MMA's proposed mandatory building maintenance standard for parking structures, it would seem appropriate for the licensed professionals who conduct these evaluations and provide the design drawings and specifications for parking garage maintenance work, to be required to notify the CBO when these standards have been met, for verification purposes.

7. *Prescribed Publicly Available Documents*

It is our understanding that all municipal building records are accessible to the public under current Freedom of Information legislation, with the exclusion of those that are deemed privileged by legal counsel in a contemplated law suit.

8. *Principal Authority's Duties and Powers Related to Complaints*

The current Ontario Building Code Act already grants Municipal Building Officials the powers to investigate complaints regarding the possible health and safety risks posed by an existing building. OSPE is not qualified to suggest what additional duties and responsibilities should be delegated to these officials as a consequence of the MMA's proposed Building Condition Evaluation program.

Questions & Comments:

For questions and/or comments regarding this document, please contact Patrick Sackville, Lead, Policy and Government Relations at patrick@ospe.on.ca.

Special Thanks:

OSPE's Infrastructure Committee wishes to extend special thanks to Dr. Norbert K. Becker, P.Eng., F.E.C. for his contributions to the development of this submission.

About the Ontario Society of Professional Engineers (OSPE)

The Ontario Society of Professional Engineers (OSPE) is the voice of the engineering community in Ontario. Ontario is home to over 80,000 professional engineers and over 250,000 engineering graduates who contribute to the most strategic sectors of Ontario's economy.

Engineers are trained, innovative problem solvers who develop solutions by considering costs and benefits, sustainability, public safety, and the complete lifecycle and integration of projects. Engineers are on the frontlines of developing, safeguarding, and maximizing Ontario's investments and are key stakeholders for all levels of government.

OSPE was formed in 2000 after members of Professional Engineers Ontario (PEO) voted to separate regulatory and advocacy functions into two distinct organizations.