Ontario Recreation Facilities Association

Building Community Since 1947

Snow Load and Facility Structural Integrity Failures

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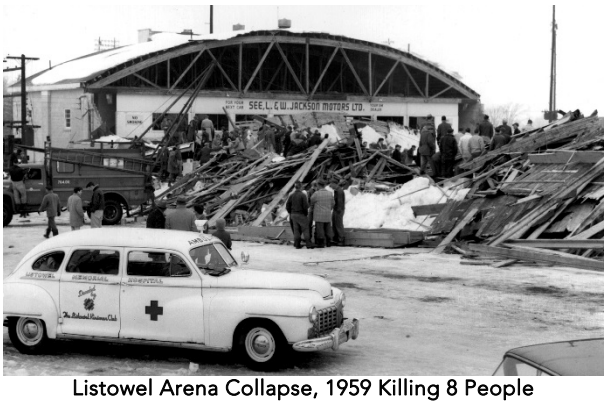
Introduction

The Ontario Recreation Facilities Association Inc. (ORFA) continues to raise awareness and concern over Ontario's aging recreation facility infrastructure; the lack of comprehensive professional structural engineer reviews of these facilities and; the absence of regular ongoing inspection for increased stress and strain caused by excessive snow load by building staff. These factors are challenging the ***structural integrity*** of many recreation facilities.

What is Structural integrity?

Structural integrity is the original engineering of a building that deals with the ability to support a designed weight or force (load) without breaking, tearing apart, or collapsing during reasonable use for the building life expectancy. When weights and/or loads exceed these designed limits, they cause ***structural failure***. *Structural failure* refers to the loss of structural integrity. Owners of buildings must ensure that both workers and users remain safe while in attendance. Workers are given the right to a safe work environment under the **Occupational Health and Safety Act (OHSA).**



Listowel Arena Collapse, 1959 Killing 8 People

Duties of Employers

25. (1) An employer shall ensure that, (e) a building, structure, or any part thereof, or any other part of a workplace, whether temporary or permanent, is capable of supporting any loads that may be applied to it, (i) as determined by the applicable design requirements established under the version of the Building Code that was in force at the time of its construction, (ii) in accordance with such other requirements as may be prescribed, or (iii) in accordance with good engineering practice, if sub-clauses (i) and (ii) do not apply. R.S.O. 1990, c. O.1, s. 25 (1); 2011, c. 11, s. 9.

Duties of the Joint Health and Safety Committee (JHSC)

9. Inspections

(23) Subject to subsection (24), the members of a committee who represent workers shall designate a member representing workers to inspect the physical condition of the workplace. R.S.O. 1990, c. O.1, s. 9 (23).

(26) Unless otherwise required by the regulations or by an order by an inspector, a member designated under subsection (23) shall inspect the physical condition of the workplace at least once a month. R.S.O. 1990, c. O.1, s. 9 (26).

Schedule of Inspections

(28) The inspection required by subsection (27) shall be undertaken in accordance with a schedule established by the committee. R.S.O. 1990, c. O.1, s. 9 (28).

(30) The member shall inform the committee of situations that may be a source of danger or hazard to workers and the committee shall consider such information within a reasonable period of time. R.S.O. 1990, c. O.1, s. 9 (30).

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o01_e.htm#BK42

Users of any public building are given the same expectation of safety under the Occupiers Liability Act.

Occupier's Duty

3. (1) An occupier of premises owes a duty to take such care as in all the circumstances of the case is reasonable to see that persons entering on the premises, and the property brought on the premises by those persons are reasonably safe while on the premises.

(2) The duty of care provided for in subsection (1) applies whether the danger is caused by the condition of the premises or by an activity carried on the premises.

Occupier's Liability

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o02_e.htm

Governing Authorities

The ***owner*** is responsible to know and adhere to all applicable legislation. The Ontario Ministry of Labour (MOL) is responsible for compliance of the OHSA. The Ministry of Labour no longer releases reminders to owners of such obligations (MOL Bulletin of Apr.4/97); it is therefore an owner's responsibility to have structural inspections performed on an as required basis by a professional structural engineer. Breaches of the Occupiers Liability Act must be dealt with through the civil court. Unless there is a death, then the local police jurisdiction may further play a role in investigating the incident as it may be deemed to be criminal in nature. An additional internal resource to be considered is local building officials as they are highly trained in such matters and will lend both guidance and support in maintaining a safe environment for both workers and the public at large.

The ***worker*** is responsible under the ***Internal Responsible System (IRS)*** of the OHSA to further play a role in ensuring workplace safety. This would include, but not be limited to, monitoring and continually reporting changes to the structure. As individuals who are regularly moving throughout the building, workers must be trained to understand the importance of continually looking for signs of twisting, shifting, lifting, bending, or cracking. These changes may be caused from loading on the roof or shifting soils due to ground freezing. Buildings that are experiencing continual water penetration are at higher risk as rust may significantly contribute to the loss of structural integrity. Such discoveries must be reported to senior facility staff and/or the JHSC.

Excessive Snow Loading

The most common contributing factor to structural failure is excessive snow loading, which is defined as, *"the live load due to the weight of snow on a roof; included in the original design calculations"*. When a worker views what might be considered excessive snow on the roof from the ground, it is important that a further site review be undertaken. Only persons trained to safely work at heights should consider going up onto any roof above 3m (10ft). If there is a reasonable concern of excessive snow loading the benefits of retaining the services of a civil or structural engineer should be considered to:

- determine whether snow loads are excessive;
- determine whether there are signs of structural distress;
- to obtain a removal procedure that will not cause more structural problems;
- reinforce a structure that is overstressed.

Once complete it then becomes the owners responsibility to implement safe snow removal procedures. Workers must be adequately trained for the snow removal task. Training should include, but not be limited to:

I. Safely getting up and down from the roof (people and equipment)
II. Fall restraint and tie off obligations (workers on a roof must use fall-arrest or travel-restraint equipment in accordance with the fall protection requirements of the Regulations for Industrial Establishments - RRO 851, s. 85).
III. The dangers of producing uneven or concentrated snow loading
IV. Securing the area where snow is to be dumped onto the ground
V. Proper shoveling techniques
VI. Working safely outdoors in cold conditions

Conclusion

As Ontario's recreation facilities age and owners are continually pressured to be fiscally responsible, items such as structural engineer inspections may be considered less of a priority and can be placed on hold for more pressing matters. For those who work in such an environment, it is important that each person professionally engage in their right for a safe work environment. Be informed, interact with senior facility staff and the JHSC and continually monitor your work environment to ensure safe conditions are being maintained.