



## **What can an owner do to mitigate the possibility of injury to the public due to ice formation? - by Matthew Cronin**

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As we enter the heart of winter in New York City, it is a good time to consider the potential dangers of ice accumulating and falling from the tall buildings that make up our city skyline. We're already seeing some extremely cold temperatures, and when combined with significant precipitation, it creates the perfect environment for ice formation on façades. High winds, and/or a subsequent quick melt, can result in large, sometimes heavy, pieces of ice falling onto pedestrian and parking areas below. There have been at least six reports of falling ice in Manhattan this winter thus far, including one pedestrian being struck in the face by falling ice. What can an owner do to mitigate the possibility of injury to the public?

Before answering this question, it should be noted that, due to advances in the energy efficiency of buildings that reduce their exterior surface temperature, the potential for and frequency of ice falling from city buildings will only continue to increase. Some examples of this are the incorporation of architectural features such as solar shades, rain screens, and glass railings; the ability to build taller and more irregular shaped structures, and the growing use of materials such as glass and metal on façades. When you combine the extreme weather conditions we are experiencing in recent years, you can see how this presents a challenge to building owners. Short of performing extremely costly major alterations to these buildings, such as the comprehensive installation of heat trace or snow/ice guards and/or the application of ice-phobic coatings, the best strategy for owners to deal with this potential hazard is a combination of vigilance, maintenance (where possible) and the implementation of temporary and/or permanent protection.

Owners of buildings susceptible to ice build-up should remain vigilant during the winter months and diligently monitor weather forecasts in order to know when the potential for precipitation combined with freezing temperatures is predicted. Façades should be visually inspected during these weather conditions and it should be documented when and where ice formation is observed and, most importantly, when incidents of falling ice occur. Logs should be maintained at the building for reference. By documenting the exact weather conditions (temperature, precipitation levels, wind speed & direction, etc.) when these events occur, owners will be able to better predict and prepare for future occurrences ahead of time.

Based on the information collected, a maintenance plan should be implemented wherever possible, to remove ice formations from façades prior to the ice beginning to melt. Building engineers should regularly remove ice from any reachable projecting elements, horizontal sills & ledges and other areas known to collect snow and ice. Non-permanent projecting items such as window mounted

air-conditioning units should be removed in winter months to eliminate them as potential collection points. This overall approach is not feasible with newer curtainwall construction that does not have operable windows but should be implemented at buildings with ice issues that have operable windows. Ice should be knocked off any reachable areas in a controlled manner. Areas below should be made safe by temporarily blocking pedestrian access to the walkways and/or parking areas below where the removals are in progress. All ice that is removed from the façades should be cleared from the walkways and/or parking areas prior to re-opening the area to pedestrians. This maintenance method can only be implemented at buildings with operable windows and, even at those, the accessible areas to remove ice from will likely be limited.

Outside of major façade modifications, protection of the pedestrian walkways is the most effective approach to minimizing the potential for injury due to falling ice. Temporary protection can consist simply of blocking off the areas below locations of falling ice with caution tape and having building staff direct pedestrians to walk under a covered area (if available) or directing them to walk on the sidewalk across the street. This is a time-consuming method and could become very costly from a labor standpoint if the number of bad weather days is significant. Additionally, attempting to control large numbers of pedestrians during rush hour can prove to be a herculean task. A better temporary alternative for buildings suffering from excessive amounts of icefall is to install a sidewalk bridge that covers the full width of the walking area, by adding catchalls to the installation, portions of the street can be protected as well. The bridge would be installed at the onset of winter weather and removed as spring arrives. This too can be costly to install, maintain, and remove on a yearly basis. Additionally, this strategy requires permitting/filing with the Department of Buildings but it can potentially prevent serious injuries to the public.

A permanent means to address high-trafficked pedestrian walkways prone to significant amounts of falling ice is the installation of an impact-resistant canopy. The installation does not have to cover the entire pedestrian way but should cover the most highly trafficked areas and protect sufficient width of the walkable area to accommodate the regular pedestrian flow. During times of potential icefall, pedestrians should be directed away from the unprotected areas to the area under the canopy.

As the energy efficiency of buildings continues to develop and different materials are used, more attention will have to be paid to addressing and preventing ice and snow build-up on building façades. Strategies will need to be developed more thoroughly and incorporated into the original designs of future buildings. However, for existing buildings, cost effective and practical means must be explored to provide for the safety of the public and to minimize owner liability related to injuries and damage caused by falling ice.

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