Snow and Ice Maintenance Programs

Slip and Fall Prevention

Snow and ice during a weather event, or when temperatures drop to freezing, results in a majority of slips and falls on exterior walking surfaces. Building owners have a legal responsibility to mitigate snow and ice-related walking hazards on their property to protect the general public. Clearing snow and using ice reducing treatments can also reduce workers' compensation related falls.

Legal Considerations

Property owners have a duty to protect patrons walking on their property. In the current legal environment, failure to control snow and ice hazards can be seen as a breach of this duty. If a person falls on snow or ice where the property owner has not demonstrated "reasonable care," the owner can be considered negligent. Be aware of your local ordinances and state statutes. Courts can reach different outcomes on the same slip and fall facts. Some ordinances may require time periods to complete snow maintenance, generally 24–48 hours.

Lease agreements should clearly define who has the duty for snow and ice maintenance on the property – whether it is the property owner, tenant or property manager. Some states assign liability to the tenant unless:

- The property owner or manager contracted snow services.
- A slip and fall occurred in an area of the property owner's or manager's control (e.g., sidewalks, parking lots, steps, or patios).

Whether self-performed snow maintenance or contracted, developing and executing a solid plan can help prevent and defend slips and falls. Some essential components of a snow program include:

- Quality of snow work
- Ongoing monitoring of walking surface conditions for refreeze
- Record keeping and documentation
- Hiring a qualified snow contractor if needed
- Risk transfer

Plan for Snow Maintenance

- Review and update your maintenance plan before the winter season arrives.
- Designate someone to monitor the weather forecast.
- Assign responsibilities within the program and provide training.
- Designate who will initiate the pre-treatment, clearing of snow, anti-icing treatments and monitoring.
- Establish frequency of treatments for areas subject to refreeze.
- Define documentation to be completed.
- Have a plan for hauling away excessive snow in extreme situations.
- Hire the services of a subcontractor to perform snow maintenance. Maintain a list of back-up contractors.
- If self-performing the snow maintenance, then acquire, inspect, maintain and provide user training on any equipment you may need. Basic equipment and materials could include:

Snow shovels	Traction control materials
Snowplows	Snow blowers
Ice chippers	Anti- and de-icing agents
Salt / treatment spreaders	Skid loader
Wheelbarrows	

Quality of Snow Work

The same high-quality work should be expected, whether it is self-performed or conducted by a hired contractor. Follow standard industry best practices, such as the American National Standards Institute (ANSI) SN9001, that recommend you:

- Prioritize areas to be maintained such as sidewalks, steps/stairs, Americans with Disabilities Act (ADA) ramps, and main foot traffic areas from parking lots.
- Treat walking surfaces with an anti-icing or pre-wetting agent prior to a snow or ice event to reduce snow bonding to the pavement.
- Treat any ice present with a de-icing agent to break it up so it can be removed and prevent refreezing.
- Provide ongoing treatments a few days beyond the initial cleaning and treatment of walking surfaces.
- Do not leave feathers or trailers when plowing parking lots (see Figure 1), especially near sidewalk curbs (see Figure 2). Clear as much as possible.

Figure 1

Figure 2

Snow Placement

Determine and establish pile placement locations.

- Pile locations should be outlined in the diagram and created by the contractor or in-house.
- Keep piles away from walkways and main entryways.
- Do not block fire hydrants, post indicator valves or fire department connections.
- Do not pile snow near lot exits where it can block the line of sight of oncoming traffic.

- Stage piles on the downhill side of the parking lot to prevent melt from running across pavement and refreezing. The recommended location is the back, lower end of a parking lot, where there is rarely any parking. (See Figure 3)

Figure 3

- Do not pile snow in front of storm inlets, since this can block lot drainage and allow accumulated water to refreeze. (See Figure 4)

Figure 4

On-Going Monitoring

A regular frequency of documented monitoring of the walking surfaces should be conducted until the surfaces no longer present a hazard.

Recordkeeping and Documentation

It is the responsibility of the building occupant or owner to document all snow maintenance activities. A snow maintenance log can identify trends and help defend against alleged negligence in a slip and fall suit. Any situations that prevented the normal clearing or treating of surfaces should be documented in the log. Consider the following:

- Note any obstructions, (e.g., cars blocking areas) that would prevent access to an area or snow maintenance to be performed.
- Document all work to include video and/or photos (time stamped and geo-tagged).
- Maintain all records for at least your state's statute of limitation.

Controlling Refreeze

- Continuously monitor the temperature and surfaces for refreeze.
- Give particular attention to the east side of a building since the early afternoon sun will melt snow and ice but as the sun moves to the west, the building shadow can cause refreeze.
- If possible, clear snow from awnings and canopies to prevent snow melt from dripping and refreezing on pavement.
- Repeatedly treat gutter downspout areas that drain and can refreeze on the pavement. (See Figure 5)

Figure 5

- Products that connect to downspouts can be filled with rock salt, resulting in a brine solution that will not freeze on the pavement.

Ice Treatments: Salts & Chemicals

Clearing alone will not be effective. Use of surface treatments is needed to melt residual ice and prevent re-freeze.

Maintain salt content in the sand/salt pile at 5%, as necessary. If you purchase and stockpile your sand when it is dry and cover it, salt may not need to be added at all, so plan ahead.

- Anti-icing is the snow and ice control practice of preventing the formation of bonded snow and ice by early applications of a chemical freezing point depressant, such as salt, chemicals or brine. This early, pre-storm application of salt means the snow plows can do their job sooner and more effectively.
- Furthermore, moderate or periodic re-applications of the chemical during the storm can continue this effect. Such preventive operations are the core of an anti-icing program.

- Pre-wetting is the addition of a liquid (preferably a salt brine to salts or abrasives) prior to the application to the pavement. When a liquid is applied to a particle of salt, the particle begins to soften and dissolve. The result reduces the potential bonding of the snow to the pavement.
- De-icing is the reactive application of salt and abrasives to a walking surface where snow has already accumulated and may have formed a bond (ice) with the pavement.

Sodium Chloride (NaCl), salt, is the generally accepted anti-icing chemical. Calcium Chloride (CaCl) is sometimes used to clear frozen culverts. The brine solution is a mixture of rock salt and water. The following are general considerations for surface treatments.

- To make brine, add salt to water in a tank, agitate, measure concentration with a salinometer and adjust mixture accordingly, i.e., add salt or water to achieve 20-23% concentration NaCl.
- Pre-treatment solid applications can be placed on wet, slush-covered or lightly snow-covered pavement.
- Application of dry solid chemicals onto dry pavement is not recommended and therefore, should not be used as a pre-treatment. Where there is sufficient moisture after snowfall has begun, dry solid chemicals can be applied.
- Timing of an initial dry solid chemical application before snowstorm events is critical. It should be made as soon as possible after sufficient precipitation has fallen to prevent loss, but before snowpack or ice bonds to the pavement.
- Late applications on pavements with more than a light covering of slush or snow can result in excessive dilution of the chemical and should be coordinated with plowing.
- The use of sodium chloride (common salt) combined with snow plowing is the most effective and economical snow and ice control method currently available. Salt is most effective for melting at temperatures above 20° F, with reduced melting ability as the temperature drops. In general, the purpose of salt is to:
  1. Reduce adherence of snow to the pavement.
  2. Keep the snow in a "mealy" condition and thereby permit nearly full removal by plowing.
  3. Prevent the formation of ice or snow ice (hard packed snow). Salt is not intended to take the place of snow plows. It is economically and environmentally unacceptable to attempt to melt snow accumulations that are plowable. Salt is also to be added to sand stockpiles to prevent freeze-up of the abrasives.

Traction Materials

Sand and fine mineral aggregates are used primarily for immediate traction on sloped walking surfaces and steps and other areas to increase traction and minimize the use of salt. Sodium chloride, calcium chloride or an appropriate mixture of each, can be added to abrasives in amounts dependent upon existing weather conditions. Stockpiles of abrasives are usually treated with chloride at the start of the season to prevent subsequent freezing.

Suggested Practices: Prevention of Snow and Ice Slips and Falls

Consider the following:

- **Carpet or Rubber Runners –** Use carpet or nitrile rubber runners placed over stairs at building entrances or parking lot pedestrian walking lanes after snow is removed. This may reduce the hazard of walking on refreeze. They must be placed tightly to the surface and not introduce new tripping hazards.
- **Parking Lot Pedestrian Snow Lanes –** Provide specific pedestrian snow routes equally spaced from the parking lot to the nearest sidewalk. These lanes should receive more detailed ice maintenance and would reduce the number of steps a pedestrian takes on hazardous surfaces.
- **Pavement Heaters –** Installation of electric under-pavement heating in designated pedestrian snow lanes can significantly reduce snow and ice related hazards along with materials and labor needed to clear and apply treatment.
- **Heated Mats –** Use of electric heated walking mats on steps and entrance walkways may be an option for providing better traction during winter weather. Carpet mats should be placed on the walking surface, once the snow and ice are removed, to provide a better walking surface during the typical refreeze. It is critical that mat placement safety be followed so the mats themselves do not create tripping hazards. (See Figure 6) Get additional information in the Floor Mat Programs section.

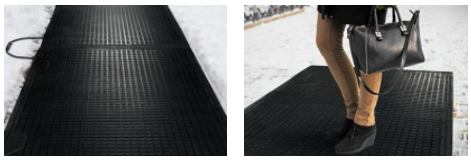

Figure 6

- **Signage –** Warning of icy surfaces and proper walking methods for icy surfaces (see Figure 7). See Responsible Walking on Icy Surfaces.

Figure 7

Hiring a Snow Maintenance Contractor

Do not hire a "handyman" to provide snow services. Your best defense against slips and falls is to hire an insured and qualified, preferably certified, snow contractor.

It is critical that contractual risk transfer is in place when using a snow maintenance contractor. Risk transfer is a mechanism to manage risk by moving it to the party that is responsible for their potential negligence.

- Have a snow contractor under contract before fall season arrives.
- Have a back-up contractor set up.
- Hiring a snow contractor that holds one of the following certifications can ensure they're qualified and may be beneficial in defense of a slip and fall claim:
  - Certified Snow Professional (CSP) through Snow and Ice Maintenance Association (SIMA)
  - ASCA-C through Accredited Snow Contractors Associations (ASCA)

Key Considerations for Written Snow Maintenance Contracts and Agreements

Snow maintenance contracts can be provided by the property owner to the snow contractor to sign. However, most often it is the snow contractor that provides the contract for the property owner to sign. The property owner has the right to make proposed changes to the contract prior to agreement and signing. Have a contract (reviewed by legal counsel) in place.

The following are common industry practices for developing or reviewing a contract.

- Define scope or description of work.
- Ensure that contractors and their subcontractors have no snow maintenance exclusions on their auto or general liability policies.
- Use site maps.
  - A map will provide more transparency and will make it easier for the property manager or owner to define responsibilities and expectations.
  - Note areas to be maintained, i.e., parking lot, building entry, sidewalks, and stairs/steps.
  - Define unique areas that will not be serviced.
- Define the start and ending of a snow and/or ice event.
- Define areas where services could be impeded.
- Define snow depth or other triggers for service and response times.
- Outline snow pile placement areas.
- Outline treatment and de-icing materials to be used.
- Require the contractor to maintain records such as weather log, time, temperature, type of precipitation and depth, unusual occurrences preventing full service and photos of serviced areas once work is complete.

Learn more about managing slip and fall risks at cna.com/riskcontrol (US) or cnacanada.ca (Canada).