



Risk Control

Snow and Ice Maintenance Preparation

Plan for Snow Maintenance

- Review and update your Winter Preparedness Plan for winter storm readiness
- Designate someone to monitor the weather forecast
- Establish contingency plans for staffing, fuel, equipment, fire protection, strategic shutdown and business operations
- Establish policies for early closure, early staff release, delayed opening and strategic or emergency shutdowns
- Ensure employees are aware of the policies and know where to obtain updated company information
- Establish means for communicating with employees, contractors and emergency agencies
- Remove snow/ice from roof overhangs at walkway/entry areas to protect the public from falling snow and ice
- Provide signage identifying falling ice
- Alert maintenance staff when cold or snowy weather is expected
- Acquire, inspect, and maintain the following snow maintenance equipment:
 - Shovels
 - Ice scrapers
 - Wheelbarrows
 - Sand/salt spreaders
 - Snowblowers
 - Ice chippers
 - Plows

When Contractors Handle Snow Maintenance

- Verify that snow maintenance contractor is in place for season
- Contact and be prepared to hire a back-up
- Obtain a Certificate of Insurance to verify the limits of general liability coverage
- Where possible, have your company named as an additional insured under the contractor's general liability policy
- Review contract to verify hold harmless agreement is in effect
- Determine exactly what services will be provided, e.g., plowing, sidewalks/entries, roofs

- Determine when the contractor will respond, i.e., after a certain amount of snow has fallen, or at a predetermined time of day
- Determine what records the contractor maintains such as weather conditions for the day, time of plowing, depth of snow plowed, unusual occurrences or work completed

Prepare Entry Areas

- Place "walk-off" mats at entries during periods of rain or snow
- Check the condition of the mats to be sure the edges are flat and do not create a tripping hazard
- Use durable nitrile rubber mats designed for your location's specific volume and weather conditions
- Ensure tiled surfaces are kept dry
- Place wet floor signage in visible areas
- Use a floor cleaner with traction additives
- Check the mats regularly for amount of water absorbed and replace if needed

Clear Snow

- Hydrants, control valves and hose houses
- Sidewalks, ramps and entryways
- Driveways
- Roads
- Heating, ventilation equipment and ducts
- Roofs (only if it creates excessive weight loading or exposure to falling on the public)
- Overhangs
- Canopies

Snow Placement

- Determine best location for placement of snow that is moved and maintain communications with on-site snow maintenance crews. Place snow:
 - Away from main entry and walkways

- Away from hydrants, fire department connections and exterior sprinkler control valves, i.e., post indicator valves
- Where it will not drain onto parking lot, street or sidewalk and re-freeze. Place in designated parking spaces set aside for that purpose.

Sidewalks

- Develop a written procedure for sidewalk maintenance, including back-up personnel and emergency procedures
- Determine what will be done, e.g., shovel, place icemelt
- Determine who is responsible for completing each task
- Determine where removed snow and ice will be placed
- Determine who will check walking surfaces and when. Document the times of the shoveling, visual checks and conditions.

Ice Prevention

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

- **Anti-icing** is the snow and ice control practice of preventing the formation or development of bonded snow and ice by early applications of a chemical freezing point depressant, such as salt, chemicals or brine. This early application of salt means the snow plows can do their job sooner and more effectively.
- **Salt Application** onto pavement at the start of a winter storm, or even prior to the beginning of precipitation, inhibits the development of a bond between the snow or ice and the pavement surface. Further, moderate and 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 so it is less likely to bounce off the road or be swept away by traffic.
- De-icing the reactive application of salt and abrasives to a roadway where snow has already accumulated and may have formed a bond (ice) with the pavement.

Sodium Chloride (NaCl) is the generally accepted anti-icing chemical. Calcium Chloride (CaCl) is sometimes used to clear frozen culverts. The brine solution is made from rock salt.

To make brine, add salt to water in a tank, agitate, measure concentration with a salimeter and adjust mixture accordingly, i.e., add salt or water to achieve 20-23% concentration (NaCl).

- Pre-wetted solid applications, like liquid treatments, can be used either in advance of the storm or as an early-storm treatment. In the latter case, the application can be placed on dry, wet, slush-covered or lightly snow-covered pavement.
- It should be completed before accumulation of snow pack bonds to the pavement
- Applications on dry pavement, either as a pretreatment or early-storm treatment, should be monitored to avoid excessive loss of material
- 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
- Where there is sufficient moisture after snowfall has begun, dry solid chemicals can be applied. Application of dry solid chemical onto dry pavement is not recommended and therefore, should not be used as a pretreatment.
- 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 snow pack or ice bonds to the pavement.
- The use of sodium chloride (common salt) combined with snow plowing is the most effective, most economical and safest snow and ice control method currently available. Salt is most effective for melting purposes at temperatures above 20 degrees Fahrenheit, 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 pack). Salt is not intended to take the place of snowplows. 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.

Abrasives – Sand and fine mineral aggregates are used primarily for immediate traction on hills, curves, intersections, railroad crossings 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.

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