

Snow and Ice Management for Parking Lots and Sidewalks

What Do Property Managers Need to Know?



Illinois winters bring challenges to property managers of all kinds. Salt Smart Practices keep facility users safe, minimize damage to buildings, landscaping, *AND* protect local rivers and groundwater.

Introduction

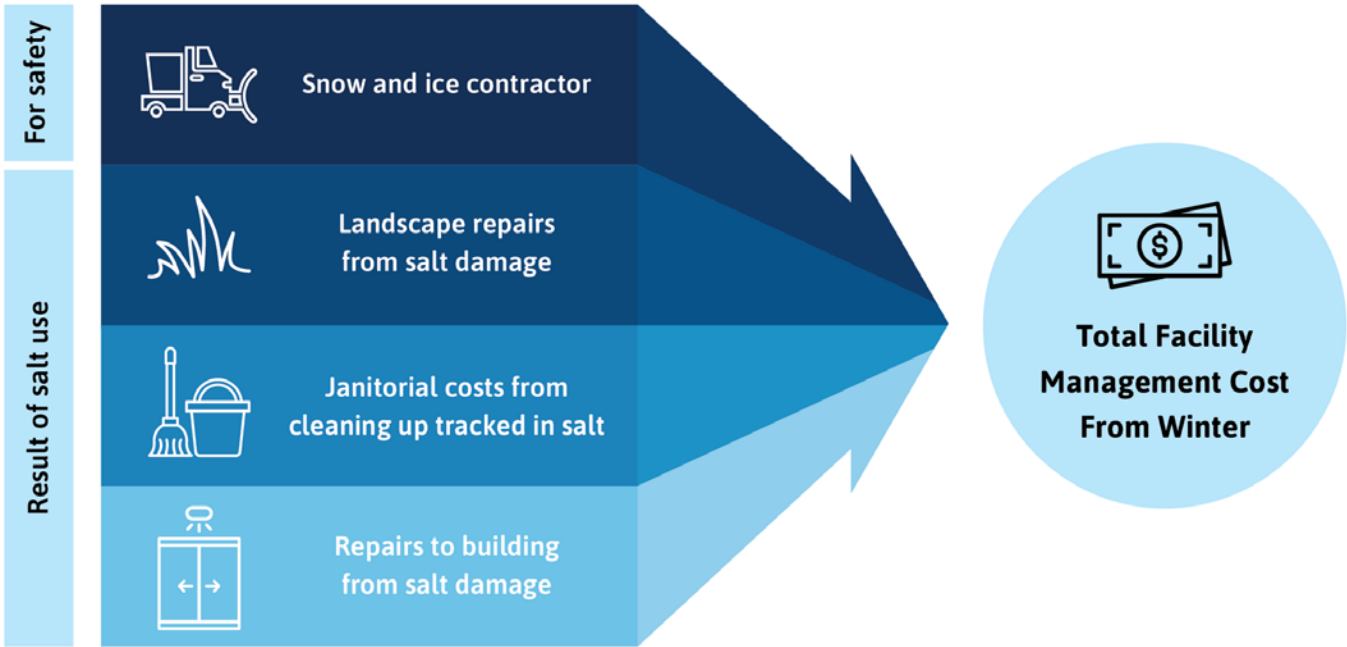
As a property manager you have many responsibilities related to safety, function and aesthetics, to the building owners, employees and facility users. Keeping them safe inside and outside the buildings is a top priority. The Salt Smart Collaborative brings together resources from across the region to help realize the multitude of benefits of using Salt Smart Practices that address safety, function, aesthetics *AND* help to protect our local waterways and groundwater. Whether you are looking for ways to support LEED certification/renewal, minimizing damage to infrastructure and landscaping or worried about the adjacent pond or stream, all while keeping people safe and likely saving money, you will find your WHY here.

The practices encouraged through the Salt Smart Certified program are tested, industry accepted practices that have been proven to work across the snow belt. There is a long-standing perception that if we do not see salt on the ground and feel it crunching beneath our feet, the surface is not safe, someone didn't do their job. This perception drives the wasteful over application of salt

across our parking lots, sidewalks and roadways. More salt does not mean a surface is safer. While you may not need to understand the chemistry and mechanics of how these practices work, hiring a professional that does will protect your facility users while minimizing costly repairs to landscaping and infrastructure. All of these costs come out of the same pocketbook, utilizing Salt Smart Practices during the winter will quickly payoff come spring.

This booklet and accompanying training class for Property Managers will help you understand the benefits of being "Salt Smart" and provide an understanding of the well accepted, best practices for winter maintenance. This is meant to be a resource to you, to help you make informed winter maintenance decisions for your facilities.

Visit <https://saltsmart.org/> for more information on doing your part to be Salt Smart and register for upcoming training classes.



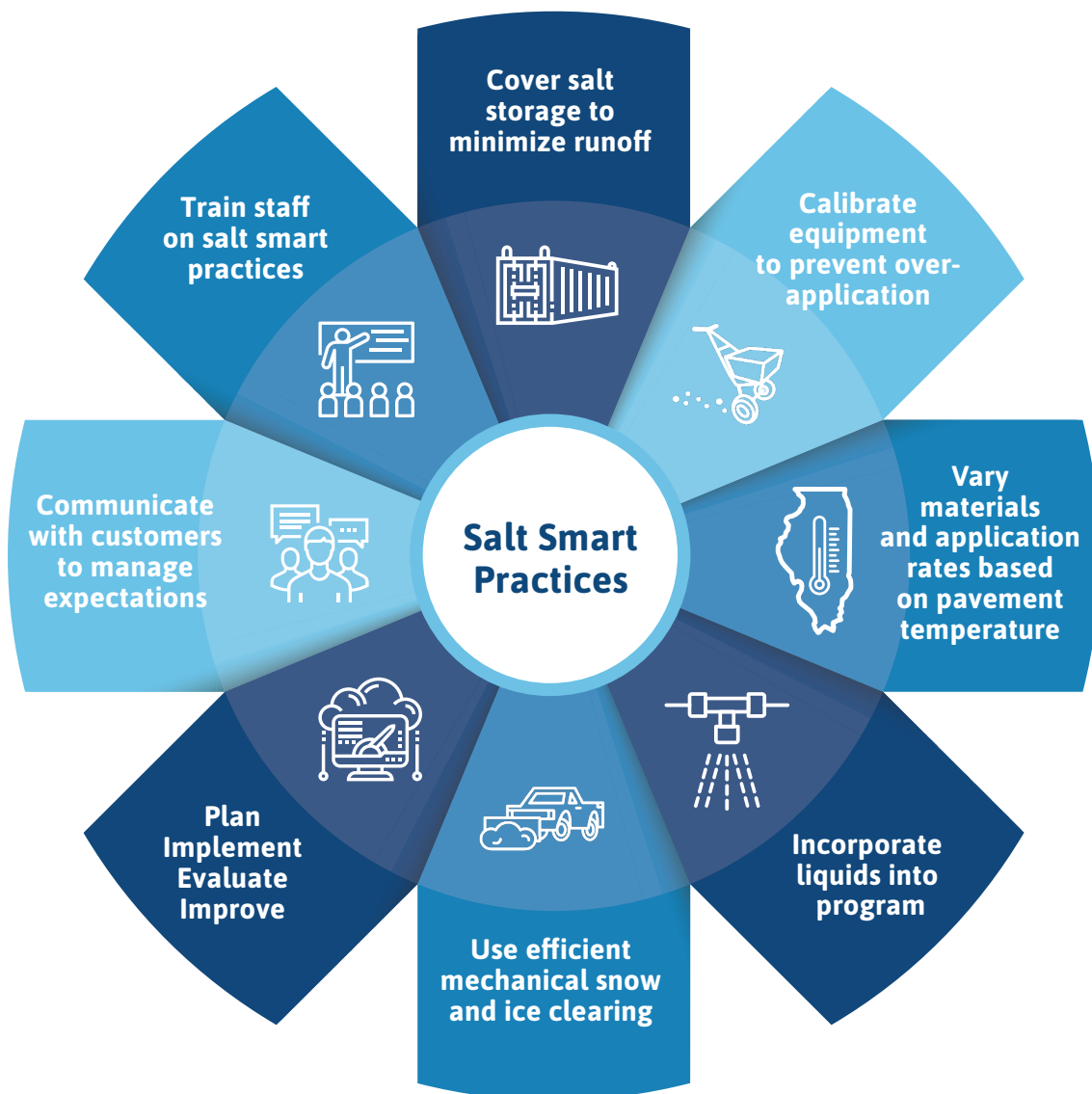
The practices used during the winter to clear snow and ice can have costly impacts on other areas of facility maintenance. By using Salt Smart Practices at your facility, you may be able to save money on landscaping and turf replacement in the spring, building repairs due to corrosion from salt, and janitorial costs to clean or replace interior floors due to salt tracked indoors.

What are Salt Smart Practices?

Salt Smart Practices are industry accepted best practices for snow and ice management. These practices provide safe surfaces, use less salt, and reduce damage to your property and the environment.

Salt Smart Practices include:

- incorporating liquids like salt brine as pre-storm anti-icing and as post-storm treatments
- clear snow and ice with plows, brooms, or shovels before applying post-storm deicer treatments
- allowing your contractor to base winter maintenance decisions on pavement temperature and conditions
- covered and secure salt and liquid materials storage at your facility



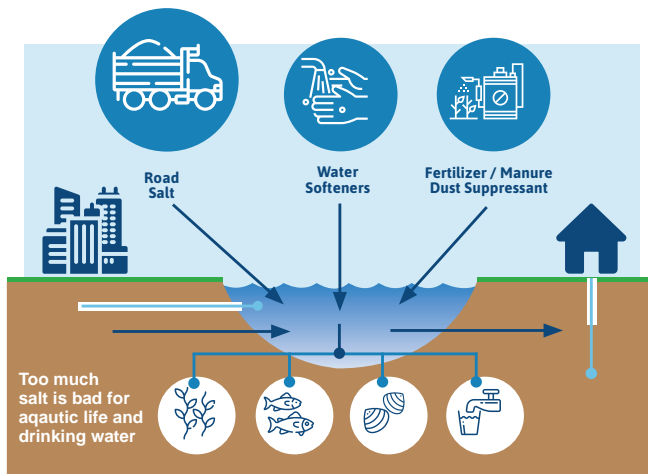
Impact of Road Salt

One of the reasons that road salt is so effective at melting snow and ice is because it dissolves easily in water. However, this also makes salt a significant threat to our water resources. Once salt is dissolved in water, there is no practical way to remove it. Most of the road salt that is applied, either in solid or liquid form, will end up as a contaminant in our streams, lakes, wetlands and groundwater.

Chloride does not degrade and is difficult to remove from the environment. Once in the water, chlorides continue to accumulate over time, both locally and as water flows downstream. This is damaging to surface water and groundwater that freshwater aquatic life relies on and impacts the quality of our drinking water sources.

Both chemical components of road salt, sodium and chloride, and other winter deicers can damage and kill vegetation. Salt that is overspread, bounces off, runs off, or sprays upward as vehicles go by

can permanently damage both plants and soil. Soil remediation is very difficult and expensive to do. Costs to replace adjacent turf grass, flower plantings or trees and shrubs add up year after year.



Road Salt is the primary source of chloride in urban Illinois.

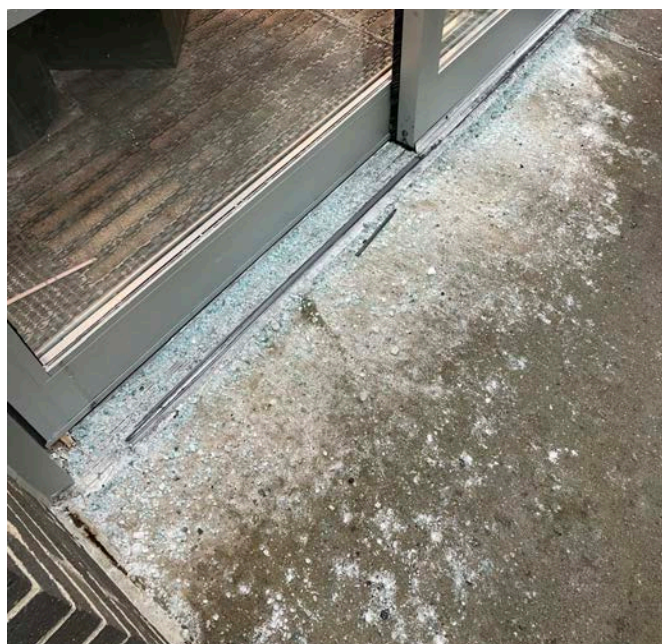
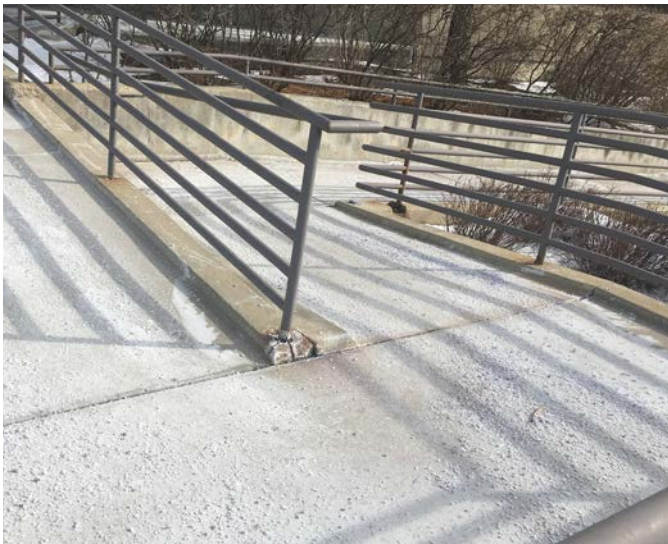


Chloride-based deicers are corrosive not only to traditional infrastructure like bridges and roadway surfaces, but also to residential and commercial surfaces like sidewalks, driveways, retaining walls, and building entryways.

As snow and ice melt, water works its way under the surface where continued freezing and thawing results in damage such as spalling, chipping, flaking, and pitting over time.

Excessive use of road salt accelerates the damaging effects of this corrosion and shortens the lifespan of residential and commercial facilities.

- Salt that piles up around hand rails, trash cans, lamp posts, or park benches corrodes these features.
- Salt that piles up around doorways damages finishes and corrodes supporting structures and sliding door mechanisms.
- Salt that is tracked into buildings causes damage to flooring and excess janitorial costs.



Clear Snow and Ice with Mechanical Methods

Mechanical snow clearing is always the best and primary approach to winter management regardless of your level of service goals. Mechanical snow clearing refers to the use of plows, snow blowers, shovels, scrapers, or other devices to physically clear snow and ice from the pavement. Mechanical snow clearing should be the preferred method for snow and ice management during and after a winter storm.

The more snow your contractor is able to clear using mechanical methods, the less deicer they will need to use. If your contractor is able to clear snow during a storm, compaction of the snow can be avoided and reduces the amount of deicer needed to break up snow and ice on the pavement. Always clear snow and ice mechanically before applying any deicers.



Materials

Your contractor can be strategic about what materials they use based on the weather and pavement conditions, in addition to other factors. Winter management decisions and strategies vary based on the type of precipitation and pavement temperatures not the air temperature. Different deicing materials are best suited for different conditions or situations and no one material is best for every condition. It is key to remember the three “rights” – the RIGHT material for the *RIGHT* conditions applied at the *RIGHT* time

Chloride Based Deicers

Chloride-based deicers are naturally occurring salts. Some are mined from the earth with little processing (“Rock Salt”), while “Solar Salt” is made by an evaporation process from salt brine or sea water.

Sodium Chloride (NaCl aka Rock Salt or Road Salt)	Calcium Chloride (CaCl ₂)	Magnesium Chloride (MgCl ₂)
<ul style="list-style-type: none">• Most commonly used deicer• Works best when pavement temperature is above 15F• Least expensive deicer• When in a liquid deicer form, often called Salt Brine• Damaging to infrastructure and landscaping	<ul style="list-style-type: none">• Melts snow and ice to -25F, works great when very cold!• Costs more than Sodium Chloride• Not best use of resources when pavement temperature is above 15F• Can be used as an additive to Salt Brine to improve performance at cold temperatures• Damaging to infrastructure and landscaping	<ul style="list-style-type: none">• Melts snow and ice to -15F, works great when very cold!• Costs more than Sodium Chloride• Not best use of resources when pavement temperature is above 15F• Can be used as an additive to Salt Brine to improve performance at cold temperatures• Damaging to infrastructure and landscaping

Chloride Free Deicers

These deicers do not contain chloride. They are chemically manufactured, not mined from the earth, and as a result are often more expensive than chloride-based deicers. However, these materials are often much less corrosive than chloride-based deicers making them suitable for sensitive areas, like parking decks or pavers, where they may be required to maintain warranties. Chloride Free Deicers cover a wide range of melting temperatures from +20F (CMA) to -25F (Potassium Formate) to even colder with certain proprietary blends.

Chloride free deicers are also commonly mixed into blended products with Chloride based deicers.

Common Chloride Free Deicers
<ul style="list-style-type: none">• Calcium-Magnesium Acetate (CMA)• Sodium Acetate (NaAc)• Potassium Acetate (KAc)• Sodium Formate (NaFm)• Potassium Formate (KFm)

Incorporate Liquid Deicers

Anti-icing is a pre-storm, proactive approach that helps prevent the bond between snow and ice and the paved surface from forming. Liquid deicers, like salt brine, are applied before the winter storm to coat the pavement surface to melt from the bottom up, reducing the potential for snow or ice to bond to the pavement.

Anti-icing should be the first winter management practice to use when the service goal is bare pavement. Since the bond doesn't form, it is much easier to physically clear snow or ice with mechanical methods (like plowing) to bare pavement. Not all conditions are appropriate for anti-icing prior to a winter storm. Knowledgeable contractors will know when it is appropriate and when it is not.



Anti-icing is like frying eggs, grease the pan and the food comes out easily with little mess to clean up. Like greasing the frying pan, the purpose of anti-icing is to keep snow from sticking to the pavement so the snow can easily be cleared.





Deicing is the practice of breaking the snow and ice bond after it has occurred with the paved surface either during or following a storm that cannot be easily cleared with mechanical methods like plowing.

Deicers melt snow and ice from the top down and often requires larger amounts of materials. Granular deicers need to dissolve into a liquid solution before melting snow or ice. This can take time depending upon the material and pavement conditions.

When using “Liquid Deicers” or “Direct Liquid Application”, liquid deicers are sprayed onto the partially cleared surface to clear the last remaining snow or ice as part of deicing operations. This liquid treatment penetrates the remaining snow and ice breaking the bond with the pavement surface and making it easy to plow off.

Because the contractor is not waiting on a solid deicer to dissolve into a liquid solution when using liquid deicers, the benefits can be realized immediately. Application of liquid deicers is more controlled. Your contractor can be more precise about where they apply the liquid deicers. This reduces the amount of excess materials making its way into landscaping. You do not need to see the crunchy salt to have a safe surface, liquid deicers can provide the same results as granular materials. and pavement conditions.

**How much salt do you
need for 1,000 sq ft with
a pavement temperature
of 23-28° F?**



**1 gallon brine
2.3 lb salt**



**Salt Smart rate
for dry salt
4 lb salt**



**Directions on bag
20 lb salt**

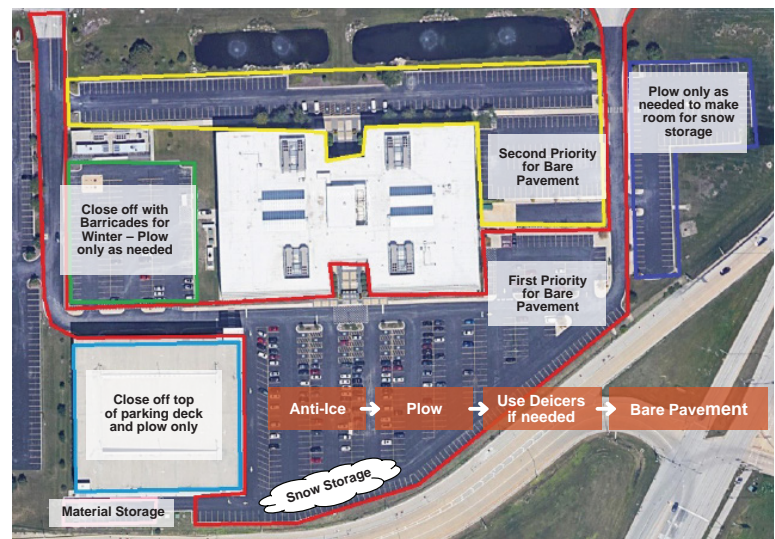
Proper Storage of Materials at your Facilities

Allowing storage of materials at your facilities can often lead to faster service; however, materials that are improperly stored can damage the property and the environment. Uncovered and unprotected salt piles are susceptible to theft by Mother



Nature. Wind, rain, and snow can blow or wash the materials away into nearby landscaping or storm drains causing environmental damage. Ensure any materials stored at your facility are covered to prevent this from happening. Properly stored materials also maintains a better site aesthetic.

Transporting the correct amount of liquid deicer to your facilities from your contractor's facility during a winter event can be challenging. By allowing your contractor to stage liquid deicer tanks or totes at your facility, they can reduce trips and provide your facilities with faster service as the liquid deicers needed to refill equipment is available on site. Support your contractor!



Work with your contractor to designate snow staging areas at your facility to reduce the likelihood of landscaping damage from snow mixed with deicers. This might mean blocking off parking spaces in an unused portion of a parking lot or another out of the way location at your facility. Your contractor can work with you to reduce snow pile melting refreeze issues in critical areas by being strategic about the location for staging cleared snow.

Identify Problem Areas at your Facilities

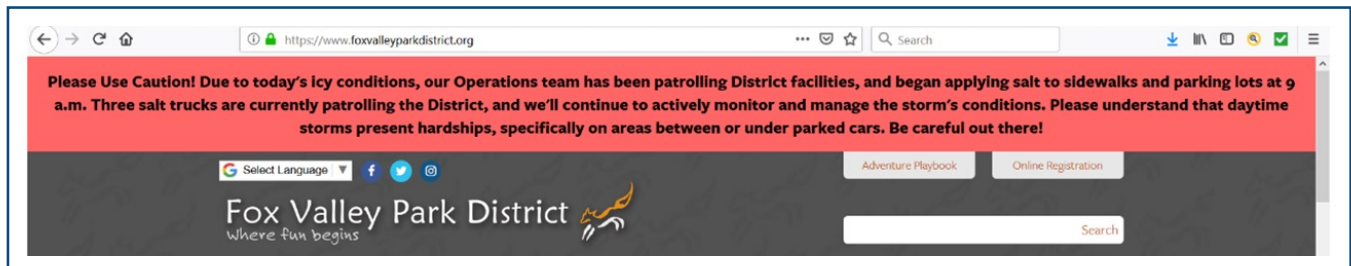
Work with your contractor to identify and remedy possible winter problem areas at your facility. Poor drainage may result in icy surfaces. Problem areas can result in excess deicer applications, even on non-snow event days in the winter. Sometimes problem areas may melt during the day and refreeze at night, prompting extra deicer applications. Solutions may be as simple as redirecting downspouts into nearby grassy or vegetated areas or closing off the problem section of sidewalk or parking lot during the winter.



Different types of problem areas you may encounter: Downspouts that discharge over sidewalks (1 and 2), uneven sidewalk tiles (3), and poor drainage or low spots in parking lots may lead to over salting due to ice forming on surfaces (4).

Communicate with your Facility Users and your Contractor

Good communication with facility users during a winter storm is key. Keep facility users informed. This might be through social media posts, signs on the property, or an alert on your website. If they know to be cautious during winter weather, there may be less complaints about the conditions.



Educating your facility users on Salt Smart practices can help manage expectations. Using liquid deicers during a winter event is a new concept to a lot of people as many are so used to seeing granular salt spread on parking lots and sidewalks. SaltSmart.org has a variety of education materials you can share with your facility users.

Keep the lines of communication open with your contractor. Request to stay informed of when your contractor provides service. Updates ahead of or during a winter storm will help you to know to expect service or know that the conditions do not call for service. Contractors following the Salt Smart practices will monitoring the weather conditions and make determinations about the best course of action for a storm based on weather and pavement conditions.



Salt buckets or bags stored in public areas or by entrances to the building can lead to salt being spread unnecessarily. Before putting out a salt bucket in a public area:

- Work with your contractor to determine if a salt bucket is needed
- Keep a broom, shovel, or ice scraper accessible to encourage clearing of snow or ice before reaching for the salt
- Keep facility users informed about the conditions so they know to be cautious during winter storms
- Try storing the salt bucket out of public areas and post instructions about how much to use with the salt bucket
- Encourage clean-up of any extra salt after the storm to reduce the potential for damage to your landscaping or facilities



What do you need to know about Snow and Ice Management Contracts?

Contractors may offer different types of service contracts to their clients. The Snow and Ice Management Contract you have with your contractor outlines how your contractor will be servicing your facilities and bills for the services. Different types of service contracts can influence how much salt is ultimately used at your facilities and if a contractor is able to work in Salt Smart Practices.

These are some of the common Snow and Ice Management Contract types offered, the way in which a contract is written can help to encourage or require the use of Salt Smart Practices.

Time and Materials Contracts	Per Event/Per Push Contracts	Seasonal Contracts
<div>Toughest contract type to reduce salt</div>	<div>Salt Smart Practices can be built in to service events</div>	<div>Flexibility for Contractors to use Salt Smart Practices to meet service goals to reduce salt</div>
<div>Can incentivize contractor to use more salt to reach service goals</div>	<div>Contractors can include anti-icing, liquids as one of their offered services</div>	<div>Can assure Property Managers that Contractor will provide service only when necessary</div>
<div>Geared towards reactive vs. proactive practices</div>	<div>Property Manager must "buy-in" to adding liquids</div>	<div>Can easily build in anti-icing, liquids to meet service needs</div>

What should be included in your RFP?

One of the most important parts of requesting Snow and Ice Management services for your facilities is developing a Request for Proposal (RFP). RFPs help define your expectations and set the stage for working with your contractor.

Level of Service

- ☐ Clearly defined outcomes of end results from snow and ice services
- ☐ Accumulation triggers/thresholds defined
- ☐ Extreme scenarios considered
- ☐ Completion times/time frames outlined
- ☐ Service priorities identified and documented on site plans
- ☐ Post-storm requirements or services outlined
- ☐ Decision-making power for additional services

Scope of Work

- ☐ Site plan outlining boundaries, priorities, snow stacking locations
- ☐ Acceptable services identified
- ☐ Deicing material restrictions identified (if any)
- ☐ Outline permissions related to staging equipment, materials on site
- ☐ Outline whether dedicated equipment is required onsite

Terms and Conditions

- ☐ Site verification, documentation, technology requirements
- ☐ Fee structures
- ☐ Fee modifiers considered
- ☐ Payment/Billing procedures
- ☐ Contract language considers liability, property damage, non-compliance
- ☐ Contract language represents fair/real world shared risk management

RFP Key Terms

Level of Service: A description of expected outcomes on a site or set of sites from the completed performance of snow and ice management services. Level of Service typically defines expectations for surface conditions at specific times, time frames, or alternate/additional expectations for events that exceed a defined timeframe or defined accumulations.

Scope of Work: Defines the service criteria and specific areas to be serviced on a site or set of sites. The Scope of Work can include any issues that may impact the services provided (poor site drainage, slopes, hills, etc).

When do I need to start planning for winter?

Start planning for the next winter as soon as the previous winter wraps up. By starting your planning early, you can be assured your preferred and qualified contractor will be able to provide you service. This example timeline can help you plan ahead and be ready for the winter season.

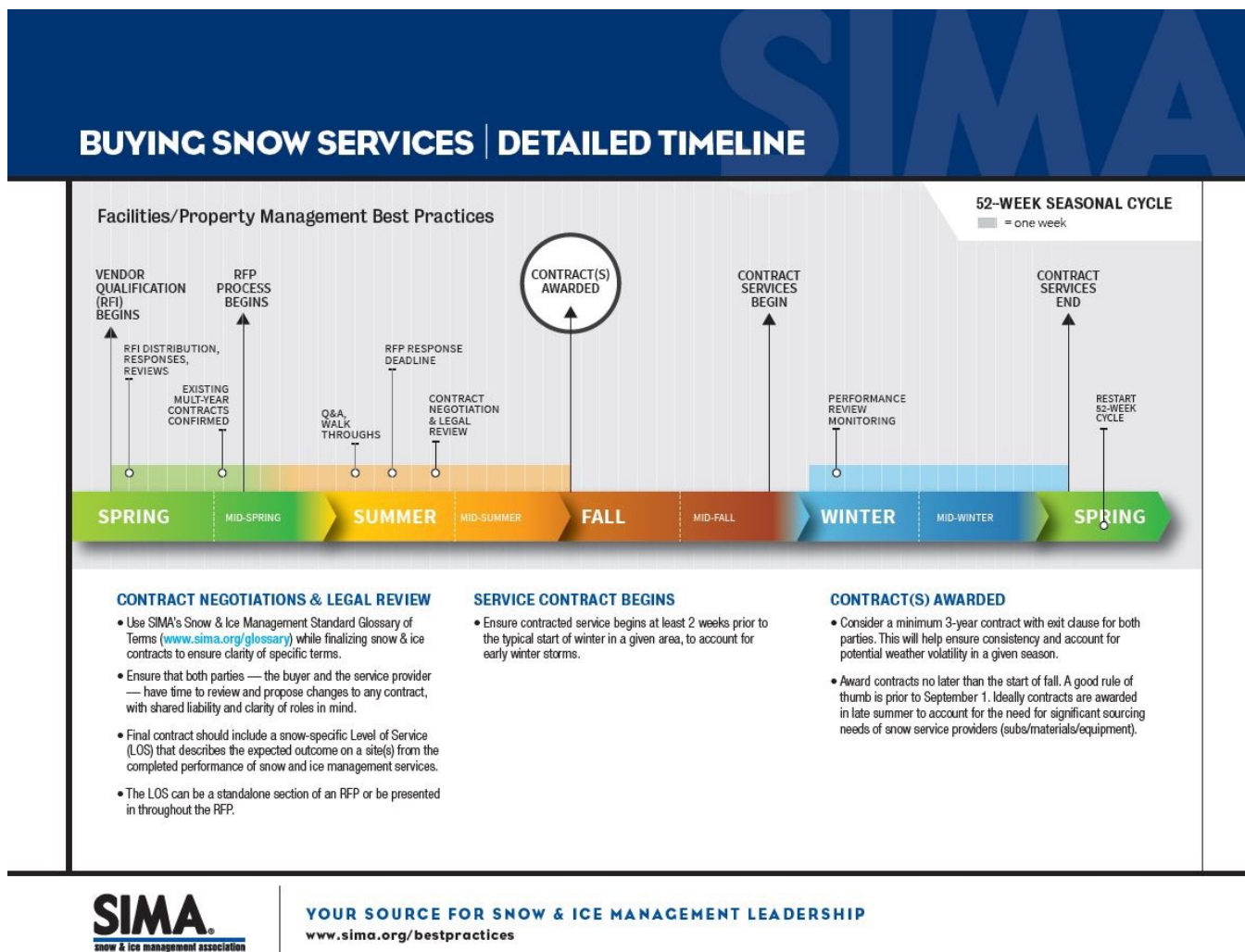


Image Credit: SIMA (Snow & Ice Management Association), www.sima.org

Resources to Help Develop Your RFP

SIMA (Snow and Ice Management Association) has developed an RFP guide that walks property managers through the process of developing a complete RFP. The guide covers in detail Level of Service, Scope of Work, and Terms and Conditions. Following the information in the guide can help you, as a property manager, request the services you need during the winter.

<https://www.sima.org/hire-a-pro>

Choose Knowledgeable Snow and Ice Management Contractors for Your Facilities and Properties

Look for contractors with certifications from national organizations like SIMA (Snow and Ice Management Association) or Illinois specific certifications like Salt Smart Certified from the Salt Smart Collaborative. Contractors certified by these organizations have undergone training to be knowledgeable on the industry accepted best practices for winter maintenance. Knowledgeable contractors can help you identify what services are needed for your facility based on the information you provide them.

Check [SaltSmart.org](https://saltsmart.org) for a list of Salt Smart Certified Contractors who service your area of Illinois.

Using Salt Smart Practices at your properties and using Salt Smart Certified Winter Maintenance Contractors has many benefits.

- Safety comes first - Salt Smart Certified Contractors provide safe surfaces with less salt
- Salt Smart Certified Contractors have been through training on Salt Smart Practices – they are knowledgeable on these practices
- Using less salt means less damage to your property including sidewalks, ramps, buildings, support pillars
- Less salt protects the natural environment – less damage to landscaping saving money on replacement costs in the spring
- Support LEED Certification – using the best practices and reducing salt contribute to maintaining LEED Certification

Find Salt Smart Certified Contractors at saltsmart.org

