

As winter arrives, bringing with it ice and snow, ~~historic building owners~~ owners of historic buildings are faced with the ~~additional~~ challenge of keeping walkways and steps around their facilities safe for pedestrians and clear of slipping hazards. ~~But, using rock salt to keep those walkways and steps clear can damage buildings' historic masonry if not done correctly. In our historic architecture work, we've seen a lot of damage that could have been limited or avoided altogether. Thankfully, Safety is always paramount, even at the cost of damaging our historic masonry buildings with rock salts, but savvy owners need to know that a tradeoff here is not always necessary. by U~~ understanding best practices specific to de-icing near historic masonry and available products, ~~is important to~~ building owners don't have to choose between ~~safety eliminating or mitigating any damage~~ and preserving their historic building masonry.

Commented [DM1]: Hate to say it, but...next week is spring...any consideration to shelf this and pull it up in the autumn?

what's the problem?

Problems caused by de-icing salts occur when the salts are absorbed into masonry building surfaces located adjacent to the areas (like walkways) being treated. Absorption of salt by the masonry can lead to subflorescence, a buildup of salts below the masonry surface. (Surface accumulation of salts on the masonry is referred to as efflorescence and can be indicative of salt accumulation within the masonry). ~~As salt concentrations increase in the masonry it can result in pressure, An increase in salt concentrations can result in pressure~~ especially during freeze thaw cycles, leading to spalling or delamination at the face of the masonry. De-icing salts can also cause salt fretting (etching) of stone surfaces and corrosion of metal building materials located near the base of walls, ~~including like:~~ wall flashings, handrails and other decorative metal elements.

~~sounds bad, how can it get worse?~~

Commented [DM2]: Comma splice/ This subheading doesn't match the content to me

Older masonry structures that have been re-pointed with hard cement mortars have an even greater risk of damage resulting from salt deposits. Prior to the 1930's many masonry buildings were constructed using lime based mortars which have lower compressive strength and greater vapor permeability than most modern Portland cement mortars. ~~The characteristics of lime based mortars are important to the performance of the wall as they allow stresses in the masonry (expansion, contraction, moisture migration, etc.) to be relieved in the mortar joint rather than in the masonry units.~~ In buildings that have been repointed with harder, less permeable Portland cement mortars these stresses (which are exacerbated by the presence of soluble salts) are transferred to masonry units often resulting in accelerated spalling and delamination of the masonry.

Commented [DM3]: This is interesting, but I don't think this is relevant in this paragraph.

Similar problems can result when older mass masonry walls have been coated with water repellents or sealers. Many of these products prevent masonry from drying out and allowing entrapped water to evaporate. Resulting build-up of moisture in the wall can result in damage to the masonry units during freeze thaw cycles which, as noted above, can be exacerbated in the presence of salts in the masonry.

how to pick the right de-icer for your historic masonry building

Preventing any damage to masonry buildings involves understanding the building's construction and using appropriate materials in its maintenance and repair. This includes selection and application of appropriate de-icing salts. The New York Landmarks Conservancy, a preservation organization based in Manhattan, provides some helpful information on their website regarding de-icing salts and ways to avoid or minimize salt related damage to masonry structures. Here is a summary of the four primary de-icing salts used for ice and snow removal they provide:

Commented [DM4]: THIS is the perfect place to add in a "WHICH WE HAVE" sort of sentence. This paragraph reads to me more like it's a promotion for the New York Landmarks Conservancy, not Entech.

Commented [DM5]: Josh, Do you have any personal experience that you could lend, instead? It might be guided by this other info, or even similar to it, but can you put it in your own words? I think that would really emphasize our expertise more so than summarizing some else's work. Maybe even keep this, but add a point or two

"During Entech's historic-architecture work, we also frequently come across XYZ and like to recommend XYZ."

Sodium Chloride (NaCl)

Also known as rock salt, is the most common deicing salt. Rock salt releases the highest amount of chloride when it dissolves. Chloride can damage concrete and metal. It also can pollute streams, rivers and lakes. It should be avoided.

Calcium Chloride (CaCl₂)

It comes in the form of rounded white pellets. It can cause skin irritation if your hands are moist when handling it. Concentrations of calcium chloride can chemically attack concrete.

Potassium Chloride (KCl)

Is not a skin irritant and does not harm vegetation. It only melts ice when the air temperature is above 15 F. When combined with other chemicals it can melt ice at lower temperatures. It is a good choice.

Magnesium Chloride (MgCl₂)

Is the newest deicing salt. It continues to melt snow and ice until the temperature reaches -13 F. The salt releases 40% less chloride into the environment than either rock salt or calcium chloride. It is far less damaging to concrete and plants. It is the best choice.

best practices for de-icing near your historic masonry buildings

The best practice would be to not use a de-icing rock salt near your historic masonry. If that is not practical, we recommend magnesium chloride, since it releases the least amount of harmful chloride. Use it sparingly and as far from your building as possible.

Always remove as much snow and ice manually before applying any de-icing salt.

Supplement de-icing salt with sand for added traction.

After the danger of freezing temperatures subside, clean up treated areas thoroughly by sweeping up and rinsing with water as soon as possible.

For more information on historic masonry buildings and their care please feel free to contact us or post your questions below.

Commented [DM6]: This could be stronger. See my comments above. I'd be more inclined to contact New York Landmarks Conservancy over Entech.

Consider adding in a link, in addition to the website form, to Josh's linkedin and suggest people contact him directly for the questions about historic masonry buildings.