

WINTER CARE & MAINTENANCE OF CONCRETE

We all like the enhancement that concrete offers for our sidewalks and driveways due to its inherent aesthetics and its durability. We even add color and texture to our concrete flatwork to further add to the architectural appeal of our home or business. Now we need to keep it that way.

Once our concrete has been constructed, it is time to discuss the options available for winter care and maintenance. Winter care and maintenance of concrete flatwork is composed of things we should do and those we should not do.



The photo at left shows an extreme case of scaling where the entire surface paste has departed leaving the aggregate exposed..

Let's discuss the things we should **not** do first. One of the single most important things to avoid is the use of salts as deicers during the first few years after construction of our concrete pavements and sidewalks. This is especially important if we have not sealed the pavement surfaces with a recommended **concrete sealer**. Without sealers, water and salts can cause problems with freeze/thaw damage. Salts, especially those with magnesium, calcium and potassium on the labels, are very damaging to the surface of the pavements. The ones sold in the stores for ice control are many times in the "most damaging" category. They are certainly useful for melting of ice, but the damage that is caused will make any home or business owner quite disappointed. Any salt or fertilizer should be avoided, if possible. Even parking an automobile which drips salt slush can cause a problem.

The first notable evidence of damage is the presence of flakes on your concrete. These flakes are pieces of the concrete surface that have been dislodged. Your concrete has now "scaled". See photo above. Scaling is generally the only issue that we find from the application of salts to concrete, but in very extreme cases, the whole structure of the pavement can be affected from some of the more radical salts now being sold.

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What you **should** do to preserve your concrete surface aesthetics....

First, try to get by on sand for traction on the new concrete instead of using salt. However, in the extreme case where you must use salt to melt slippery ice, choose the one that will cause the least impact. That one is ordinary **sodium chloride** or table salt. Bags of canning salt can be purchased in the grocery store.

Remember Good Construction Practices, Curing & Sealing: The pavement becomes somewhat more immune to the damaging effects of salt with age and the longer you can wait to apply salt, the better. If you ever construct new concrete or replace your old, make certain your contractor knows how to properly cure your concrete. Consider these points:

Good Curing: Curing ensures that the surface of the concrete does not dry out prematurely. Curing also provides proper heat management, especially in cool weather, so the cement has a chance to hydrate effectively. This minor procedure is neglected much too frequently. Then, your concrete can be vulnerable from the start if curing is inadequate or missed.

Good Construction Practice: This requires that air entrainment is preserved in the surface of the concrete through proper finishing practices. The surface of exterior concrete pavement should never be finished with excessive effort, or the air entrainment at the surface will be destroyed. The air entrainment is important to make your concrete durable and the surface is the most important location to have this durability.

Construction for Durability: You have control here. Try to construct your concrete pavements before the cooler fall weather arrives. Exposure to some warm temperatures gives the cement and flyash in the concrete the opportunity to hydrate and develop strength, thus development of greatly reduced porosity and toughening of the surface. Concrete cannot toughen as well if placed during cooler weather conditions. Therefore, it cannot keep the water and salt from penetrating to cause damage. Fall placed concrete should be covered with insulating blankets which both cure

and preserve temperatures above 55 degrees for a minimum of 7 days. Warmer is better. Place your concrete on warm soil and certainly ensure that the concrete does not freeze in the first seven days.

Sealing Your Concrete: Remember to apply a penetrating sealer to the concrete surface when the weather is still warm.

We would like to think that concrete can resist all forms of deterioration once constructed. Unfortunately, there is no complete assurance that you will not lose some surface paste during the winter. It can be predicted quite well, however. A study of recent pavements showing scaling damage indicated that the damage could have been prevented by avoidance of one or more problems during installation and operation. These have included 1.) contractor omission of curing practices, 2.) use of water on the surface of the pavement to assist finishing, 3.) over-working of surface and 4.) frost damage of freshly placed concrete.

Owner Practices: Your operation practice can contribute to scaling through 1.) allowing salt drips from autos parked on a driveway, 2.) application of deicing salts, 3.) application of fertilizers for deicing, and 4.) lack of concrete sealing practices. Also, the diversion of downspouts away from the concrete surface during freezing temperatures keeps the concrete dry, which aids in durability all in itself. Plus, any salt residuals should be hosed off immediately in the spring to prevent the excess salt from moving into the concrete. Concrete sealers should contain silane or siloxane and should be reapplied every couple years.

Snow Management: The owners timely ability to remove snow from the surface before tires or traffic compact it can go a long way to preserving the natural good traction of a concrete surface. Early snow removal can prevent slippery conditions and negates the need to apply salt for ice or compacted snow removal. For commercial sidewalks, talk to your local city administrator to see if the sidewalks can be cleared of snow well before the start of business every day. Your personal effort to provide intermittent clearing of newly fallen snow throughout the day also makes sense.