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THE COLD FACTS OF PROTECTING DRIVEWAYS, SIDEWALKS, AND OTHER EXTERIOR CONCRETE FLATWORK DURING WINTER WEATHER MONTHS

Introduction

Lambert Concrete, Inc. is publishing this document in an effort to educate homeowners on the potentially damaging effects of snow, ice, and de-icing products on new exterior concrete flatwork. For ANY exterior concrete flatwork installed within the past year, proper maintenance and care of driveways, sidewalks, porches, patios, and even garage floors during the first cold weather season is critical to minimizing damage to concrete flatwork surfaces.

What Causes Concrete Flatwork Damage?

Freeze/thaw cycles during cold months are the most common cause of damage to the surface of concrete flatwork. Concrete is a porous material that will absorb moisture at the surface. When the absorbed moisture in concrete freezes, it exerts tremendous expansive force, which weakens the concrete and sometimes leads to the surface of the concrete scaling off. Concrete less than one year old (and especially concrete poured after November 1st) is particularly vulnerable to freeze/thaw cycle damage in the first cold weather season.

The Facts About De-Icing Products

De-icing products can be composed of a variety of different chemicals that are harmful to concrete. These include ammonium nitrate, ammonium sulfate, and magnesium chloride. State, county, and municipality street departments have been known to use magnesium chloride-based deicing materials in the past, a fact that exacerbates the probability of damage to concrete as a result of snow and water drippings from vehicles.

However, the most damaging effect of using de-icers is not the chemical interaction with concrete. The greatest harm caused by de-icers is that they increase the number of freeze/thaw cycles experienced by concrete flatwork during cold months, and thereby amplify the weakening effects produced by freezing moisture at the surface of the concrete. As a general rule, de-icing products should not be applied to exterior concrete flatwork less than one year old.



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Lambert Concrete, Inc.'s Practices

Since 1970, Lambert Concrete, Inc. has been a trusted concrete contractor providing quality concrete construction services for literally thousands of homes in Northwest Indiana. Lambert Concrete, Inc. uses concrete mixes in exterior flatwork that meet or exceed industry standards for compressive strength (3,500 – 4,000 PSI) and air-entrainment. Air-entrained concrete mixes contain tiny air bubbles that provide spaces within the concrete for expanding water to move into, thereby reducing the expansive stresses associated with freezing moisture in the concrete.

In addition, exterior concrete flatwork placed and finished by Lambert Concrete, Inc. is sprayed with a surface sealer on the day it is poured. This surface sealer is meant to provide an initial level of moisture evaporation and absorption protection, but can be significantly deteriorated by foot and vehicle traffic during and after the construction of a home.

STEPS TO TAKE TO PROTECT YOUR EXTERIOR FLATWORK

The following is a list of steps that can and should be taken to protect driveways, sidewalks, and other exterior concrete flatwork less than one year old during cold weather months:

1. **DO NOT USE ANY DE-ICING PRODUCT IN THE FIRST COLD WEATHER SEASON UNDER ANY CIRCUMSTANCES.** Using de-icing products increases the frequency of freeze/thaw cycles and exacerbates the weakening effects of freezing moisture on concrete surfaces. The only safe material to use to make the concrete surface skid-resistant is plain sand.
2. **NEVER USE ANY DE-ICING PRODUCT CONTAINING AMMONIUM NITRATE, AMMONIUM SULFATE, OR MAGNESIUM CHLORIDE.** These de-icing agents chemically attack concrete and cause damage above and beyond the effects of freeze/thaw cycles.
3. **DO NOT PARK VEHICLES ON DRIVEWAYS.** Snow and water contaminated with road salt and de-icers will drip from vehicles leaving concentrated areas of salt or de-icer brine that will facilitate multiple freeze/thaw cycles at the surface of the concrete.
4. **IF THE CONCRETE DRIVEWAY WAS POURED AFTER NOVEMBER 1, MINIMIZE VEHICLE TRAFFIC ON THE DRIVEWAY UNTIL THE COLD MONTHS HAVE PASSED AND THE GROUND IS NO LONGER FROZEN.** Exterior concrete flatwork poured after November 1st does not experience an adequate period of sufficiently high ambient temperature to cure. As a result, the compressive strength of the concrete is at a minimum. A weak concrete surface combined with uneven areas of frost-heaved sub base can lead to severe damage when subjected to the stress caused by the weight of an automobile.
5. **APPLY A CONCRETE SEALER TO PROTECT THE SURFACE OF THE CONCRETE.** Call Lambert Concrete, Inc. for an estimate to professionally apply a sealer that's right for your driveway.