

“FROST HEAVING – WINTER WOES REQUIRE SUMMER REMEDIES”

As summer months approach, the symptoms of frost heaving that were present during the winter often disappear. This does not mean the cause and possible defects have been eliminated. If evidence of frost heaving was present in and around your dwelling last winter, now is the time to identify possible causes so that repairs can be made before the next winter season.

What is “frost heaving”?

Frost heaving is a movement of soil caused by the formation of ice lenses within the ground. It is a natural occurrence in Minnesota and other northern climates during the winter and early springtime. Frost heaving occurs when water in the soil expands as it freezes. Generally, water expands by approximately 9% in volume when frozen. This expansion creates significant forces that can move and destroy what had seemingly appeared to be solid construction. Soil movement can vary from something that is barely visible to displacement that is many inches.

Causes and consequences of frost heaving.

Three conditions typically exist for frost heaving to occur. These are:

1. A sufficiently cold climate (such as found in Minnesota) so that freezing temperatures penetrate into the ground;
2. A sufficient amount of water in the soil; and
3. A type of soil that is frost susceptible

When water in soil freezes, an ice lens is formed. Ice lenses collect nearby water in the soil by capillary action, which increases the size of the lens. The force created by the formation of the ice lens will heave soil and move the surface of the ground upward. Fine-grained soils, such as silty clays, are particularly susceptible to frost heave due to the size of the soil particles, which are conducive to capillary action. Excess water in soil is typically necessary to create frost heaving, as the natural amount of water is often insufficient to create substantial ice lenses. Additional water sources can include a high groundwater table, pipe leaks or drain tile leaks, or surface water or roof drainage that is not properly directed away from the structure.

When frost heaves the soil, patios slabs, sidewalks, steps, asphalt drives, retaining walls, and other building elements that rest at or near the surface of the ground are also lifted. In some cases frost heaving can lift and damage a home's foundation wall. Isolated concrete piers, such as those used to support decks and elevated living areas, are susceptible to “adfreezing.” Adfreezing occurs when frozen soil adheres to the side of a footing and lifts it as the soil moves upwards. Adfreezing is particularly problematic as it can cause significant differential upward movement between the affected footing and other adjacent footings and foundations.

Even though displaced building components will sometimes resume their original positions when the ground thaws, frost heaving can cause them substantial harm. It can also cause various forms of damage to other building components such as: doors and windows can become racked (particularly in elevated living areas) rendering them inoperable; cracks can form in interior drywall; siding can become damaged; and decks can sustain damage.

Prevention of frost heaving begins with reducing excess water in the soil, preventing the soil from freezing, or using soils that are not frost susceptible. Numerous other methods exist to

prevent heaving and the appropriate methods vary by site. The responsibility for building a structure that adequately resists frost heaving falls on the contractor and/or design professional who need to understand the soil characteristics and employ the proper details.

Some homeowners ask, "Why do some concrete patios, deck footings, or sidewalks heave, move and crack in the same neighborhoods where others do not?" Differing amounts of heaving indicate differing conditions such as the amount of water in the soil, or the type of soil adjacent to the building, or varying construction details. The magnitude of soil movement depends largely on the amount of water in the soil and whether the construction was completed in a fashion to minimize the amount of heaving.

There are many issues that commonly lead to, or exacerbate, frost heaving, including: installing concrete flatwork directly on frost susceptible soils; installing shallow footings that do not extend to frost depth, grading that does not direct water away from a structure, and failing to properly install drain-tile systems. Heaving and movement are symptoms of a problem, and finding the cause can be complicated and often requires an investigation by a professional who understands proper construction procedures.

Left unchecked, frost heaving could cause disastrous results. Damage can worsen and can extend to other areas of the structure. Prolonged movement of footings that support decks and elevated living areas could cause extensive damage and instability of the entire assembly. Cracks in concrete could continue to spread and require removal and replacement of the concrete in the entire area.

If frost heaving is occurring, can a warranty claim be pursued?

Minnesota is known for cold weather and an abundance of water. Likewise, frost heaving is a fairly common occurrence in this area. Unfortunately, identifying the cause of the problem and pursuing potential remedies can be very costly. An important consideration for a homeowner association experiencing the problem is who is going to pay for the repairs.

If an investigation discloses that some facet of the construction violated a building code, or otherwise was not built according to sound construction standards, or the construction was not performed in a workmanlike manner, the association may have warranty rights related to the builder. The warranty may be one provided directly by the parties who built the project, or may be one of the statutory warranties provided by the State of Minnesota.

Regardless of the source of the warranty, any remedy utilizing warranty rights must be pursued in a timely manner. The specific time-frame during which claims must be pursued is called the statute of limitations period. For instance, the home improvement warranty under Minnesota Statute §327A provides warranty periods for various types of construction defects from one to ten years for major construction defects due to noncompliance with building codes, but does not cover all frost heaving conditions.

The Minnesota Common Interest Ownership Act (Minnesota Statute §515B, which is also referred to as "MCIOA") provides warranties for various construction defects for up to six years, unless the developer and home owners agreed to reduce the warranty period to as short as two years. The applicable statute of limitations period and how long someone maintains warranty rights depends on factors that vary with each project and defect. Exclusions and exceptions may also apply.

Frost heaving often presents conditions that are readily apparent and visible. Unsightly conditions can be obvious, such as when posts and porches lift, patios and sidewalks heave and crack, or the corner of a building raises and becomes unlevel. These visible conditions may have a direct bearing on specific warranty claims and rights, and what actions are available for the association to take.

Under Minnesota Statute §327A, a claim must be brought within two years of the discovery of the breach, and written notice must have been provided to the builder within six months of discovery of the condition. While the association or home owner may be able to argue for a limited extension of time in circumstances where the builder has made repeated assurances that they would make repairs, it important to take action quickly upon discovery of the frost heaving.

Likewise, a common law claim for negligence must be brought within two years after the date of the discovery of the injury, or within two years of when it should have been discovered, whichever occurs first. If a warranty claim under MCIOA is available, the written notice requirement to the builder may be relaxed. However, the claim must still be initiated within the applicable statute of limitations time period. That period is six years from when enough units were sold by the declarant to trigger a right to transition the board control from the declarant to the unit owners, unless the original purchasers agreed that the period be two years instead of six.

Regardless of the legal theory under which warranty claims may be pursued, the visible nature of frost heaving may shorten the time in which warranty rights can be pursued. Even during the summer months, when the building components have returned to more normal positions, the statutes of limitations period concerning various claims continue to run toward expiration.

Conclusion.

Even if the visible damage caused by frost heaving to the dwelling, patio, deck or sidewalk is not catastrophic, the prolonged effect of the building component rising and falling from season to season, will take a toll. If more than minor frost heaving exists, some form of investigation should be conducted as soon as possible to determine the cause of the problem and what remedy might be available. If the dwelling or project is relatively new, a warranty claim may apply if action is taken early enough.

Clair E. Schaff
Attorney at Law
Levin & Edin
651-222-2155

cschaff@mncondodefects.com

Kent J. Jones, P.E.
Engineering Consultant
Encompass, Inc.
952-854-4511

kent@encompassinc.com