

WINTER CONSTRUCTION (PROTECTION FROM FREEZING)

ONTARIO BUILDING CODE

9.12.1.3. Protection from Freezing

- (1) The bottom of excavations shall be kept from freezing throughout the entire construction period.

OBJECTIVE

To avoid frost heave and the subsequent uneven subsidence on thawing if the soil freezes.

Cold weather is defined as a period when for more than three consecutive days, the following conditions exist: the average daily air temperature is less than 5° C and the air temperature is not greater than 10° C for more than one-half of any 24 hour period. Cold weather usually starts during the fall and continues until spring.

The bottom of excavations should be kept from freezing throughout the entire construction period. Certain types of soils are subject to frost heave. The amount of frost heave is dependent on the type of soil, moisture content and the depth of the frost or freezing. Constructing a foundation on frozen soil will result in the foundation settling unevenly as the soil thaws, damaging the foundation and other supports. Precautions must be taken during construction to avoid the bottom of excavations from freezing. The protection of the open excavation must be maintained for the entire duration of the construction or until the building can be enclosed and heated. Builders that plan to undertake such activities in the winter months must plan ahead and develop a plan of action that will ensure protection of the soil from freezing. The use of insulated blankets is one method of preventing the soil from freezing.

One of the more serious problems associated with cold weather construction is the weather which varies in an unpredictable manner from cold to very cold. In the winter time the ground can freeze to a depth in Ontario of several feet. Freezing of soil can cause significant heaving and damage to buildings. Water expands approximately 10% by volume when it freezes and significant heaving occurs when water is drawn from unfrozen areas into the frost zone resulting in the formation of ice lenses. If construction is undertaken in the winter, precaution must be taken to prevent excavated soils from freezing. Open excavations in

sub-zero temperatures could freeze to a significant depth in a matter of a few hours. Open excavations must therefore be protected.

It is strongly recommended that new home builders consult a geotechnical engineer and develop a 'Frost Protection Plan' (FPP) that is suitable to the soil condition you are working with. The Special Investigation Unit in conjunction with the area building inspector will be ensuring that winter construction undertaken by builders complies with the 'Protection from Freezing Requirement' in Part 9 of the building code. Upon visiting construction sites, they may require a plan or method for ensuring the protection from freezing is being implemented during the excavation, placement of concrete for footings and foundation walls.

