Cold Weather Concrete

Building Services Information Sheet

Last Updated: January 2023

Weather conditions can change rapidly in the fall, winter, and spring seasons. Proper planning and good concrete practices are critical:

- When the daily ambient temperature is 5°C or lower, extra precautions for curing should be followed to prevent damage from freezing and to maintain curing conditions that foster normal strength development.

- During cold weather conditions, additional heat is often required to maintain favorable curing temperatures of 10°C to 20°C. However, care must be taken to not exceed the recommended concrete temperature to avoid loss of moisture from the concrete.

- Upon concrete finishing, it is important to cover 100% of the exposed concrete surface by using insulated blankets and tarping. Leaving formwork in place for vertical elements (walls, columns, etc.) will help mitigate damage from freezing. The top surface of such formwork must be protected as well to prevent damage from freezing.

- The owner may, at their expense, conduct concrete testing to ensure that concrete placed meets the project design and quality requirements. The owner is responsible for reviewing all test reports to ensure project requirements are met.

Requirements:

Ontario Building Code 9.3.1.9 - Cold Weather Requirements

1) When the air temperature is below 5°C (41°F), concrete shall be
    a. Kept at a temperature of not less than 10°C or more that 25°C while being mixed and placed, and
    b. Maintained at a temperature of not less than 10°C for 72 hrs after placing
2) No frozen material or ice shall be used in concrete described in (1)

Ontario Building Code 9.20.14.1 - Laying Temperature of Mortar and Masonry

1) Mortar and masonry shall be maintained at a temperature not below 5°C during installation and for not less than 48 hrs after installation.

2) No Frozen material shall be used in the mortar mix.

Ontario Building Code 4.2.5.7 – Protection and Maintenance at Excavations

1) All sides of an excavation, supported and unsupported, shall be continuously maintained and protected from possible deterioration by construction activity or by the action of frost, rain and wind.

Canadian Standards Association (CSA) A.23.1 - Concrete Materials and Methods of Concrete Construction

Please refer to section A.23.1 for a comprehensive listing of concreting guidelines.