

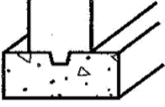
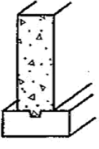

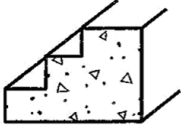


# Residential Concrete Requirements



Ready Mixed Concrete Association of Ontario

The minimum requirements for residential concrete are outlined in the Ontario Building Code (OBC) and CSA A23.1-09 Concrete materials and methods of concrete construction. In general, the concrete supplied for residential concrete applications shall conform to CSA A23.1-09 Clause 8.13.4, Table 2 and Table 4.

Class of concrete	Description of usage	Maximum water/cementing materials (w/cm) ratio	Minimum 28d compressive strength, MPa	Air content, %
R-1 	Footings for walls, columns, fireplaces, and chimneys	0.70	15	3-6
R-2 	Foundation walls, grade beams, piers, etc.	0.70	15	4-7
R-3 	Interior slabs on ground not exposed to freeze – thaw	0.65	20*	—
C-2 	Garage floors and all concrete exposed to freeze – thaw and deicing salts, such as walkways, driveways, patios, steps	0.45	32	5-8

\* Note: OBC Clause 9.16.4.5 requires a minimum of 25 MPa strength when damp proofing is not provided. When damp proofing is provided the minimum concrete strength may be reduced to 15 MPa.

Other basic considerations to bear in mind when placing residential concrete include the following:



- **Maximum Discharge Time** – The maximum time between batching of the concrete at the concrete plant and the complete discharge of the concrete from the truck is 120 minutes. This time may be extended

through the use of a set retarding admixture.

- **Concrete Placement** – Concrete shall be deposited as close as possible to its final location and in such a way as to avoid cold joints. Handling or moving of concrete in forms by the use of vibrators or the addition of water on the jobsite shall not be allowed.

- **Concrete Placement Rate** – Concrete for walls shall be deposited continuously in approximately equal horizontal lifts not exceeding 1.2 metres in height.
- **Concrete Consolidation** – Each lift of concrete shall be consolidated by the use of a mechanical vibrator inserted at regularly spaced intervals.
- **Concrete Curing and Protection** – Curing shall be provided by one or more of the following curing methods:
  - Ponding or continuous sprinkling
  - Absorptive mat or fabric continually kept wet
  - Damp sand, earth, or similar moist materials
  - Curing compounds
  - Waterproof paper or plastic film
  - Vapour mist bath
  - Forms in contact with the concrete surface
- **Minimum Concrete Curing Period** – R-1, R-2 and R-3 concrete shall be cured for either 3 days at a minimum temperature of 10°C or for the time necessary to reach 40% of the specified 28-day compressive strength. C-2 concrete shall be cured for 7 days at a minimum temperature of 10°C and for the time necessary to reach 70% of the specified 28-day compressive strength.



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Sources:

- 1 Ontario Building Code – 2012, Ontario Ministry of Municipal Affairs and Housing – Housing Development and Buildings Branch
- 2 Clause 8.13.4, Table 2 & Table 4, **CSA A23.1-09/CSA A23.2-09 Concrete materials & methods of concrete construction/Test methods and standard practices for concrete**. © 2009 Canadian Standards Association