

BuildTECH Bulletin – Piles & Grade Beam

1. Foundations which include piles and grade beams that support any fully finished livable floor space or second storey must be designed in accordance with Part 4 of the National Building Code and sealed by a professional engineer licensed to practice in the Province of Saskatchewan.
2. Foundations which include piles and grade beams that support non-finished floor spaces including attached garages with no livable floor space in or above, attached covered decks, and three season rooms shall meet the minimum specifications described below.

Grade Beam Construction

Grade beams must be a minimum of 200mm by 600mm (8 inches by 24 inches) with 2 – 15M bars top and bottom. Thickened edge slabs are not acceptable as a grade beam without an Engineer's seal. An acceptable void form must be placed under all grade beams.

Stirrups

It is the builder's responsibility to assess the soil conditions to determine the need for stirrups.

Void Forms

Void forms must be placed under all grade beams including extensions under garage door openings.

Cutouts in grade beams

Cutouts in a grade beam cannot occur without adequate structural provisions across the opening. The builder is solely responsible for cutouts where the grade beam is not dropped accordingly. Cutouts shall not exceed 300mm or the grade beam must be dropped accordingly. Where cutouts occur it is the builder's responsibility to ensure the top and bottom bars extend across the openings with sufficient overlap. Piles placed under cutouts must extend a minimum of 4 meters deep. A minimum of 1-15M bar must extend from the top bars in the grade beam to the full depth of the piles. Where possible piles must be placed at the edge of all cutouts unless designed by an engineer.

Pile Construction

Pile sizing and spacing must be designed for the anticipated loads. The following forms a general guide that will be accepted without an engineer's seal where used in accordance with item 2. above.

1. Small loads from 1 – vehicle attached garages, covered decks and/or 3 season rooms
200mm by 2400mm @ 2400mm on center concrete piles may be used to support roof spans up to 4.8 meters or floor joists spans up to 2.4 meters. Piles that support floor joists and roof loads must comply with 3) below.
2. Moderate loads from 2 – vehicle attached garages, covered decks and/or 3 season rooms
250mm by 3000mm piles @ 2400mm on center may be used to support roof spans up to 9.8 meters or floor joists up to 4.9 meters.
3. Combination roof and floor loads – covered decks and/or 3 season rooms
250mm by 3000mm piles @ 2400mm on center may be used to support floor joists and roof spans up to 3 meters. The span may be increased up to spans noted in 2. above, by reducing the spacing of the piles and/or increasing the length of the piles proportionally.

All piles must be reinforced with a minimum of 1-15M bar full depth of the pile extending to the top bars of the grade beam.

Piles adjacent to a foundation wall

Piles must also be placed within 0.9 meters of a concrete foundation wall. This pile should be a minimum 4 meters deep when within 1 meter of a recent excavation. See below for piles in excavated area.

Piles within 1 meter of a service trench

All piles located within 1 meter of a service trench are required to be a minimum of 4 meters deep. It is the builder's responsibility to ensure compliance.

Piles placed in excavated area

Piles must be extended for the depth of the excavation plus the minimum depth required under "Pile Construction", above. This is the builder's responsibility to ensure compliance.