

## Footings

Effective July 1, 2019, all permitted buildings must have continuous exterior footings placed at least 12" below grade. This is in accordance with the 2012 IRC, section 403. This notice is to clarify the county's policy, and to ensure that all footings meet the same standard.

The bottom of the footing shall be measured from undisturbed ground next to the footing. Piled dirt shall not be used to determine the depth. If a backfill wall measuring at least 12" above the footing is close to the footing, the footing may be formed up on solid ground, with shallow or no footings cut into the ground. The ground will still be probed for proper support. If there are shallow or no backfill walls around a footing, that footing section must be cut 12" into the ground.

Footings shall go down to hard ground. Footings in fill dirt shall be dug to original grade. An option for dealing with this situation is, instead of digging the entire footing deeper, to dig pier holes that are the width of the footing at a maximum distance of 6' on center. These piers should be dug to solid ground. The inspector may require more piers or the entire footing dug deeper at his discretion. Rebar must then be installed to tie the pier holes to the footings, and the footings to the slab. A slab on fill dirt needs a rebar grid 24" o.c.

Conversely, the builder may find that the footings are being placed in an area consisting of rocks. If the ground consists of small, brittle, or unsubstantial rocks, then the rocks need to be removed from the footings so that a firm footing may be laid. If the rocks are large and substantial, capable of creating a solid footing, then the rocks may be used in the footings. The dirt must be removed from the rock, so that it is clearly visible. If the rock causes only a minor shallowing of the concrete being poured into the footing, rebar may be laid over the rock, tying the footing together over the rock. If the rock majorly interrupts the concrete, leaving less than 4" of concrete footing over the top, then 2 pieces of rebar need to be drilled into the rock, extending 6" into and out of the rock, and sealed with adhesive. This should be tied to the rest of the footings.

The width of the footings shall be sized according to Table 403.1 of the IRC. It is based on the height of the building and the type of construction, with a minimum of 12", and usually not required to be more than 24" wide. The footings may be wider if desired. The thickness of the poured concrete footing is based on the width of the concrete and the wall above it. The minimum thickness of the concrete is 6". The wider the footing, the thicker the concrete needs to be to prevent the footing from shearing at the wall.

Interior piers for houses shall also be sized per Table 403.1 of the IRC. Pier footings for decks and pole barns should be sized per the prescriptive deck code (with Ga amendments) or the pole barn specs. The footings must be minimum 12" deep, extending to solid ground. They

must have a minimum 6" of concrete between the bottom of the post and the bottom of the hole, unless they are designed otherwise.

Rebar reinforcement is required across garage doors, when concrete stem or basement walls are installed, as designed, or if the situation requires it. Please consult the inspectors with any questions.

Engineered footings may be required, depending on the situation. The builder may choose to design footings that are not covered by the prescriptive code (such as a house built on piers). The inspector may require engineering for footings that the inspector cannot reasonably conclude will provide a firm footing (often due to soil conditions). This is up to the inspector's discretion. The builder may also have an engineer inspect the footings if the inspection department cannot approve the footings due to scheduling difficulties (such as the footings were not ready to be inspected during business hours, and the pour is scheduled for a weekend pour).

Three important items to note are the inspector's probe rods, difficult circumstances that affect the footings, and footing readiness. The inspector regularly carries a 4' probe rod, and the office has an 8' probe rod. If the holes are too deep, please let the inspector know so that he can bring the 8' rod, or have an appropriate length piece of rebar on site. If a situation exists that might cause a need for engineered footings, please contact the inspector. With discussion and research, solutions can sometimes be found that do not require an engineer solution. Footings should be completely dug, with rebar and formboards as necessary, when the inspector arrives. Depending upon the circumstances, items may be fixed while the inspector is on site. It is up to the inspector's discretion to handle the approval of any corrections.

**R403.1.4 Minimum depth.** All exterior footings shall be placed at least 12 inches (305 mm) below the undisturbed ground surface. Where applicable, the depth of footings shall also conform to Sections R403.1.4.1 through R403.1.4.2.

**TABLE R403.1  
MINIMUM WIDTH OF CONCRETE,  
PRECAST OR MASONRY FOOTINGS (inches)<sup>a</sup>**

	LOAD-BEARING VALUE OF SOIL (psf)			
	1,500	2,000	3,000	≥ 4,000
<b>Conventional light-frame construction</b>				
1-story	12	12	12	12
2-story	15	12	12	12
3-story	23	17	12	12
<b>4-inch brick veneer over light frame or 8-inch hollow concrete masonry</b>				
1-story	12	12	12	12
2-story	21	16	12	12
3-story	32	24	16	12
<b>8-inch solid or fully grouted masonry</b>				
1-story	16	12	12	12
2-story	29	21	14	12
3-story	42	32	21	16

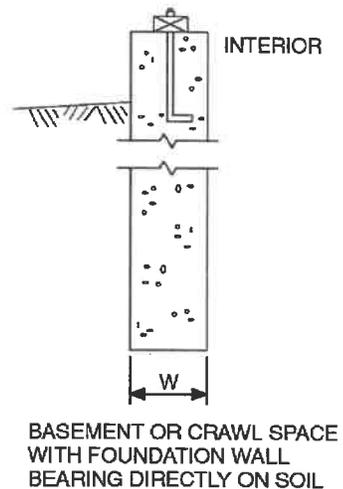
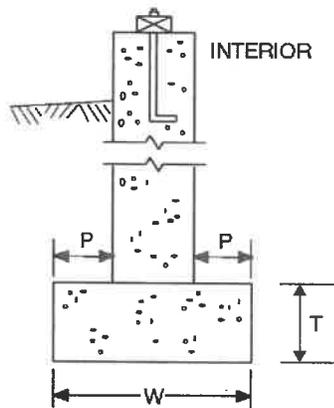
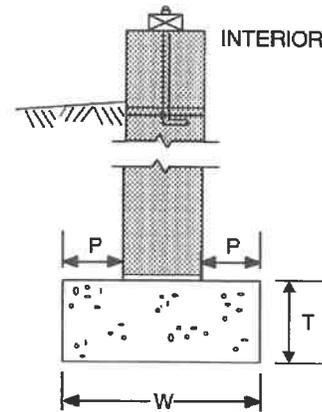
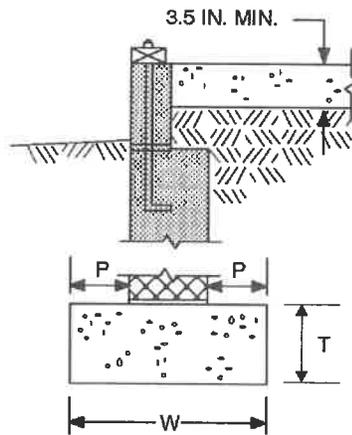
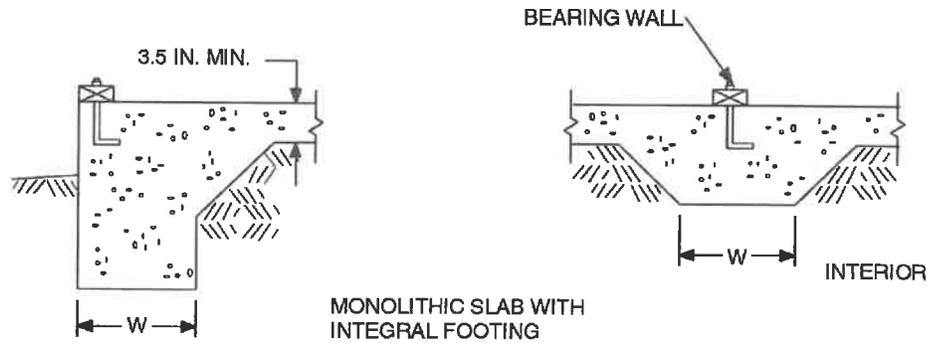
For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Where minimum footing width is 12 inches, use of a single wythe of solid or fully grouted 12-inch nominal concrete masonry units is permitted.

## SECTION R403 FOOTINGS

**R403.1 General.** All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other *approved* structural systems which shall be of sufficient design to accommodate all loads according to Section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill. Concrete footing shall be designed and constructed in accordance with the provisions of Section R403 or in accordance with ACI 332.

**R403.1.1 Minimum size.** Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 and Figure R403.1(1). The footing width, W, shall be based on the load-bearing value of the soil in accordance with Table R401.4.1. Spread footings shall be at least 6 inches (152 mm) in thickness, T. Footing projections, P, shall be at least 2 inches (51 mm) and shall not exceed the thickness of the footing. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table R401.4.1. Footings for wood foundations shall be in accordance with the details set forth in Section R403.2, and Figures R403.1(2) and R403.1(3).



For SI: 1 inch = 25.4 mm.

FIGURE R403.1(1)  
CONCRETE AND MASONRY FOUNDATION DETAILS