

MINIMUM THICKNESS OF FOOTINGS

PURPOSE

This interpretation has been developed to clarify the requirements of the Alberta Building Code 2014 (ABC 2014) for the design of footings.

DISCUSSION

Eventually, all loads in a structure are transferred to the ground. The capability of the ground to accept these loads without excessive movement or compression is referred to in the ABC 2014 as its loadbearing capacity. This capability varies depending on the type of soil and the amount of water present in the soil.

To ensure that an adequate area of ground is being used to support the load, the ABC 2014 requires footings to have a minimum area to spread out the load, so that the pressure being exerted on the soil does not exceed the soil's loadbearing capacity.

Forces (loads) can be considered as spreading out from the point of application and travelling through concrete at roughly a 45 degree angle. As a result, clause 9.15.3.8.(1)(b) requires the depth of the footing to be equal to, or greater than, the projection of the footing beyond the supported element. This requirement allows the loads to be distributed evenly over the area of the footing so that the loadbearing capacity of the soil is not exceeded.

Questions have been raised by code users and safety codes officers if the thickness must be increased for footings that are larger than the minimum required size. In some instances, for ease of construction, the area of a column footing or the width of a strip footing may be greater than required in Table 9.15.3.4.

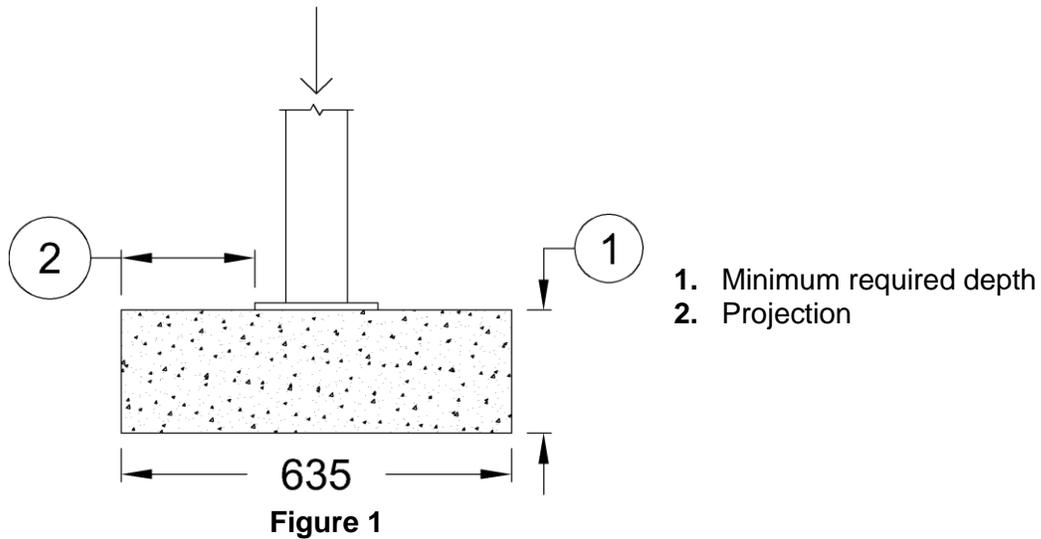
Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Building Code 2014.

Issue of this STANDATA is authorized by
the Provincial Building Administrator

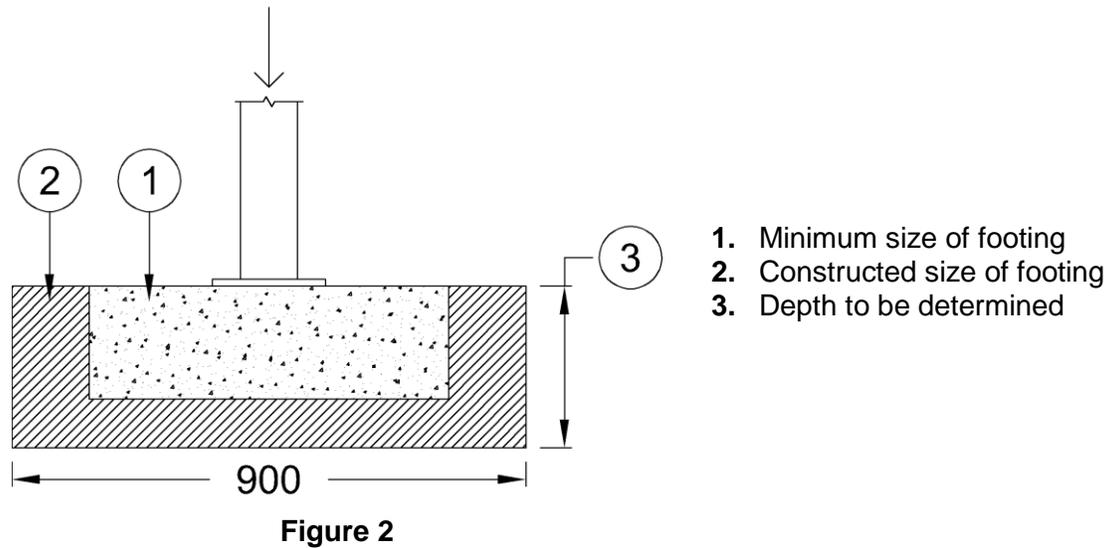
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For example, the minimum area for a footing beneath a column supporting a single storey when the columns (or other supports) are spaced at 3 m o.c. is 0.4 m², as shown in Figure 1.



However, if this footing were poured so that it was 0.81 m² (900 mm x 900 mm), as shown in Figure 2, even though it was only required to be 0.4 m², code users are not clear respecting the thickness of the footing required by the ABC 2014.



CODE REFERENCES

1. Sentence 9.15.3.8.(1) states:

<ol style="list-style-type: none">1) Footing thicknesses shall be not less than the greater of<ol style="list-style-type: none">a) 100 mm, orb) the width of the projection of the footing beyond the supported element.

2. Table 9.15.3.4. gives the minimum widths for strip footings and the minimum areas for column footings depending on the number of floors supported.

INTERPRETATION

1. The minimum thickness of an unreinforced footing shall be the greater of:
 - a. 100 mm, or
 - b. not less than the length of the projection required beyond the supported element (usually the base plate of a column or a foundation wall) calculated using the minimum footing area required.
2. Alternatively, the minimum required thickness of footings may be determined by the structural analysis of the loads by a registered engineering professional licensed to practice in the province of Alberta.

This INTERPRETATION is applicable throughout the province of Alberta.