

# CCMC 12839-R

## CCMC Canadian code compliance evaluation

<b>CCMC number:</b>	12839-R
<b>Status:</b>	Active
<b>Issue date:</b>	1997-10-31
<b>Modified date:</b>	2022-04-04
<b>Evaluation holder:</b>	<b>Bigfoot Systems Inc.</b> 6750 Highway 3, Martin's Point R.R. # 2 Mahone Bay NS B0J 2E0 Canada Website: <a href="http://www.bigfootsystems.com">www.bigfootsystems.com</a> Telephone: 902-627-1600 Email: <a href="mailto:info@bigfootsystems.com">info@bigfootsystems.com</a>
<b>Product name:</b>	BIGFOOT SYSTEMS®
<b>Code compliance:</b>	NBC 2015, OBC 2012
<b>Evaluation requirements:</b>	CCMC-TG-031113.03-15 "CCMC Technical Guide for Bell Shaped Foundation Form"

**In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.**

[Learn more about CCMC recognition](#)

## Code compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as a casting product for concrete-constructed tube footings in accordance with the conditions and limitations stated in this evaluation, complies with the following codes:

### Ontario Building Code 2012

Code provision	Solution type
9.15.3 Footings	<a href="#">Alternative</a>

### National Building Code of Canada 2015

Code provision	Solution type
9.15.3. Footings	<a href="#">Alternative</a>

The above opinion is based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

# Product information

## Product name

BIGFOOT SYSTEMS®

## Product description

The product is an engineer-designed footing form made of lightweight, recycled, high-density polyethylene plastic that replaces traditional wooden boxes. The product is bell-shaped, which allows for standard fibre construction tubes to be attached to its top.

The product's footing forms come in four different models: BF20, BF24, BF28 and BF36.

- Model BF20 accepts 15-cm (6 in.) and 20-cm (8 in.) small, medium and large construction tubes.
- Model BF24 accepts 20-cm (8 in.) and 25-cm (10 in.) small, medium and large construction tubes.
- Model BF28 accepts 25-cm (10 in.) and 30-cm (12 in.) small, medium and large construction tubes
- Model BF36 accepts 30-cm (12 in.), 35-cm (14 in.), 40-cm (16 in.) and 45-cm (18 in.) construction tubes.

The following figure illustrates the shape of the product with generic dimensions. The following table provides specific dimensions for each model. The top rings of the bell form are designed to accept construction tubes with various inside diameters. The side portion is ribbed to give added strength to resist distortion of the form from the backfill or poured concrete and allows trapped air to escape. The sloped sides also have small vent holes to allow trapped air to escape when the footing is being poured with concrete to prevent honeycombing of the concrete inside the form.

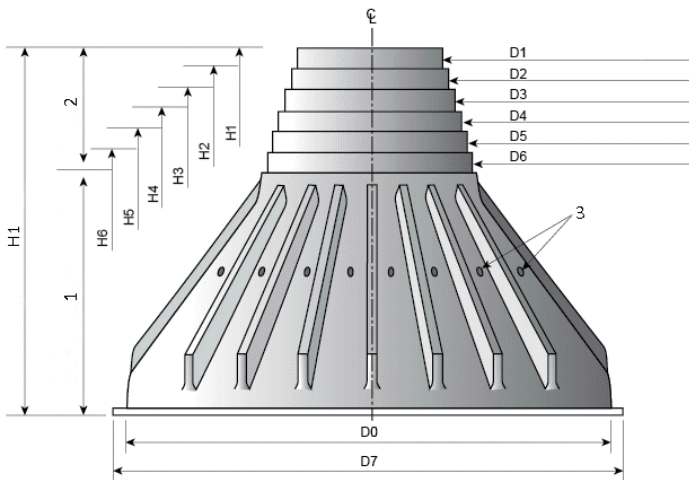


Figure 1. Footing form of the product

1. 30 cm (12 in.) for BF20, 24, 28 35 cm (14 in.) for BF36
2. All rings 2.8 cm (1.125 in.)
3. Vents
4. H1 - overall height
5. D1 - outside diameter

## Dimensions of the product

Ring diameter	BF20 cm (in.)	BF24 cm (in.)	BF28 cm (in.)	BF36 cm (in.)	Ring height	BF20 cm (in.)	BF24 cm (in.)	BF28 cm (in.)	BF36 cm (in.)
<b>D1</b>	13.97 (5.50)	19.05 (7.50)	24.13 (9.50)	30.48 (12.00)	<b>H1</b>	39.37 (18.00)	47.63 (18.75)	47.63 (18.75)	58.42 (23.0)
<b>D2</b>	15.29 (6.02)	20.37 (8.02)	25.45 (10.02)	35.56 (14.00)	<b>H2</b>	43.18 (17.00)	44.77 (17.625)	44.77 (17.625)	52.07 (20.5)
<b>D3</b>	16.46 (6.48)	21.39 (8.42)	26.47 (10.42)	40.64 (16.00)	<b>H3</b>	40.64 (16.00)	41.91 (16.5)	41.91 (16.5)	45.72 (18.0)
<b>D4</b>	19.05 (7.50)	24.13 (9.50)	29.21 (11.50)	45.72 (18.00)	<b>H4</b>	38.10 (15.00)	39.05 (15.375)	39.05 (15.375)	39.37 (15.5)
<b>D5</b>	20.37 (8.02)	25.45 (10.02)	30.53 (12.02)	-	<b>H5</b>	35.56 (14.00)	36.20 (14.25)	36.20 (14.25)	-
<b>D6</b>	21.39 (8.42)	26.47 (10.42)	31.55 (12.42)	-	<b>H6</b>	32.02 (13.00)	33.34 (13.125)	33.34 (13.125)	-
<b>D7</b>	54.61 (21.50)	64.01 (25.20)	75.18 (29.60)	92.42 (36.40)	<b>Wall thickness</b>	0.239 (0.094)	0.239 (0.094)	0.239 (0.094)	0.47625 (0.200)
<b>D0</b>	50.80 (20.00)	60.96 (24.00)	71.12 (28.00)	91.44 (36.00)	-	-	-	-	-

## Manufacturing plant

This evaluation is valid only for products produced at the following plant:

Product name	Manufacturing plant
	Springhill, NS, CA
BIGFOOT SYSTEMS®	◇

◇ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

## Conditions and limitations

The CCMC's compliance opinion is bound by this product being used in accordance with the conditions and limitations set out below.

- The product may be used as a casting for concrete footings in applications such as cottages, gazebos, storage sheds, sunrooms, screen rooms, additions, pole barns, carports, verandas, raised decks, gate posts, front porches, jack posts, fence posts, permanent and portable signs, wharves, moorings, capitals for columns, footings for mobile homes, satellite dishes and telecommunication towers. The product can also be used as a funnel for pouring.
- For applications beyond the scope of this Report, footing size and spacing will have to be carried out by a registered professional engineer skilled in such design and licensed to practice under the appropriate provincial or territorial legislation.
- Excess rings should be cut off at the top of the ring being used and should be removed.
- For below-grade applications, the product must be placed on undisturbed ground or on 100 mm to 150 mm of compacted crushed stone, and then backfilled according to the suggested depth before pouring concrete in order to prevent the footing from rising when concrete is being poured.
- For above-grade applications, the product must be anchored to the ground with 30-cm (12-in.) spikes driven in at a 45° angle. Drill 10-mm holes on a 45° angle in the product as indicated by the markings on the flange area at each rib location to accommodate the spikes.
- The construction tube must be screwed to the footing with four 25-mm (1-in.) screws, except for the BF36, which requires eight 25-mm (1-in.) screws.
- The hole must be backfilled according to the suggested depths before pouring concrete.
- For additional stability after the concrete has been poured, three to four #4 or #5 rebars may be placed in the centre of the construction tube down to the bottom of the footing form, ensuring not to strike the sides of the product.
- Concrete must be designed, mixed, placed, cured and tested in accordance with CSA A23.1-14, "Concrete Materials and Methods of Concrete Construction." Concrete must have a minimum compressive strength of 20.7 MPa (3 000 psi) at 28 days and consist of not more than 19-mm aggregate. Concrete must be placed in 25-cm to 40-cm lifts (maximum 40.6 cm) with #4 or #5 rebars thrust 10 to 12 times per concrete lift. Rods should be in the centre and not around the perimeter. Stripping of the forms is not necessary with the proposed footing form.
- The product must be installed according to the manufacturer's instructions
- For most applications, the product may be installed according to the following table.

**Table 1. Allowable bearing pressures and loads for the BIGFOOT SYSTEMS® tube**

Soil type	Maximum allowable bearing pressure psf (kPa)	Model BF20 allowable loads lbs (kN)	Model BF24 allowable loads lbs (kN)	Model BF28 allowable loads lbs (kN)	Model BF36 allowable loads lbs (kN)
Soft clay	835.42 (40.0)	1 822.59 (8.1)	2 624.54 (11.7)	3 572.29 (15.9)	5 905.21 (26.3)
Loose sand or gravel	1 044.27 (50.0)	2 278.24 (10.1)	3 280.67 (14.6)	4 465.36 (19.9)	7 381.51 (32.8)
Firm clay	1 566.41 (75.0)	3 417.37 (15.2)	4 921.01 (21.9)	6 698.04 (29.8)	11 072.26 (49.3)
Dense or compact silt	2 088.54 (100.0)	4 556.49 (20.3)	6 561.34 (29.2)	8 930.71 (39.7)	14 763.02 (65.7)
Dense or compact sand	3 132.81 (150.0)	6 834.73 (30.4)	9 842.01 (43.8)	13 396.07 (59.6)	22 144.53 (98.5)
Stiff clay	3 132.81 (150.0)	6 834.73 (30.4)	9 842.01 (43.8)	13 396.07 (59.6)	22 144.53 (98.5)
Till	4 177.08 (200.0)	9 112.97 (40.5)	13 122.68 (58.4)	17 861.43 (79.5)	29 526.04 (131.3)
Clay shake	6 265.62 (300.0)	13 669.46 (60.8)	19 684.02 (87.6)	26 792.14 (119.2)	44 289.06 (197.0)
Sound rock	10 442.70 (500.0)	22 782.44 (101.3)	32 806.71 (145.9)	44 653.57 (198.6)	73 815.09 (328.3)

## Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-031113.03-15	CCMC Technical Guide for Bell Shaped Foundation Form

The Report Holder has submitted technical documentation for the CCMC's evaluation. Testing was conducted at laboratories recognized by the CCMC. The corresponding technical evidence for this product is summarized below.

### Results of testing the stability properties for the product

Test	Requirement	Result
<b>Buoyancy</b>	The top of each construction tube must remain within 10 mm (both horizontally and vertically) of its original position.	The top of the construction tube remained stationary during the test with no measurable movement.
<b>Compression of unit walls after backfilling</b>	The sloping sides of the footing base must not be deformed by more than 10 mm after backfilling.	The units completely filled with concrete and maintained their original shape. There was no appreciable change in dimensions.
<b>Air pockets and honeycombing</b>	There must be no air pockets or honeycombing in any of the products tested.	Well-consolidated concrete with no voids or honeycombing.

**This PDF is an alternative version.** This document was published on 2022-04-04 and may not be the latest version of this evaluation. Users should consult the latest [published assessment](#) on the [CCMC Registry of Product Assessments](#), which contains the most up to date information. This PDF is intended for use as a record, not the latest information available.

## Administrative information

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## CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

### CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)



(Alliance of Canadian Building Official Associations (ACBOA))

First Nations National Building Officers Association (FNNBOA)



(First Nations National Building Officers Association (FNNBOA))

Canadian Home Builders' Association (CHBA)



(Canadian Home Builders' Association (CHBA))

Alberta Building Officials Association (ABOA)



(Alberta Building Officials Associations (ABOA))

Saskatchewan Building Officials Association (SBOA)



(Saskatchewan Building Officials Association (SBOA))

Manitoba Building Officials Association (MBOA)



(Manitoba Building Officials Association (MBOA))

Ontario Building Officials Association (OBOA)



(Ontario Building Officials Association (OBOA))

New Brunswick Building Officials Association (NBBOA)



(New Brunswick Building Officials Association (NBBOA))

Nova Scotia Building Officials Association (NSBOA)



(Nova Scotia Building Officials Association (NSBOA))



The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. [Learn more about how the CCMC provides a unique service for Canada.](#)

For more information, contact the CCMC by phone at (613) 993-6189 or by email at [ccmc@nrc-cnrc.gc.ca](mailto:ccmc@nrc-cnrc.gc.ca)

## Code compliance as an acceptable solution

### Code Compliance via Acceptable Solutions

If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

### CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

# Code compliance as an alternative solution

## Code Compliance via Alternative Solutions

Where a design differs from the acceptable solutions in Division B, then it should be treated as an **"alternative solution."** A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

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