



Evaluation Report

CCMC 13309-R

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The Footing Tube

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “The Footing Tube,” when used as a concrete pier in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code of Canada (NBC) 2005:

- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solution:
 - Subsection 9.15.3.

This opinion is based on CCMC’s evaluation of the technical evidence in Section 4.1 provided by the Report holder.

2. Description

“The Footing Tube” is a concrete pier form made of plastic manufactured from recycled linear low-density polyethylene with an ultraviolet stabilizer. The tube is tapered to provide stackability for shipping and storage and resistance to frost penetration and water. “The Footing Tube” is available in three sizes of piers: 152 mm (6”), 203 mm (8”) and 254 mm to 305 mm (10” to 12”), in addition to a base pier (FTB30), which can be used under the 203 mm (8”) and 254 mm to 305 mm (10” to 12”) tube to accommodate additional load bearing area.

“The Footing Tube” is identified with height scribe lines to indicate the level of concrete required to fill the tube and determine backfill height. The tube can be cut to the desired height using the scribe lines as a guide.

The safety top on the tube resists the entry of water, dirt during backfilling and other debris during construction.

Table 2.1 provides specific dimensions for the 152-mm, 203-mm and the 254-mm to 305-mm tubes in addition to the FTB30 base pier. The FTB30 base pier is not mechanically connected to the tubes to facilitate adjustment before leveling.

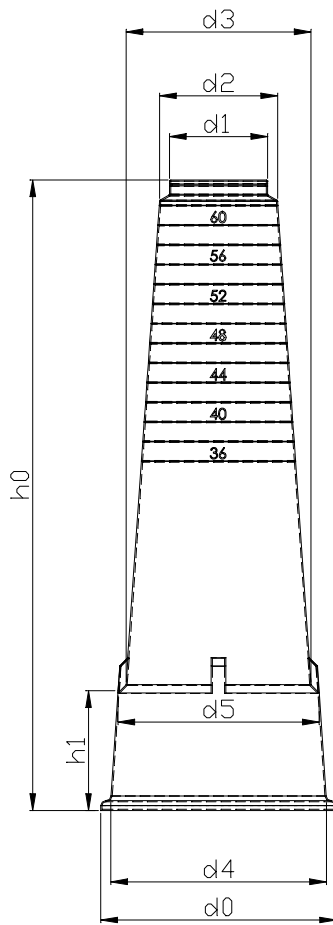


Figure 1. "The Footing Tube" details.

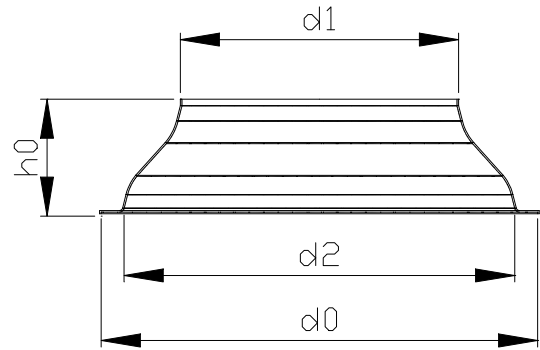


Figure 2. FTB30 Base Pier details.

Table 2.1. Dimensions of "The Footing Tube" and the FTB30 Base Pier

| Tube/Footing Diameter (d_1) | Dimensions (mm) | | | | | | | |
|---------------------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|
| | d_0 | d_1 | d_2 | d_3 | d_4 | d_5 | h_0 | h_1 |
| 152 mm (6") | 355 | 152 | 152 | 297 | 304 | 297 | 1 372 | 152 |
| 203 mm (8") | 609 | 203 | 203 | 356 | 558 | 499 | 1 591 | 216 |
| 254 mm to 305 mm (10" to 12") | 609 | 254 | 305 | 477 | 559 | 521 | 1 626 | 304 |
| 546 mm (FTB30) | 856 | 546 | 762 | N/A | N/A | N/A | 229 | N/A |

Note to Table 2.1:

(1) "N/A" means not applicable.

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by "The Footing Tube" being used in accordance with the conditions and limitations set out below.

- "The Footing Tube" may be used as a casting product for concrete piers for applications such as decks, porches, fence posts, one-storey cottages and additions, lampposts, pole barns and point load beams.
- "The Footing Tube" shall be installed according to the manufacturer's Installation Manual, dated February 2008.
- In cases where "The Footing Tube" is used in seismic zones as defined in Sentence 4.1.8.16.(3) of Division B of the NBC 2005, unreinforced products (tubes) will not be adequate. Proper seismic designs must be carried out by a registered professional engineer in accordance with the applicable codes, including the NBC 2005.
- The allowable bearing pressures and loads for "The Footing Tube" are specified in Table 3.1 below. For applications beyond the scope of this Table, consult a registered professional engineer in accordance with the applicable codes, including the NBC 2005.

Table 3.1. Allowable Bearing Pressures and Loads for "The Footing Tube"

| Soil Description | Allowable Bearing Pressure ⁽¹⁾⁽²⁾ (kPa) | 152-mm (6") Deck Tube ⁽³⁾ 0.078 m ² Base Area | 203-mm (8") Footing Tube ⁽⁴⁾ 0.239 m ² Base Area | 254-mm to 305-mm (10" to 12") Footing Tube ⁽⁵⁾ 0.239 m ² Base Area | FTB30 0.455 m ² Base Area |
|---------------------------------|--|--|---|---|---|
| Dense or compact sand or gravel | 150 | 11.8 KN/tube | 35.9 KN/tube | 35.9 KN/tube | 68.2 KN/tube |
| Loose sand or gravel | 50 | 3.9 KN/tube | 11.9 KN/tube | 11.9 KN/tube | 22.7 KN/tube |
| Dense or compact silt | 100 | 7.8 KN/tube | 23.9 KN/tube | 23.9 KN/tube | 45.5 KN/tube |
| Stiff clay | 150 | 11.8 KN/tube | 35.9 KN/tube | 35.9 KN/tube | 68.2 KN/tube |
| Firm clay | 75 | 5.9 KN/tube | 17.9 KN/tube | 17.9 KN/tube | 34.1 KN/tube |
| Soft clay | 40 | 3.1 KN/tube | 9.5 KN/tube | 9.5 KN/tube | 18.1 KN/tube |
| Till | 200 | 15.7 KN/tube | 47.9 KN/tube | 47.9 KN/tube | 91.0 KN/tube |
| Clay shale | 300 | 23.6 KN/tube | 71.8 KN/tube | 71.8 KN/tube | 136.5 KN/tube |
| Sound bedrock | 500 | 39.4 KN/tube | 119.8 KN/tube | 119.8 KN/tube | 227.5 KN/tube |

Notes to Table 3.1 :

- (1) Referenced in Table 9.4.4.1. of Division B of the NBC 2005.
- (2) Where a foundation bears on gravel, sand or silt, and the water table is within a distance below the bearing surface equal to the width of the foundation, the allowable bearing pressure shall be 50% of that determined in Article 9.4.4.1. of Division B of the NBC 2005.
- (3) Not for use where frost depth exceeds 1.3 m.
- (4) Not for use where frost depth exceeds 1.4 m.
- (5) Not for use where frost depth exceeds 1.5 m.

Concrete shall be designed, mixed, placed, cured and tested in accordance with CAN/CSA-A438-00, "Concrete Construction for Housing and Small Buildings," and shall comply with Subsection 9.3.1. of

Division B of the NBC 2005. The excavation hole must be backfilled according to the suggested depths before pouring concrete.

4. Technical Evidence

CCMC's Technical Guide for "Footing Tube" sets out the nature of the technical evidence required by CCMC to enable it to evaluate a product as an acceptable or alternative solution in compliance with the NBC 2005. The Report holder has submitted test results and engineering analysis for CCMC's evaluation. Testing was conducted at an independent laboratory recognized by CCMC. The corresponding test results for "The Footing Tube" are summarized below.

4.1 NBC 2005 Compliance Data for "The Footing Tube" on which CCMC Based its Opinion in Section 1

Table 4.1.1. Stability Test Results for the "The Footing Tube"

| Tube | Requirement | Result ⁽¹⁾ |
|-------------------------------|--|-----------------------|
| 152 mm (6") | Within 10 mm horizontally of original position | Pass |
| 203 mm (8") | Within 10 mm horizontally of original position | Pass |
| 254 mm to 305 mm (10" to 12") | Within 10 mm horizontally of original position | Pass |
| 546 mm (FTB30) | Within 10 mm horizontally of original position | Pass |

Note to Table 4.1.1:

(1) The purpose of this test is to establish that the tubes will remain stable and correctly in place during the placement and curing of concrete after backfilling.

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