



CANADIAN CODE
COMPLIANCE EVALUATION



CCMC 14520-R

CCMC Canadian code compliance evaluation

CCMC number:	14520-R
Status:	Active
Issue date:	2023-06-19
Modified date:	2023-10-17
Evaluation holder:	Prinsco, Inc. 1717 16th Street NE Willmar MN 56201 United States Website: www.prinsco.com Telephone: 320-441-2677 Email: Nathan.Tortorella@prinsco.com
Product name:	Proform HD®
Compliance:	NBC 2020
Criteria:	CCMC-TG-334613.05-20 "CCMC Technical Guide for Dual Footing Form and Drainage Tile System - HDPE"

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

[Learn more about CCMC recognition](#) [Look for the trusted CCMC mark on products to verify compliance.](#)



National Research
Council Canada

Conseil national de
recherches Canada

Canada

Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as a concrete footing form and drainage tile in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

National Building Code of Canada 2020

Code provision	Solution type
4.1.1.3.(4)(c) CSA CAN/CSA-S269.3-M92 Concrete Formwork ...	<u>Alternative</u>
9.14.3.1. Material Standards	<u>Alternative</u>
9.14.3.2. Minimum Size	<u>Alternative</u>
9.14.3.3. Installation	<u>Alternative</u>
9.14.5. Drainage Disposal	<u>Alternative</u>

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

Proform HD®

Product description

Proform HD® is a foundation product intended for use as a concrete footing form and drainage tile. The product is manufactured from corrugated high-density polyethylene (HDPE) and is available in 150 mm (6 in.) depths, with a single hollow chamber.

The Proform HD® system consists of 3.05 m (10 ft.) long sections, which are slotted on the exterior face to allow the entrance of ground water. The system also includes straight couplings, corner couplings, 90° vertical "L" fittings, a snap-in adaptor, single and double outlet fittings, spacer bars (reusable), and grade stakes to facilitate installation and accommodate drainage to the disposal system. Pipes conforming to BNQ 3624-115, "Polyethylene (PE) Pipe and Fittings for Soil and Foundation Drainage," may be used in conjunction with or as part of the system; that is, for outlet crossover or outflow to a sewer.



Figure 1. Picture of installed product

Manufacturing plant

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

Product name	Manufacturing plant
	Chatsworth, IL, US
Proform HD®	☑

This PDF is an alternative version. This document was published on 2023-10-17 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.

☑ 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 must be laid on undisturbed or well-compacted soil so that the top of the product is below the bottom of the floor slab or the ground cover of the crawl space.
- Drainage disposal of the product must be in accordance with Subsection 9.14.5., Drainage Disposal, of Division B of the NBC 2020.
- Based on the evidence provided, the product has been evaluated for depths up to 3.7 m.
- The Proform HD[®] system must be installed in accordance with the manufacturer's specifications stated in the installation guide prepared by Prinsco, revision 101816. The installation guide must be made available at the job site at all times.
- When the lineal is elevated from the subgrade and gravel installed before the concrete is poured (Figure 3), gravel must be removed from the surface intended to receive the concrete to ensure the actual footing volume is as intended by design.
- The material backfilled against Proform HD[®] must be a non-cohesive material; that is, crushed stone or other coarse, clean granular material. This backfilled material must be installed over a width of at least 300 mm, and must cover the top and sides of the product by at least 150 mm. The clean granular material must contain not more than 10% of material that will pass through a 4-mm sieve.

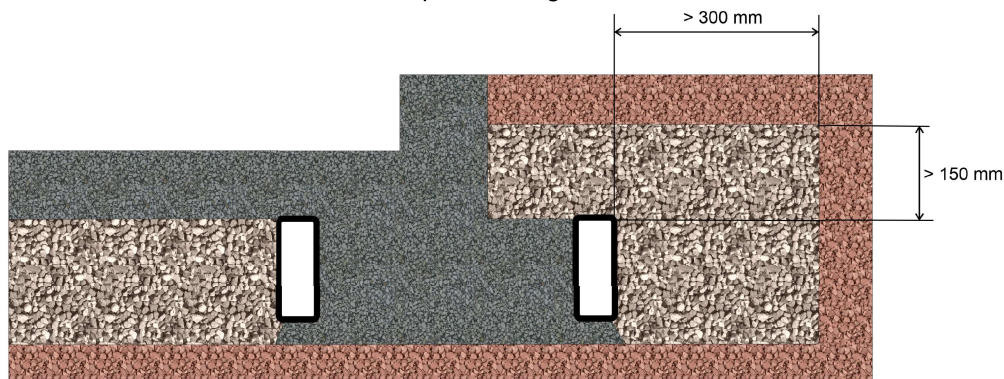


Figure 2. Concrete poured first

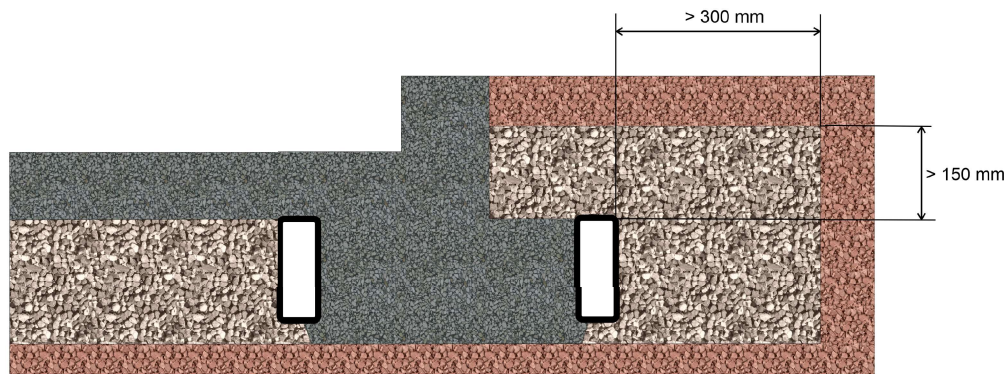


Figure 3. Gravel placed first

- This product has not been evaluated as part of a radon or other soil gas mitigation system. A higher level of performance may be required if the product is to be installed as a radon or other soil gas mitigation system.

- If a geotextile filter fabric is required between the stone fill and the soil, its compatibility with the soil must be investigated on a project-by-project basis.

Technical information

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

Criteria number	Criteria name
CCMC-TG-334613.05-20	CCMC Technical Guide for Dual Footing Form and Drainage Tile System - HDPE

The evaluation 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.

Material requirements

Table 1. Results of testing the resistance properties of the product

Property	Requirement	Result
Impact resistance	No evidence of cracks or fissures when tested for impact on lineals and fittings	Pass
Resistance to soil pressure	Maximum 20% deflection	Pass

Performance requirements

Table 2. Results of testing the concrete form capacity of the product

Property	Requirement	Result
Stability	The footing form and its accessories must remain within 10 mm of their original position after concrete placement and hardening.	The product met the requirements. A maximum displacement of 7 mm was observed 24 h after concrete pour.
Concrete leakage	There must be no measurable leakage of concrete through the form.	The product met the requirements. No leakage of concrete through the form was observed.
Load capacity	The form must resist the anticipated loads imposed by the concrete placement.	The product met the requirements. The product resisted the loads imposed by the placement of concrete.

Table 3. Results of testing the drainage capacity of the product

Property	Requirement	Result
Flow characteristics and perforation area	Total perforated area per metre length > 30 cm ² /m and perforation width (smallest dimension) 2.0 mm to 5.0 mm	Pass

Administrative information

Use of Canadian Construction Materials Centre (CCMC) assessments

This assessment must be read in the context of the entire [CCMC Registry of Product Assessments](#), any applicable building code or by-law requirements, and/or any other regulatory requirements (for example, the [Canada Consumer Product Safety Act](#), the [Canadian Environmental Protection Act](#), etc.).

It is the responsibility of the user to confirm that the assessment they are using is current and has not been withdrawn or superseded by a later version on the [CCMC Registry of Product Assessments](#).

Disclaimer

The National Research Council of Canada (NRC) has evaluated only the characteristics of the specific product described herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (such as authorities having jurisdiction, design professionals and specifiers). This evaluation is valid when the product is used as part of permitted construction, respecting all conditions and limitations stated in the evaluation, and in accordance with applicable building codes and by-laws.

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Language

Une version française de ce document est disponible.

In the case of any discrepancy between the English and French version of this document, the English version shall prevail.

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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

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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.

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:

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PROFORMTM HD

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INSTALLATION GUIDE



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rev. 101816

INTRODUCTION

PROFORM HD is an innovative, efficient alternative to traditional wood forms. This corrugated dual-wall HDPE system actually forms the footings while at the same time providing superior drainage and radon venting – all in one easy step. This installation guide outlines the basic steps typically used for a PROFORM HD project. Refer to local building codes/requirements regarding footing construction & drainage requirements.

SYSTEM LAYOUT

Begin with a rough layout of the required number of standard 12' lineals, elbows, drain outlets and other necessary accessories. Refer to *Estimating Materials for a PROFORM HD Project* for guidance on determining amount of materials that will be needed to complete the project.

CUTTING

Cutting the PROFORM HD lineals to the required lengths can be easily done with a hand saw, circular saw or reciprocating saw. PROFORM HD is shipped with installed couplers, therefore it is best to not pre-cut lengths. When reaching a corner, simply cut the PROFORM HD lineal to the required length, install an elbow, and use the remainder of the PROFORM HD lineal as the next piece to be installed. This will help minimize scrap by ensuring that numerous short pieces are not left over. Square cuts will help ensure proper alignment and fit for couplers and accessories.



Circular Saw



Reciprocating Saw



Hand Saw

ASSEMBLY

Assembly of PROFORM HD should start at a corner with a full lineal piece or a scrap piece from a previous project. Start by inserting a corner fitting into the receiving/cut end of the PROFORM HD stick.



Start assembly at a corner

Be sure to install the slotted side AWAY from the concrete.

A circle inscribed on the top and bottom of the elbows show the location where a slit can be made and a rebar stake can be driven through into the ground to hold the elbow in place.



Location for rebar

(Assembly cont.) Continue around the perimeter of the footing by connecting the PROFORM HD lineals with installed coupler ends or making a cut to attach a corner fitting.



Connect lengths with installed couplers

PROFORM HD fittings install with a "snap" and the locking cleats provide a secure fit so there is no need for lubricant or glue. Fittings should be connected to a field cut or plain end only. Since PROFORM HD lineals ship with couplers installed, the need to install couplers is minimized which speeds up the installation process. If needed, the installed coupler can be easily removed and another fitting attached.

Spacer straps may be used to ensure the proper footing width and can also be used as a chair for rebar.



Spacer straps and string lines

VARIABLE ANGLE ELBOW

The PROFORM HD Elbow is 90°, but with simple field modifications can be converted into 45°, eliminating the need for ordering additional elbows.

Convert the elbow to 45° by using a utility knife and simply cutting along the seam as shown in the "cutting" illustration. Leave the backside intact as a "hinge". Then take the smaller side and insert it into the other half until the stop touches the center ridge. Secure with two screws in the joint.



Cutting



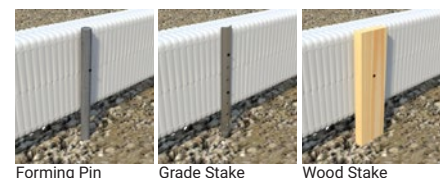
Inserting



Securing

PINNING / LEVELING

PROFORM HD should be secured upon completion of the assembly by using steel forming pins, grade stakes or wood stakes. It is recommended to fasten pins/stakes on the inside/concrete side of the forms.



Forming Pin

Grade Stake

Wood Stake

(Continued on next page)

(Pinning/Leveling cont.) PROFORM HD should be installed level around the entire footing. Raise the lineal slightly above the desired elevation when fastening to the pins/stakes. Once the fastening is complete, tap the pin/stake down to the desired elevation. This will help ensure that the correct elevation is maintained around the entire perimeter. Fastening to pins/stakes can be done with short screws or nails.



Tap pin to desired elevation

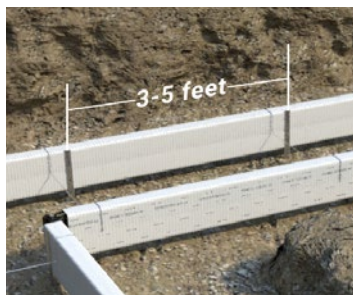


Use short screws or nails to fasten pin

Grade stakes and wood stakes can be left in place eliminating additional labor needed for removing forming pins.

REINFORCING

To minimize bowing from the lateral force of the concrete as it is poured, it is recommended that the PROFORM HD be pinned every 3' – 5' along the lineals as well as at elbows and connections. The pins should be placed on the inside/concrete side of the forms and should extend far enough into the soil to provide adequate support for the PROFORM HD lineals.



Pin every 3'-5'



Spacer strap

Spacer straps, which are available in 16", 20" or 24" widths, can help speed up the installation by ensuring the correct spacing between forms. Spacer straps can be left in place to be used as rebar chairs or can be removed as the concrete is poured.

CHANGE IN ELEVATION

Occasionally foundation plans will require changes in elevation and PROFORM HD is fully adaptable with the use of a Vertical Elbow. The flow of drainage will remain continuous throughout the system.



Vertical Elbow

DRAINAGE

Drainage outlets and crossovers can be located at any point along the system. Drainage outlets are needed to direct the flow of water either to a sump basin or away



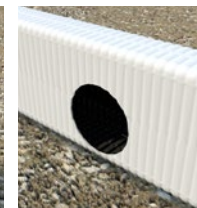
Outlet crossover

from the footing. Crossovers are required to connect the inner and outer lineals to facilitate drainage. It is recommended to use 4" non-perforated corrugated HDPE pipe for crossovers and outlet drainage so the carrying capacity of the system will not be affected. Refer to your local building codes for the number and type of crossovers required.

Connections can be created using either a Single Outlet fitting or a Crossover Adapter. For a crossover adapter, simply cut a hole near the bottom of the lineals using a 4" hole saw and install the adapter with a section of 4" non-perforated corrugated pipe.



Single Outlet Adapter



cut using a 4" hole saw



insert crossover adapter

PLACING STONE

Place stone along the exterior of the PROFORM HD. Stone should be a clean crushed rock which promotes drainage. It is recommended that the rock is placed prior to pouring the concrete to help increase the lateral stability of the PROFORM HD. Refer to your local building code for the dimensions of the rock required.



Clean Crushed Rock

CONCRETE POURING

Fill the footing form with concrete and screed off the top of the lineals upon completion. The PROFORM HD system is left permanently in place to act as the foundation drainage and radon venting system.



Fill Form



Screed

DO NOT REMOVE PROFORM HD!

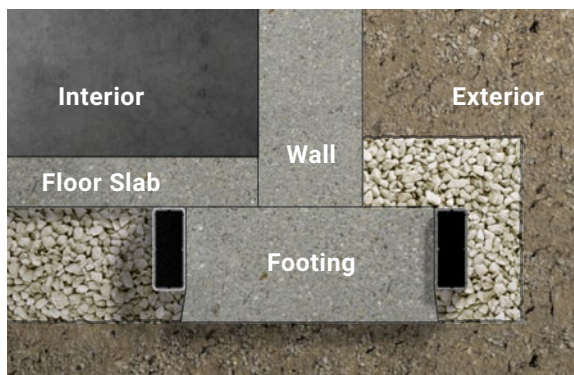
FORMING OPTIONS

Footings shall always be formed in accordance with local building codes/requirements. The methods described below provide some suggestions typically used for PROFORM HD installations.

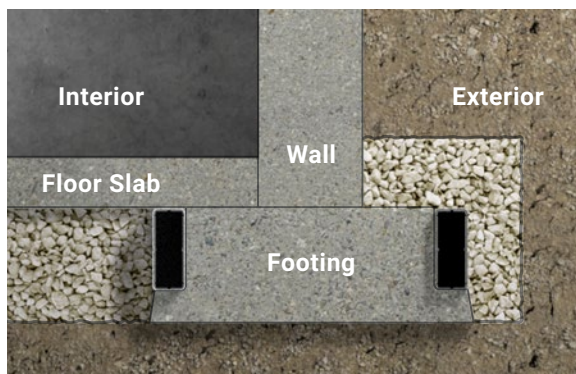
Depending on the required footing depth, PROFORM HD can be raised so that the top of the form meets the top elevation of the footing. For example, 6" PROFORM HD can be used for 6" footings as well as 8" footings.

8" Footing

For an 8" footing, the 2" of space between the bottom of the form and the excavated ground would be filled in with rock or with concrete. It is recommended to place the rock around the exterior of the PROFORM HD to provide additional support and to minimize the amount of concrete spilling out from under the forms.



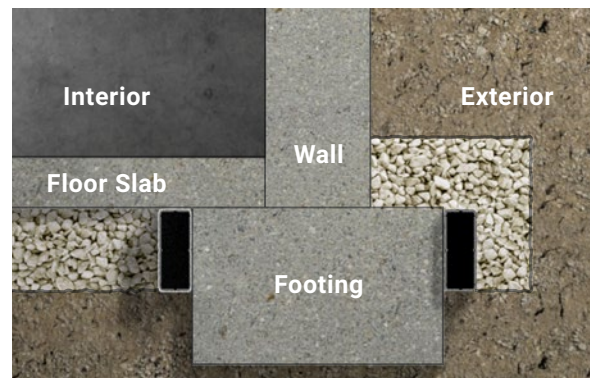
Surrounded by rock



Concrete placed prior to rock

10-12" Footing

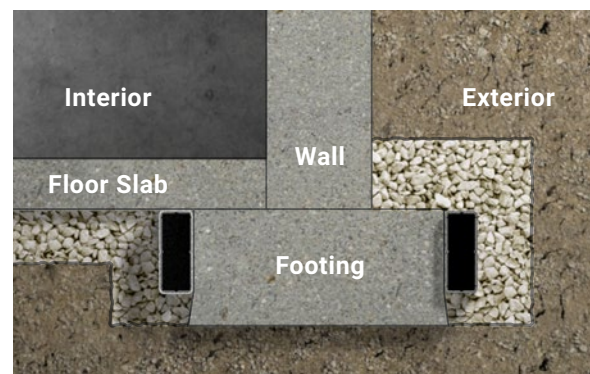
Deeper footing depths can be achieved by utilizing the PROFORM HD lineals with undisturbed soil. For example, a 10" or 12" footing can be formed by using 6" PROFORM HD in combination with either a 4" or 6" trench. This method provides a cost alternative solution to larger, more expensive forming options.



Combination PROFORM HD with trench

Perimeter Excavation

Some contractors prefer to excavate to the footing depth only around the perimeter of the floor plan. This method saves on excavation as well as the amount of rock required. The PROFORM HD lineals should be installed such that 4" of the footing height is above the elevation of the center excavation. This allows for 4" of rock spread over the undisturbed soil to serve as the sub-base for the basement slab.



Perimeter excavation only

RADON VENTING SYSTEM GUIDE

One of the additional advantages of PROFORM HD is that while it provides superior foundation drainage, it also functions as a part of a radon venting system. This guide provides a recommended solution for sub-slab perimeter radon venting. Alternate venting configurations may be utilized provided they meet all applicable codes and environmental agency requirements.

Passive Venting Systems

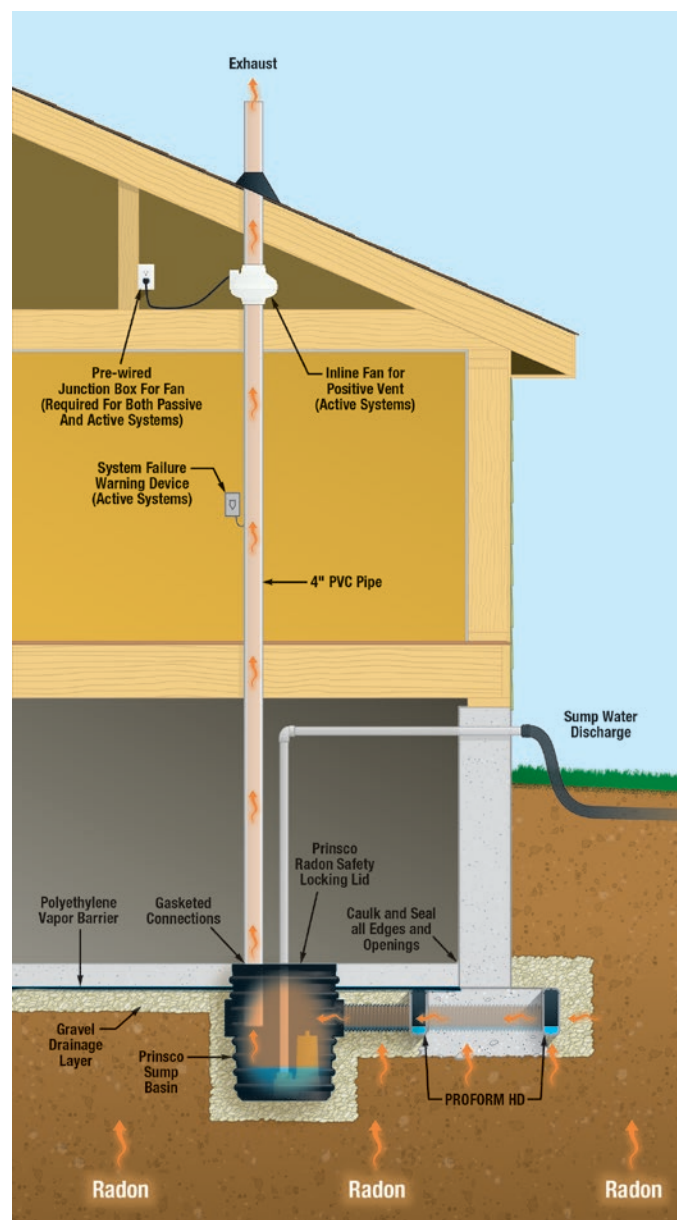
1. A passive venting system, which is installed without a fan, must have the vertical stack vent pipe installed on the interior of the structure. This is to ensure that there is sufficient temperature differential within the stack to promote an adequate draft.
2. With the PROFORM HD draining to an interior Prinsco Sump Basin, no additional outlets will be needed. The vertical stack vent pipe will be connected to the sump basin with the use of a gasketed Radon Safety Locking Lid. Other outlet vent configurations can be utilized as well.
3. Fill the sub-slab space with a minimum of 4" of a gas-permeable material, such as a clean gravel.
4. Place a continuous layer of polyethylene sheeting or an air-gap membrane under the entire slab, overlapping at the seams to serve as a soil-gas retarder.
5. After the basement floor is completed, seal and caulk around the perimeter of the basement floor and around any openings in the floor such as floor drains, utility entries, or cracks to retard any soil-gas entry.
6. Install a 4" vertical stack directly over the sump pit location. Do not use 90° elbows in the vertical stack vent run. Properly seal and flash the vent outlet at the roof line.
7. All exposed and visible interior radon vent pipes should be identified with at least one label on each floor level which reads: "Radon Venting System."
8. Provide for rough-in wiring in the attic area near the vertical stack for the installation of a fan and system failure warning device. If subsequent tests indicate radon levels in excess of 4 pCi/L or the maximum level defined by local code or practices, the passive system shall be converted to an active system.

Active Venting Systems

A ventilation fan is incorporated into the vertical stack pipe to convert from a passive system to an active system. For active systems with a fan, the vertical stack pipe may be located on the exterior of the house. The ventilation fan should be installed in the attic or on the exterior of the house, never in the basement.

A system warning device must also be installed in an easily accessible location to monitor the system.

PROFORM HD and related system components should be installed in accordance with all applicable codes and in conformance with EPA "Model Standards and Techniques for Control of Radon in New Residential Buildings." Contact the United States Environmental Protection Agency and/or state and local environmental agencies for more specific information on radon control.



INSPECTION, HANDLING AND STORAGE

Upon receipt of a shipment of PROFORM HD and accessories, check to ensure that all items listed on the packing list are accounted for. A visual inspection will also indicate any damage that may have occurred during transportation.

PROFORM HD is manufactured from High Density Polyethylene (HDPE) which is very durable and resistant to impact, UV degradation, as well as harsh chemicals.








However, care should be taken to ensure that the PROFORM HD is not damaged by mishandling or improper storage. PROFORM HD can be easily unloaded in full bunks using a forklift or other mechanical device.

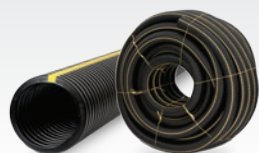
PROFORM HD should be stored on a flat surface. If the PROFORM HD is to be stored for a prolonged period, it is recommended that it be left in the original bunk packaging.

NOTES:

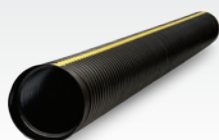
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PROFORM HD FITTINGS & ACCESORIES

	Item	Number
	6" x 10' PROFORM™ HD	PFHD33010
	6" 90° / 45° Elbow	PFHD33051
	6" Vertical Elbow	PFHD33054
	6" Coupler	PFHD33050
	6" End Cap	PFHD33055
	4" Crossover Adapter	PFHD33057
	6" x 20" Spacer Strap	PFHD33020
	8" x 16" Spacer Strap	PFHD33816
	8" x 20" Spacer Strap	PFHD33820
	8" x 24" Spacer Strap	PFHD33824
	Single Outlet	PFHD33060
	12" Metal Grade Stake	PFHDGS12
	18" Metal Grade Stake	PFHDGS18



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FITTINGS



SUMP DRAINAGE