For more information, or to contact a Halo representative, visit our website at www.BuildWithHalo.com and click “Contact Us”.

This manual will be updated regularly. Current updates will be available at www.BuildWithHalo.com.

1.0 - HANDLING, STORAGE & INSTALLATION

MATERIAL HANDLING
Material handling, and the flow of materials from manufacturing site to job site is a significant part of the construction process. Precautionary measures taken in packaging, storage, transportation and installation of Halo products can help minimize the potential for damage to the products. Care should be taken to keep stored Halo products protected from reflective sunlight or prolonged solar exposure.

JOBSITE HANDLING AND INSTALLATION
Precautions taken when storing insulation products on the job site can help minimize the potential for damage. Keep Halo products tarped or covered to protect from weather. Do not use a clear plastic covering film. If possible, store indoors.

Precautions taken during the construction process can help minimize the potential for thermal expansion or damage. Care should be taken to keep installed Halo products protected from reflected sunlight or prolonged solar exposure. Removing or covering the surface that is creating the reflection or shielding the affected Halo products will help restore the original dimensions in the event of thermal expansion.

For more information contact your local Halo representative or e-mail info@buildwithhalo.com.

2.0 – USEFUL TOOLS & MATERIALS

Recommended for sealing joints, penetrations, perimeter edges and flashing details.

- Expandable foam
- Vapor barrier blue Tuck Tape
- 3M peel and stick membrane
- Blueskin flashing tape (may require a primer for some surfaces)
- Butyl tape
- Or any construction tape approved for Radon barrier assemblies

Recommended for fastening or gluing

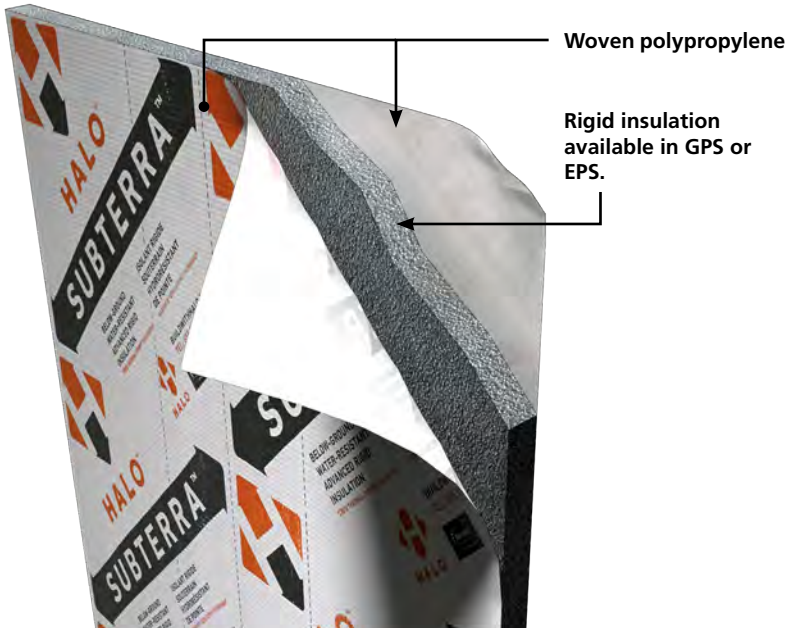
- Weather resistive construction glue, such as PL 300

Additional tools:
- Utility knife
- Straight edge

3.0 – PRODUCT DESCRIPTION

FEATURES

Subterra Protection Board products are rigid foam sheathing insulation faced with a polypropylene woven fabric. The insulation is made with either EPS (expanded polystyrene) or GPS (expanded polystyrene containing graphite). Products made with GPS provides up to 18% more R-value than conventional EPS.



BENEFITS

When installed under slabs Subterra Protection Board offers the following functional benefits.

- Prevents the ingress of radon - 7 times more radon resistant than 6 mil polyethylene membranes.[1]
- Replaces 6 mil polyethylene membranes as the air and vapor barrier.[3]
- Protects void forms under structural slabs.
- Provides a water resistant barrier - resistant to over 2 feet of standing water.[2]
- Continuous insulation reducing heat loss through the slab.
- Flexible, resilient and durable against heavy loading and construction traffic conditions - will not warp.
- Provides a safe, non-slip, surface.
- Quick and simple installation - saves time and labour.
- Light in weight and easily cut to fit any space.

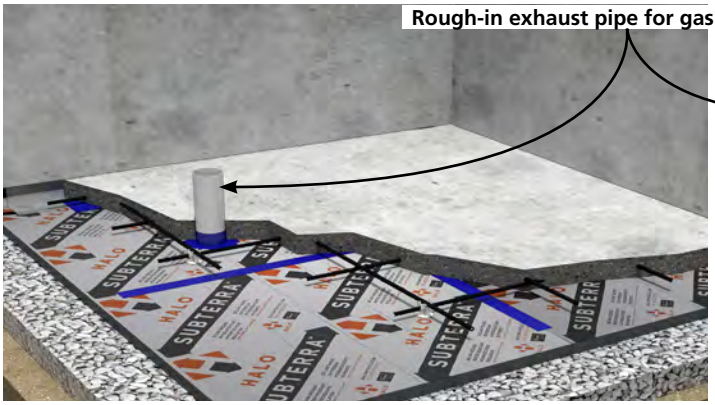
AVAILABLE SIZES

Available in 4ft x 8ft sheets, 1/2”, 3/4”, 5/8”, 1”, 1.5” and 2” thickness. Custom sizes are available. Contact your local Halo representative for availability.

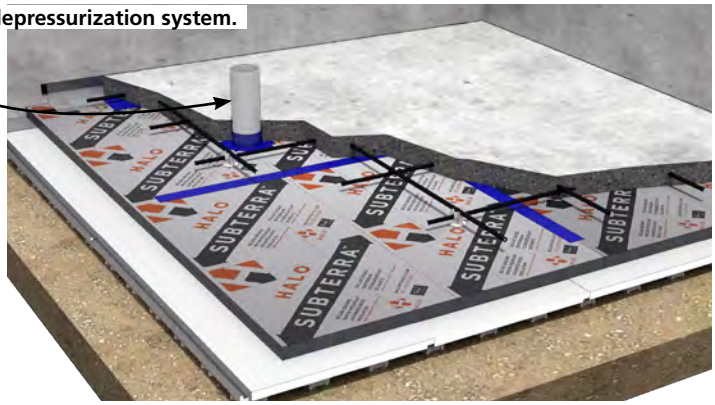
1. National Research Council of Canada’s (NRC) Radon Diffusion Test, which shows Subterra Protection Board is more than 7 times Radon resistant than 6 mil polyethylene membranes.
2. In accordance with AATCC 127, Water Resistance: Hydrostatic Pressure Test, and AC71, Foam Plastic Sheathing Panels Used as Weather-resistive Barriers.
3. Independently evaluation of Subterra to the National Building Code of Canada by QAI (Quality Auditing Institute).

4.0 – APPLICATIONS

Ideal for under-slab applications providing the required continuous insulation, and preventing the ingress of moisture and radon gas into the interior.



Subterra Protection Board over granular substrate as part of the subfloor gas depressurization system.



Subterra Protection Board over proprietary subfloor gas depressurization system.

And due to its light weight, durability and resiliency against heavy construction loading, Subterra Protection Board is an ideal replacement to OSB as protection for void forms under structural concrete slabs.

Subterra Protection Board as void form protection.

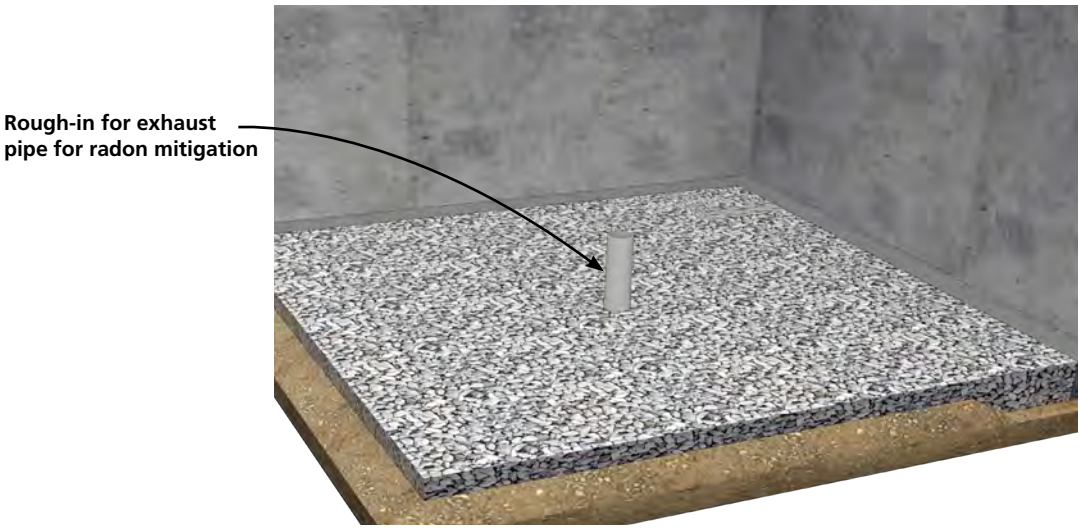
1. For information on Dynavoic visit www.beaverplastics.com or call 1-888-453-5961.

5.0 – INSTALLATION

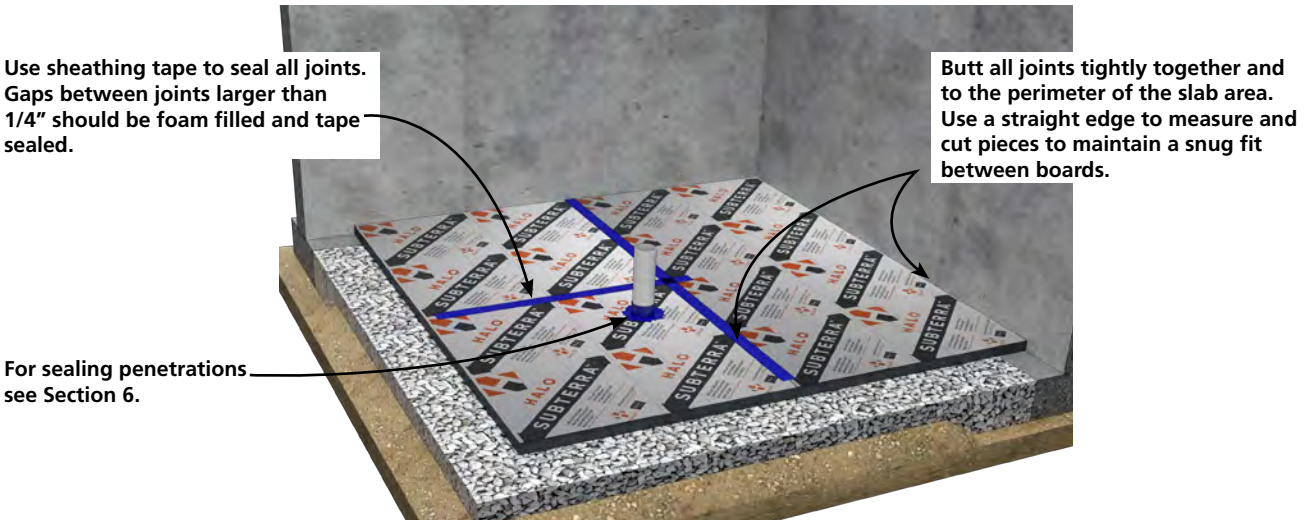
The following instructions are typical for the installation of Subterra Protection Board as a Radon barrier.

Installation may vary depending on project specific requirements. Before starting, make sure all installation complies with local building code requirements.

STEP 1 - Level and Compact The Base Material:
Level and compact the earth or granular material under the slab. Inspect the surface to ensure there are no protrusions that could prevent Subterra from being placed level and flush to the base material

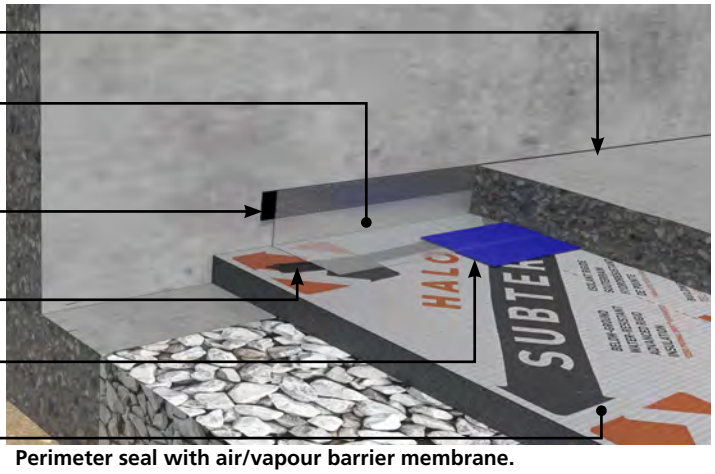


STEP 2 - Install Subterra Protection Board:
Install Subterra over the base material covering the entire area of the concrete pour. The orientation of Subterra can be placed in any direction.

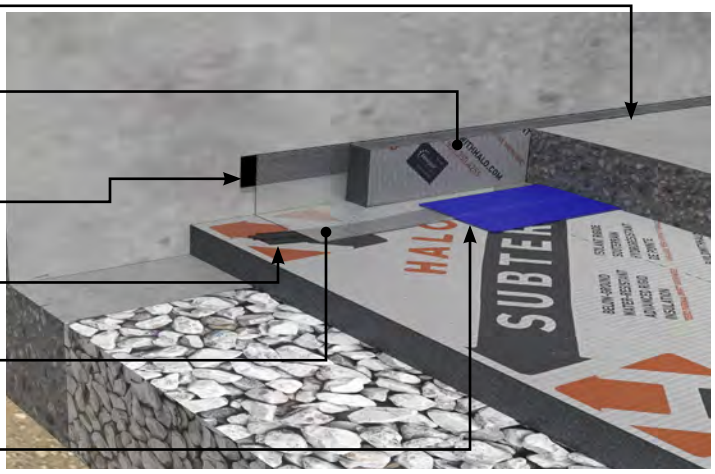


STEP 3 - Seal The Perimeter:

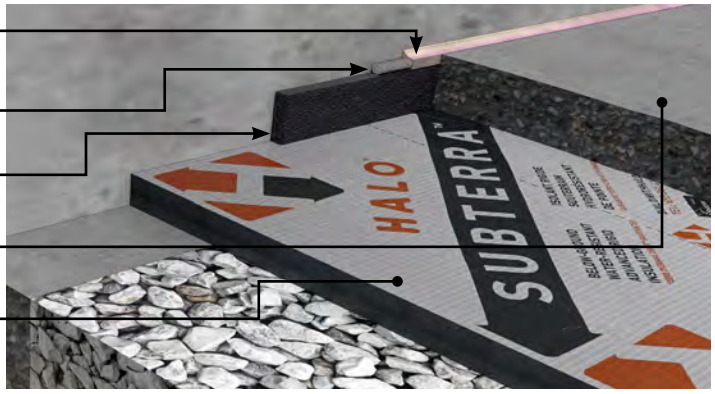
Proper sealing of the perimeter prevents ingress of radon gas into the building structure. Different examples for sealing Subterra to the perimeter of the concrete slab are shown below.



Perimeter seal with air/vapour barrier membrane.



Perimeter seal with air/vapour barrier membrane and perimeter insulation.



Perimeter seal with flexible caulking.

STEP 3 Cont'd:

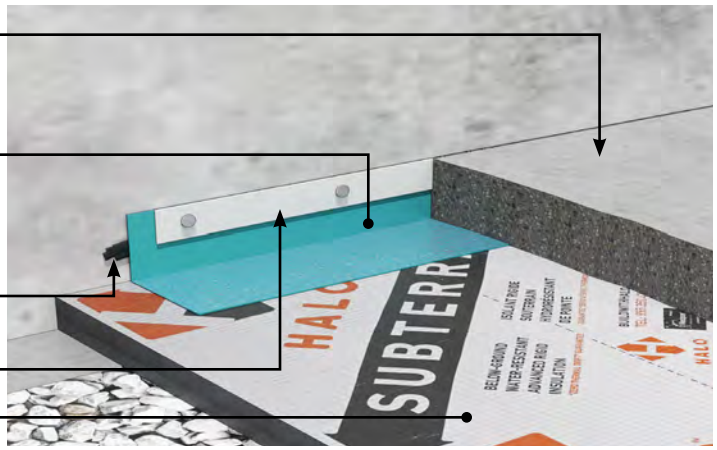
Concrete slab

Air and vapour barrier peel and stick membrane. Provide a membrane strip along the perimeter. The strip should extend to the depth of the concrete slab and minimum 6 inches over Subterra. Follow manufacturer's instructions for proper installation against concrete surfaces..

Acoustic sealant

Termination bar fastened to foundation wall.

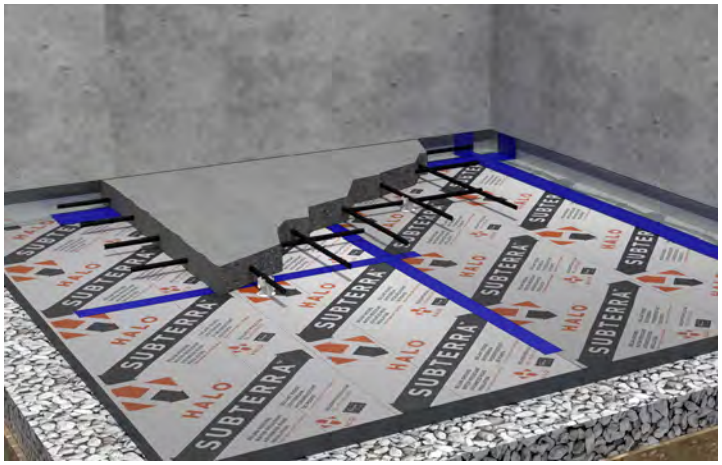
Subterra Protection Board



Perimeter seal with air/vapour barrier peel and stick membrane.

STEP 4 - Pour The Slab:

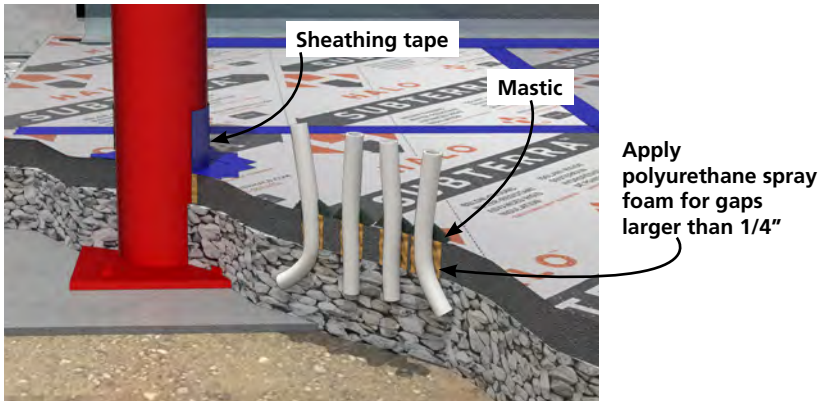
Prior to concrete placement, inspect the condition of the Subterra boards and all sealed joints and penetrations. See "Inspection and Repair."



6.0 – PENETRATIONS

Penetrations through Subterra Protection Boards, such as utilities or columns can be simply sealed with sheathing tape or a mastic sealant to maintain the continuity of the air and moisture barrier.

Gaps larger than 1/4" between Subterra Boards and the penetration should be foamed filled before tape sealing.



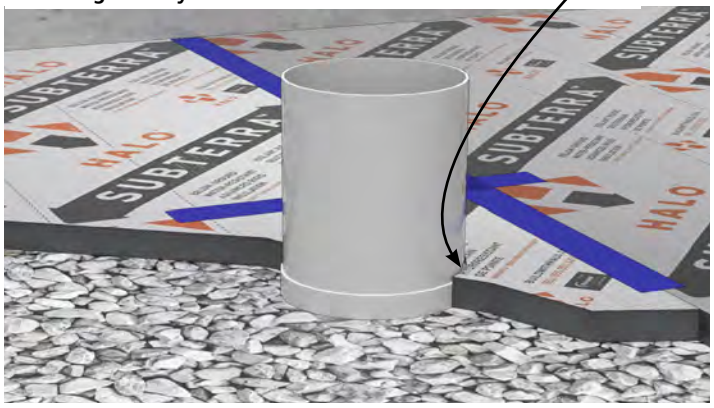
RADON MITIGATION

Reducing radon ingress and buildup from below the slab typically involves the installation of a vertical exhaust pipe through the installed Subterra Protection Boards. This allows airborne radon to escape to the outside of the building.

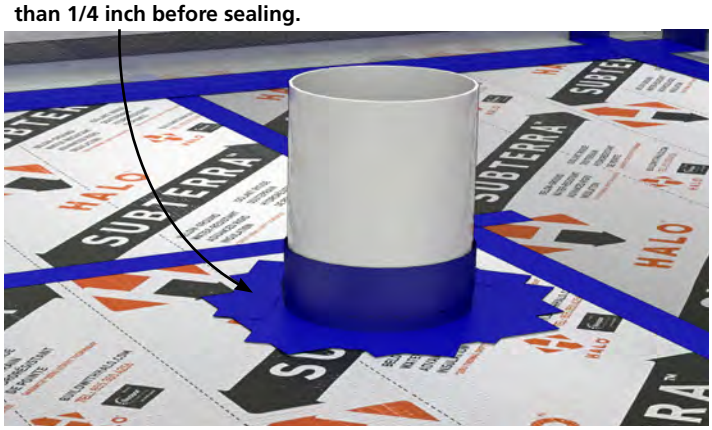
STEP 1 - Cut A Hole for The Exhaust Pipe:
Mark the location for the pipe rough-in, and cut a hole through Subterra that will tightly fit the exhaust pipe.

STEP 2 - Apply Sheathing Tape:
With the exhaust pipe securely in place, seal Subterra to the exhaust pipe.

Building codes typically require a 4 inch pipe so using a 4 inch hole saw will provide a secure fit. The hole can also be cut using a utility knife.



Apply sheathing tape, or a mastic sealant, to seal between Subterra and exhaust pipe. Use spray foam to fill gaps larger than 1/4 inch before sealing.



7.0 - INSPECTION & REPAIRS

Subterra Protection Boards are designed to be extremely durable and resilient against heavy construction traffic. However, inspecting the condition of installed Subterra boards prior to the concrete pour will ensure proper installation is maintained.

Inspect installed Subterra boards sufficiently in advance of concrete placement to ensure

- taped seams are not broken
- joints, penetrations and perimeter are properly sealed
- damaged areas are marked and properly repaired.

In most cases repairing damaged Subterra boards simply requires tape sealing over the damaged area. If the foam and laminate are damaged then removing the damaged section and replacing with a new section will be required.