HEAT-SHEET®
HEAVY

UNDER-SLAB RADON MITIGATION INSULATION LAYER

Installation Guide

Heat-Sheet.com

1.0 - INTRODUCTION

Used for under-slab applications, when installed with the “nodules down”, the interconnected channels created by the Heat-Sheet Heavy nodules allow soil gas movement between the ground and the air barrier system, required as part of the radon depressurization system.

2.0 - PRODUCT DESCRIPTION

Made with high density expanded polystyrene (EPS), Heat-Sheet Heavy are manufactured in 2ft x 4ft panels with interlocking edges, and protruding nodules.

3.0 - BENEFITS

Heat-Sheet Heavy is designed to support the weight of cast-in-place concrete, and foot traffic during construction.

Available in a variety of thicknesses to satisfy a range of insulation values. Refer to the Heat-Sheet Heavy Material Property Data Sheets for more information.

When installed under slabs with the nodules facing down, a network of voids are created that allow the unimpeded flow of radon towards the outlet system, depressurizing radon gas buildup under the slab. As a result, Heat-Sheet Heavy replaces the granular fill that is typically required as the gas permeable layer under slabs providing 50 percent more air flow.[1]

4.0 - INSTALLATION AND DETAILING

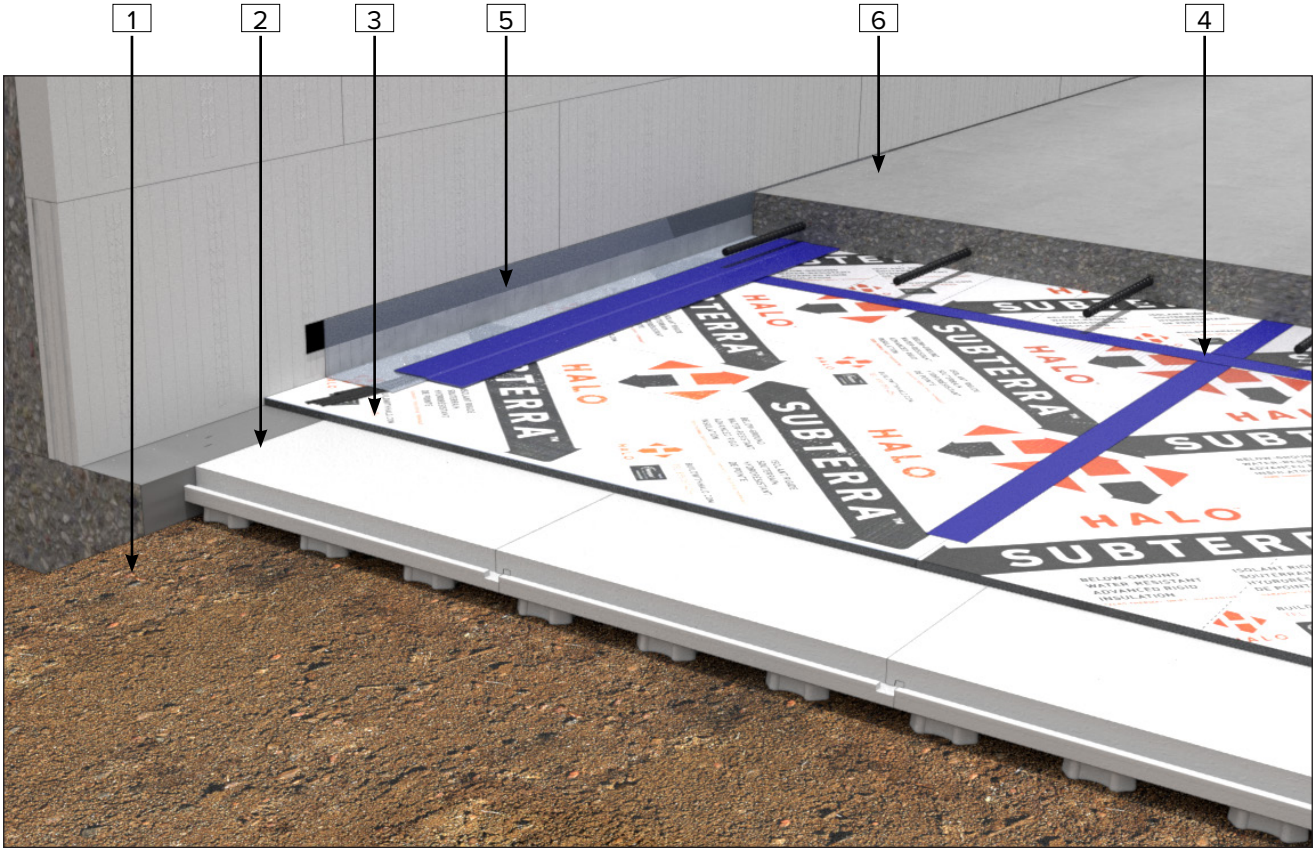
An approved air and vapor barrier is required over Heat-Sheet Heavy to prevent radon gas ingress into the living space. This air/vapor barrier layer is typically a minimum 6 mil polyethylene or an approved peel-and-stick membrane.

However, a layer of 1/2” Halo® Subterra Protection Board[3] is more than 7 times radon resistant than 6 mil polyethylene membranes[2], and is more durable and easier to install than typical air/vapor barrier products. In addition, Subterra provides an extra layer of continuous insulation.

This section provides typical Heat-Sheet Heavy installation instructions for applications where Heat-Sheet Heavy provides both continuous insulation and sub-slab ventilation for radon mitigation.

1. Based on independent testing by the National Research Council of Canada (NRC), “Radon Infiltration Building Envelope Test Systems” (RIBETS)
2. Based on independent testing by the National Research Council of Canada (NRC), “Comparative Test of Subterra Protection Board with Tuck Tape and 6 mil Polyethylene Membrane for Radon Prevention”
3. Halo Subterra Protection Board is regionally available and is currently only manufactured by Beaver Plastics Ltd. and AMC Foam Technologies Inc.

4.1 PERIMETER SEALING WITH SUBTERRA PROTECTION BOARD



1 Level and compact the base material, as required. Heat-Sheet Heavy can be placed directly on undisturbed soil, compacted fill or sand.

2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Since joints between Heat-Sheet Heavy panels interlock, taping joints is not required.

3 Install a minimum 1/2” layer of Subterra Protection Board directly on top of Heat-Sheet Heavy to act as the gas impermeable layer. Subterra should cover the entire slab area.

Prior to placing Subterra, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damaged panels.

Butt all joints tightly and against the foundation wall, grade beam or slab.

4 Seal all Subterra board joints with low permeance sheathing tape. Foam fill between joints with gaps 1/4” or more before tape sealing.

5 Provide a strip of air and vapor barrier membrane along the perimeter. The strip should extend up to the depth of the concrete slab and minimum 6” over Subterra.

Seal and secure the air/vapor barrier membrane to the foundation wall, grade beam or slab with butyl tape.

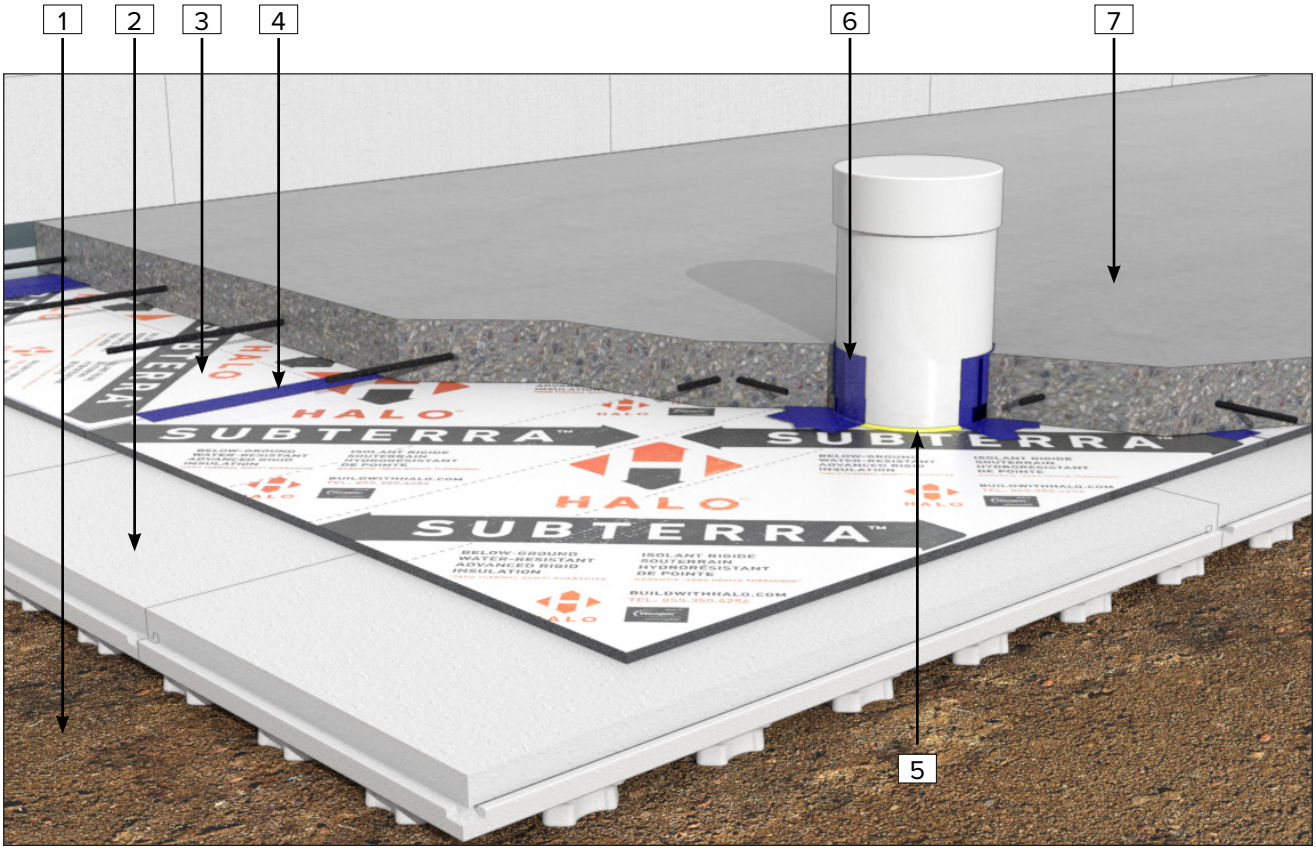
Seal and secure the air/vapor barrier to the Subterra boards with acoustic sealant.

Unless a peel-and-stick membrane is used, use low permeance sheathing tape to secure the air/vapor barrier membrane to Subterra.

6 Pour the slab. Prior to concrete placement, inspect the condition of the Subterra boards including all sealed joints and penetrations, and repair or replace damages sections.

NOTE: For detailed installation of Subterra Protection Boards and alternate sealing methods, refer to the Halo Subterra Protection Board install guide.

4.2 PENETRATION SEALING WITH SUBTERRA PROTECTION BOARD



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2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Since joints between Heat-Sheet Heavy panels interlock, taping joints is not required.

Cut a circular hole with a hole saw or utility knife to accommodate the radon exhaust pipe.

Apply spray foam between Heat-Sheet Heavy and the exhaust pipe for gaps 1/4” or greater.

3 Install a minimum 1/2” layer of Subterra Protection Board on top of Heat-Sheet Heavy to act as the gas impermeable layer. Subterra should cover the entire slab area.

Prior to placing Subterra, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damaged panels.

Butt all joints tightly and against the foundation wall, grade beam or slab area.

Cut a circular hole to accommodate the exhaust pipe with a utility knife.

4 Seal all Subterra board joints with low permeance sheathing tape. Foam fill between joints with gaps 1/4” or more before tape sealing.

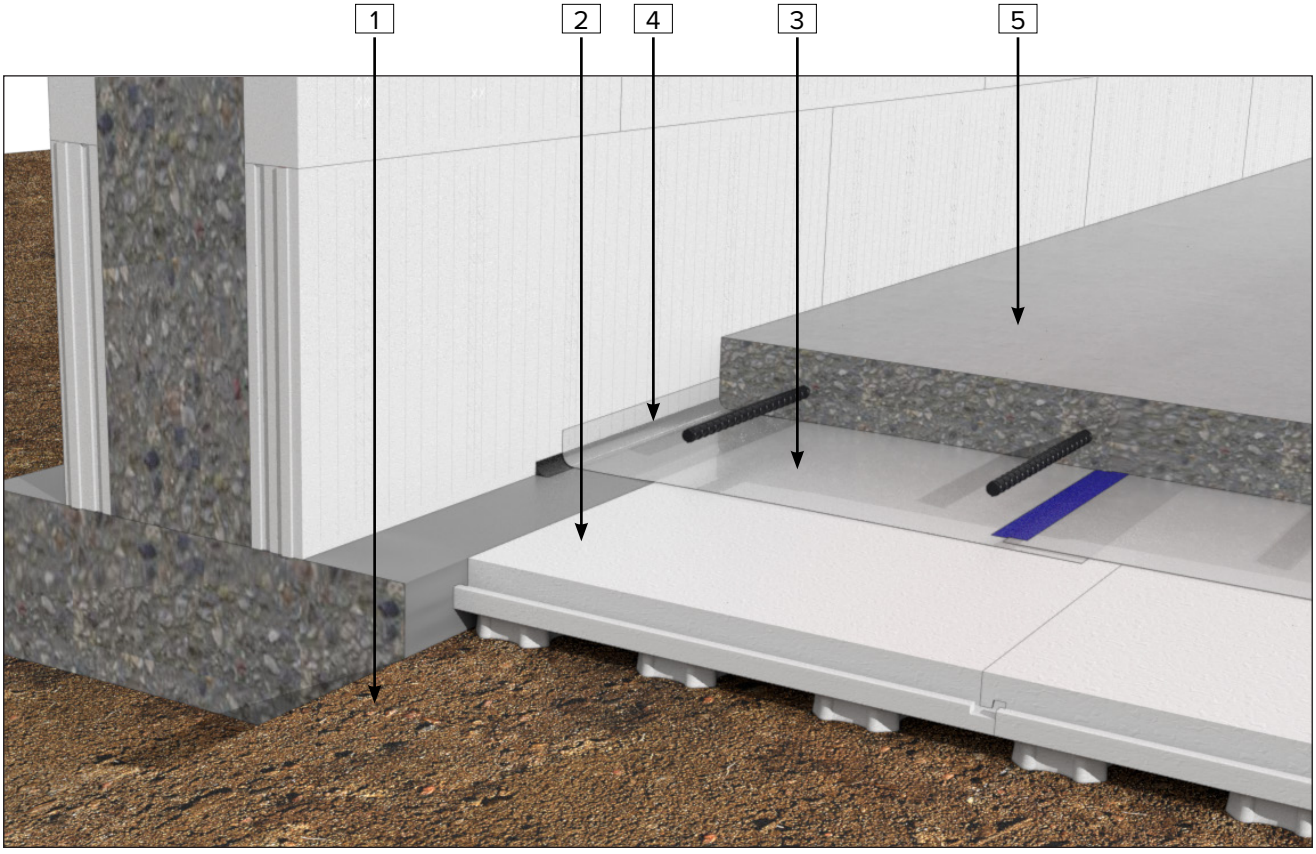
5 Apply spray foam between Subterra and the exhaust pipe for gaps 1/4” or greater.

6 Apply low permeance sheathing tape, or a mastic sealant, to seal between the Subterra boards and the exhaust pipe.

7 Pour the slab. Prior to concrete placement, inspect the condition of the Subterra boards including all sealed joints and penetrations, and repair or replace damages sections.

NOTE: For detailed installation of Subterra Protection Boards and alternate sealing methods, refer to the Halo Subterra Protection Board install guide.

4.3 PERIMETER SEALING WITH AIR/VAPOR MEMBRANE



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2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Since joints between Heat-Sheet Heavy panels interlock, taping joints is not required.

3 Install an air and vapor barrier layer on top of Heat-Sheet Heavy, such as 6 mil polyethylene sheets or a peel-and-stick membrane. The air/vapor membrane will act as the gas impermeable layer, so it should cover the entire slab area and extend up against the foundation wall just below the depth of slab.

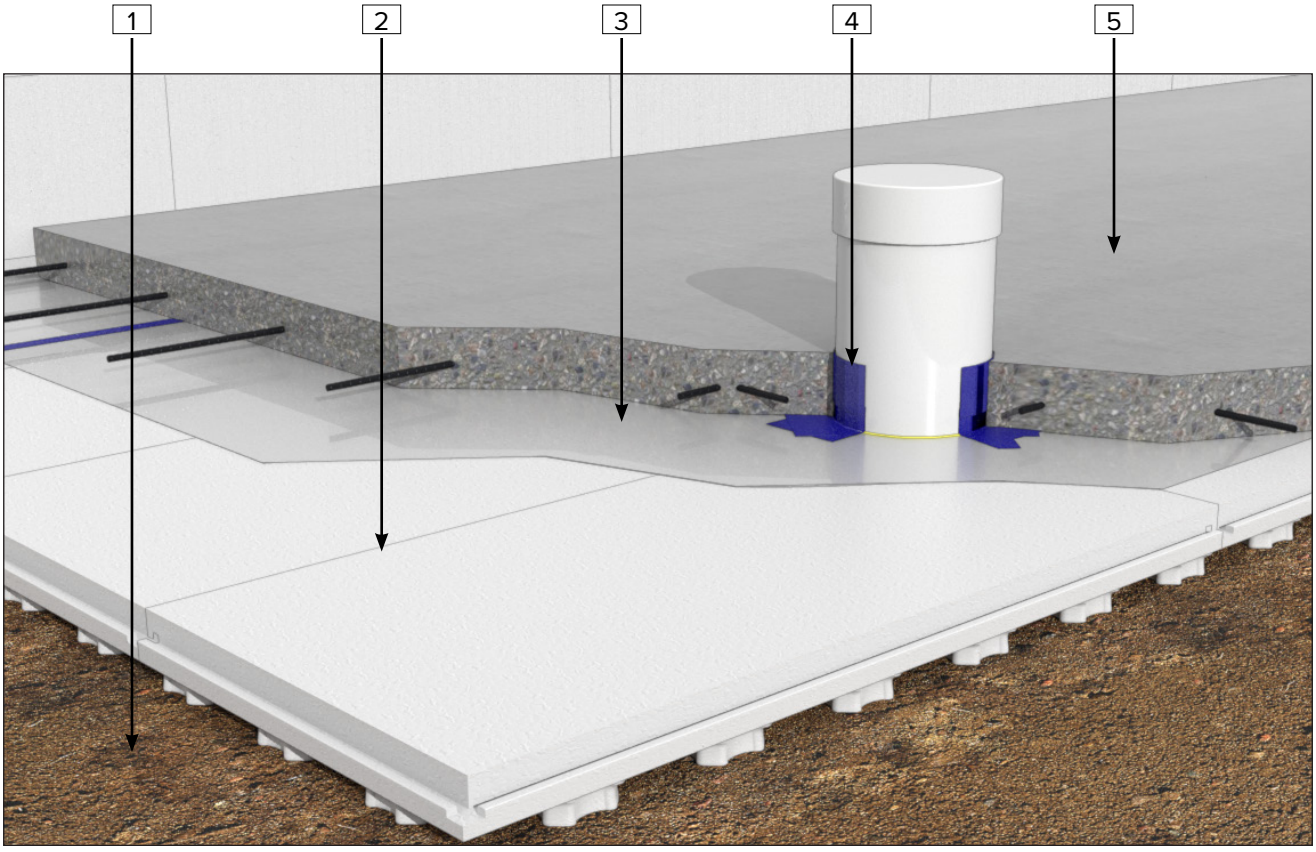
Prior to placing an air/vapor membrane, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damaged panels.

Provide a minimum 12” lap joint, or as required by local codes or by design. When using 6 mil polyethylene sheets, seal and secure lap joints with low permeance sheathing tape.

4 Seal the perimeter with acoustic sealant between the air/vapor membrane and the foundation wall, grade beam or slab.

5 Pour the slab. Prior to concrete placement, inspect the condition of the Subterra boards including all sealed joints and penetrations, and repair or replace damages sections.

4.4 PENETRATION SEALING WITH AIR/VAPOR MEMBRANE



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2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Cut a circular hole with a hole saw or utility knife to accommodate the radon exhaust pipe.

Apply spray foam between Heat-Sheet Heavy and the exhaust pipe for gaps 1/4” or greater.

3 Install an air and vapor barrier layer on top of Heat-Sheet Heavy, such as 6 mil polyethylene sheets or a peel-and-stick membrane. The air/vapor membrane will act as the gas impermeable layer, so it should cover the entire slab area and extend up against the foundation wall just below the depth of slab.

Prior to placing an air/vapor membrane, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damages panels.

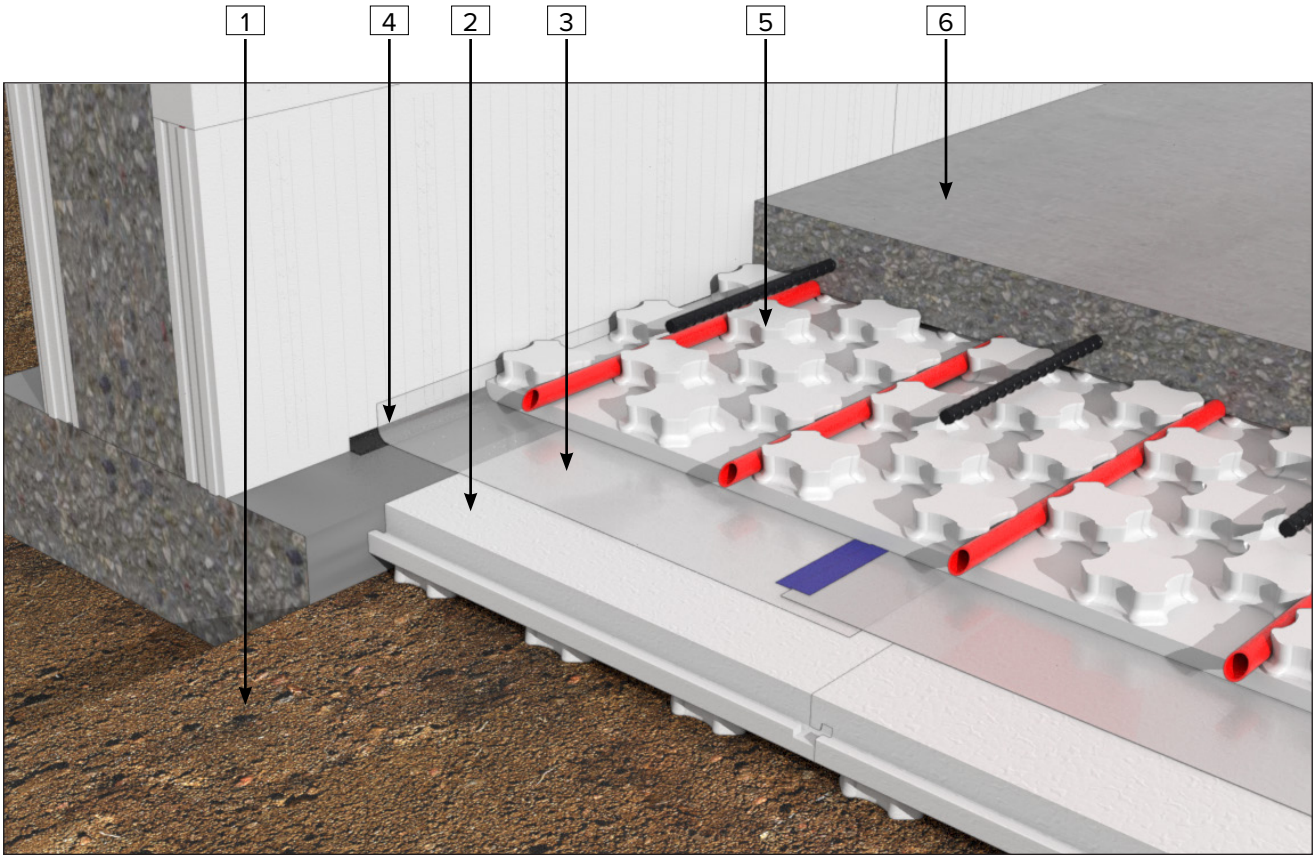
Provide a minimum 12” lap joint, or as required by local codes or by design. When using 6 mil polyethylene sheets, seal and secure lap joints with low permeance sheathing tape.

Cut a hole to accommodate the exhaust pipe with a utility knife.

4 Apply low permeance sheathing tape, or a mastic sealant, to seal between the air/vapor barrier layer and exhaust pipe.

5 Pour the slab. Prior to concrete placement, inspect the condition of the Subterra boards including all sealed joints and penetrations, and repair or replace damages sections.

4.5 PERIMETER SEALING WITH AIR/VAPOR MEMBRANE & RADIANT FLOOR TUBING



1 Level and compact the base material, as required. Heat-Sheet Heavy can be installed directly on undisturbed soil, compacted fill or sand.

2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Since joints between Heat-Sheet Heavy panels interlock, taping joints is not required.

3 Install an air and vapor barrier layer on top of Heat-Sheet Heavy, such as 6 mil polyethylene sheets or a peel-and-stick membrane. The air/vapor membrane will act as the gas impermeable layer, so it should cover the entire slab area and extend up against the foundation wall just below the depth of slab.

Prior to placing an air/vapor membrane, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damaged panels.

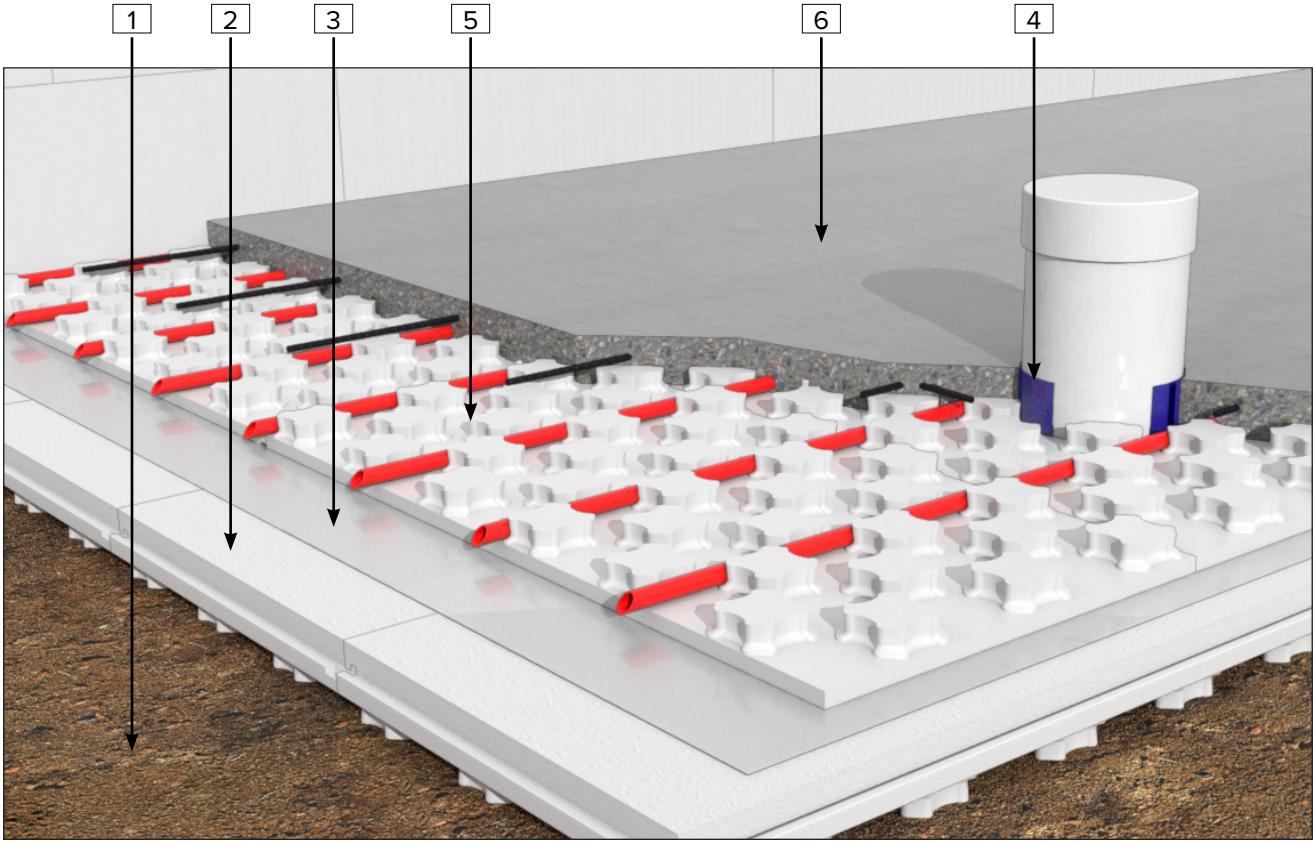
Provide a minimum 12” lap joint, or as required by local codes or by design. When using 6 mil polyethylene sheets, seal and secure lap joints with low permeance sheathing tape.

4 Seal the perimeter with acoustic sealant between the air/vapor membrane and the foundation wall, grade beam or slab.

5 Install Heat-Sheet Heavy radiant floor panels on top of the air/vapor membrane. Perimeter sealing of Heat-Sheet Heavy radiant floor panels is not required. For detailed installation instructions refer to the Heat-Sheet Heavy Installation Guide.

6 Pour the slab. Prior to concrete placement, inspect the condition of the Heat-Sheet Heavy radiant floor panels, and repair or replace damages sections.

4.6 PENETRATION SEALING WITH AIR/VAPOR MEMBRANE & RADIANT FLOOR TUBING



1 Level and compact the base material, as required. Heat-Sheet Heavy can be installed directly on undisturbed soil, compacted fill or sand.

2 Install Heat-Sheet Heavy on the base material. Heat-Sheet Heavy acts as the sub-slab ventilation layer, so no additional gas permeable layer, such as granular fill, is required.

Cut a circular hole with a hole saw or utility knife to accommodate the radon exhaust pipe.

Apply spray foam between Heat-Sheet Heavy and the exhaust pipe for gaps 1/4” or greater.

3 Install an air and vapor barrier layer on top of Heat-Sheet Heavy, such as 6 mil polyethylene sheets or a peel-and-stick membrane. The air/vapor membrane will act as the gas impermeable layer, so it should cover the entire slab area and extend up against the foundation wall just below the depth of slab.

Prior to placing an air/vapor membrane, inspect the condition of the Heat-Sheet Heavy panels, and repair or replace damages panels.

Provide a minimum 12” lap joint, or as required by local codes or by design. When using 6 mil polyethylene sheets, seal and secure lap joints with low permeance sheathing tape.

Cut a hole to accommodate the exhaust pipe with a utility knife.

4 Apply low permeance sheathing tape, or a mastic sealant, to seal between the air/vapor barrier layer and exhaust pipe.

5 Install Heat-Sheet Heavy radiant floor panels on top of the air/vapor membrane. Sealing penetrations around Heat-Sheet Heavy radiant floor panels are not required. For detailed installation instructions refer to the Heat-Sheet Heavy Installation Guide.

6 Pour the slab. Prior to concrete placement, inspect the condition of the Subterra boards including all sealed joints and penetrations, and repair or replace damages sections.

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