

Note: Read these instructions thoroughly before installation to ensure proper use of Absolute Barrier® vapor/gas under-slab barriers.

When installing Absolute Barrier®, ASTM E1465, ASTM E2121 and ASTM E1643 also provide valuable information regarding the installation of vapor/gas barriers. ASTM D4437 outlines test procedures for determining the quality of bonded seams. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction. Depending on the complexity and project specific requirements, a qualified design engineering firm may be required for design and installation specifications of the under-slab gas barrier. In those cases, all work shall be in accordance with the project drawings, specifications, and quality control requirements.

When Absolute Barrier® gas barriers are used as part of an active control system for radon or other gas, a ventilation system will be required.

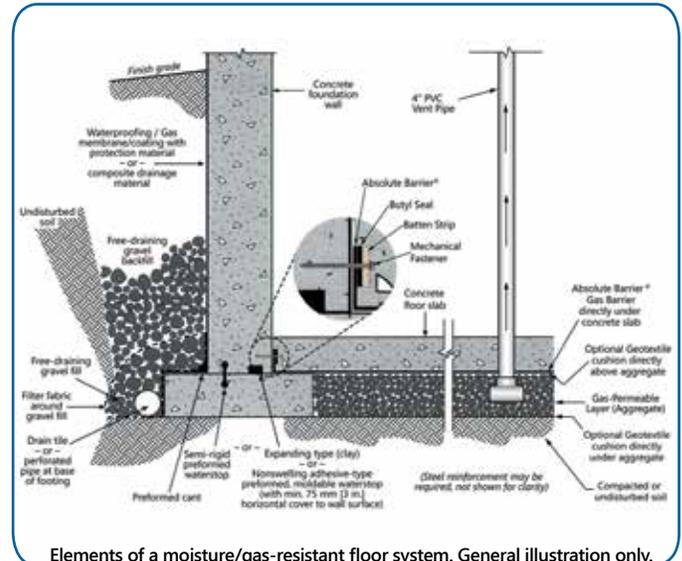
If designed as a passive system, it is recommended to install a ventilation system that could be converted to an active system if needed.

Absolute Barrier® Material List:

- HDPE Welding Rod if using X-Series
- LLDPE Welding Rod if using Y-Series
- Preformed Pipe Boots (or additional membrane if field fabricated)
- Aluminum Batten Strip
- Butyl Seal 2-Sided Tape
- POUR-N-SEAL™ (optional)

Absolute Barrier® Install Equipment List:

- Extrusion Welder
- Hot Air Welder and/or
- Single or Dual Track Wedge Welder
- Vacuum Box Test Device and/or
- Air Lance Testing Device
- Center Air Channel Testing Device (if using Dual Track Wedge Welder)



Elements of a moisture/gas-resistant floor system. General illustration only.
(Note: This example shows multiple options for waterstop placement)

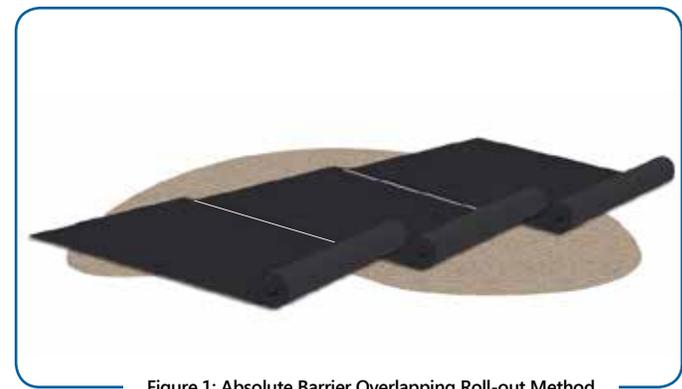


Figure 1: Absolute Barrier Overlapping Roll-out Method

1 BARRIER PLACEMENT & DEPLOYMENT

1.1 Level and tamp or roll granular base as specified. A base for a gas-reduction system may require a 4" to 6" gas permeable layer of clean coarse aggregate as specified by your architectural or structural drawings after installation of the recommended gas collection system. In this situation, a cushion layer consisting of a non-woven geotextile fabric placed directly under Absolute Barrier® will help protect the barrier from damage due to possible sharp coarse aggregate.

1.2 Unroll Absolute Barrier® running the longest dimension parallel with the direction of the pour and pull open all folds to full width, remove as many wrinkles as practical (Figure 1). Overlap edges 6" in preparation for thermal seaming. This overlap area must be cleaned of all dust, dirt, water and foreign debris no more than 30 minutes prior to the heal seaming operation.

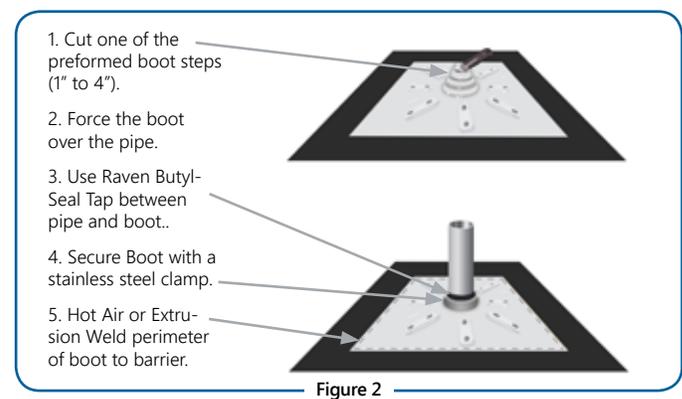


Figure 2

1.3 Absolute Barrier® may be attached to the vertical wall directly above the footings and fasten with a batten strip sealed with Butyl Seal Tape between the concrete surface and the Absolute Barrier® gas barrier (or as required by the design engineer, local building codes or as specified by architectural or structural drawings).

See vertical wall attachment illustration example on Page #1. Batten strips can also be used to attach the gas barrier to other vertical concrete penetrations. Acceptable field welding methods are thermal fusion and extrusion. The thermal energy for fusion welding can be provided by a single or dual hot wedge welder, hot air or a combination. Extrusion welding rod should be made from the same resin class as the bonding surface of the gas barrier being extruded to.

Trial welds, at least 4 feet long, shall be made on scraps of the same material being installed.

Three nondestructive test methods are available to verify field welds including; center air channel pressure testing for double track fusion seams, vacuum box testing for single track fusion seams and extrusion seams or patches, and air lance testing for single track fusion seams.

SINGLE PENETRATION PIPE BOOT INSTALLATION

1.4 When installing Absolute Barrier®, seal around all plumbing, conduit, support columns or other penetrations that come through the Absolute Barrier® membrane. Lay the barrier as closely as possible to the penetrations to minimize patch work. Sealing around pipe penetrations can be accomplished using option 1 or 2 below:

Option 1

Pipes four inches or smaller can be sealed with Raven VaporBoot Plus preformed pipe boots. VaporBoot Plus preformed pipe boots are formed in steps for 1", 2", 3" and 4" PVC pipe or IPS size and are sold in units of 12 per box (Figure 2).

Option 2

Field prepared pipe boots made of Absolute Barrier® material should fit snugly but not require excessive force to pull over a pipe. Pipe boot aprons should be seamed to the parent barrier material using a hot air gun and a rubber covered hand roller or an extrusion fillet weld. The pipe boot sleeve can be attached to the pipe or other penetration with butyl tape between the penetration and the boot sleeve and fastened with stainless steel band clamps (Figure 3A and 3B).

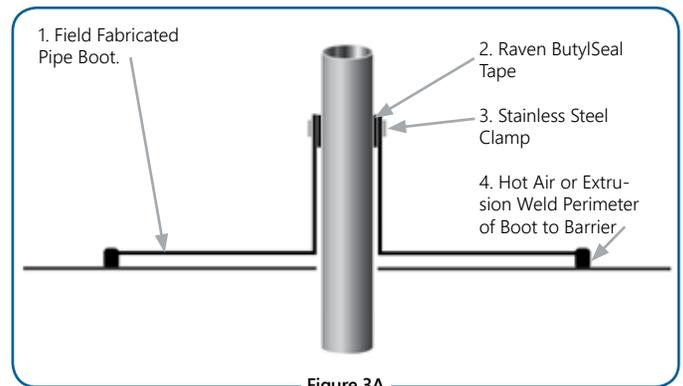


Figure 3A

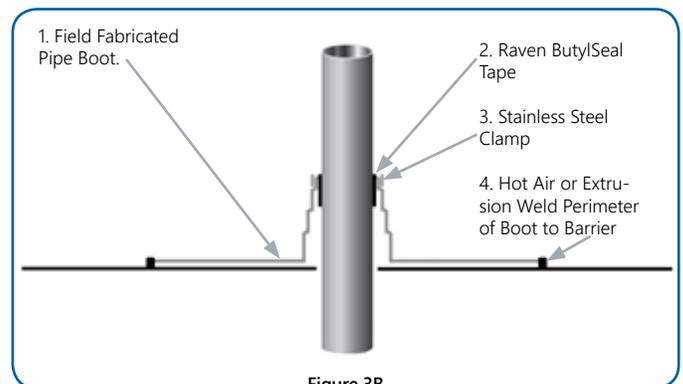


Figure 3B



Figure 4

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5 When installing Absolute Barrier® in situations with side-by-side multiple penetrations;

Option 1: Custom pipe penetration boots may need be fabricated in the field to meet the site demands. Follow the design engineer's instructions as specified by architectural or structural drawings.

Option 2: POUR-N-SEAL™ method of sealing side-by-side multiple penetrations (Figure 4, 5, and 6):

A) Install the vapor barrier as closely as possible to pipe penetrations to minimize the amount of POUR-N-SEAL™ necessary to seal around all penetrations.

B) Once barrier is in place, remove soil or other particles with a dry cloth or a fine broom to allow for improved adhesion to the POUR-N-SEAL™ liquid.

C) Create a dam around the penetration area approximately 2" away from the pipe or other vertical penetrations by removing the release liner from the back of a 1" weather stripping foam and adhere to the vapor barrier. Form a complete circle to contain the POUR-N-SEAL™ materials (Figure 4).

D) Once mixed, pour contents around the pipe penetrations. If needed, a brush or a flat wooden stick can be used to direct the sealant completely around penetrations creating a complete seal (Figure 5 and 6).



Figure 5

E) DO NOT leave excess POUR-N-SEAL™ in plastic container for longer than the time it takes to pour sealant.

1.6 Repairing Holes or Openings:

Absolute Barrier®: Holes or openings in the Absolute Barrier® less than 0.125 inches in diameter may be repaired with an extrusion bead of the same base polymer (LLDPE or HDPE) as the gas barrier membrane. Holes or openings in the Absolute Barrier® that are more than 0.125 inches in diameter shall be patched with the same membrane using either and hot air or an extrusion welding process.

The patch shall extend at least 3 inches from the nearest damage if the damaged area is less than 1 inch in diameter.

When damage exceeds 1 inch in diameter the patch shall extend at least 6 inches from the nearest damage. All extrusion patches shall be vacuum box tested and hot air patches can be either air lanced or vacuum tested.

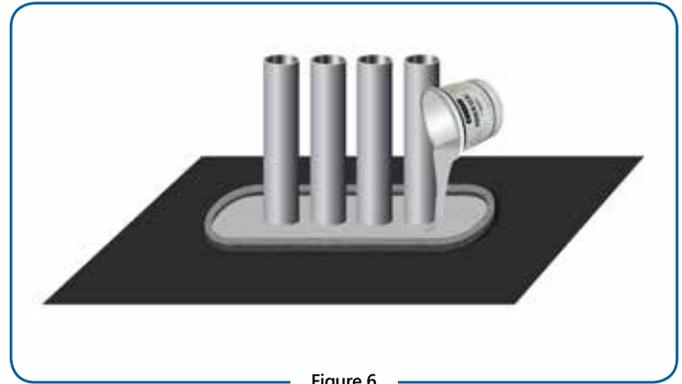


Figure 6

2
STEP

ABSOLUTE BARRIER® PROTECTION

2.1 When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect Absolute Barrier®. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on Absolute Barrier® provide for additional protection in high traffic areas including concrete buggies.

2.2 Use only brick-type or chair-type reinforcing bar supports to protect Absolute Barrier® from puncture.

2.3 Avoid driving stakes through Absolute Barrier®. If this cannot be avoided, each individual hole must be repaired per section 1.6. To avoid penetrating Absolute Barrier® when installing screed supports, utilize non-penetrating support, such as the Mako® Screed Support System (Figure 7).

2.4 If a cushion or blotter layer is required in the design between Absolute Barrier® and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.

Absolute Barrier® can be identified by the package label and will be black in color.



Figure 7



Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.ravenefd.com

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