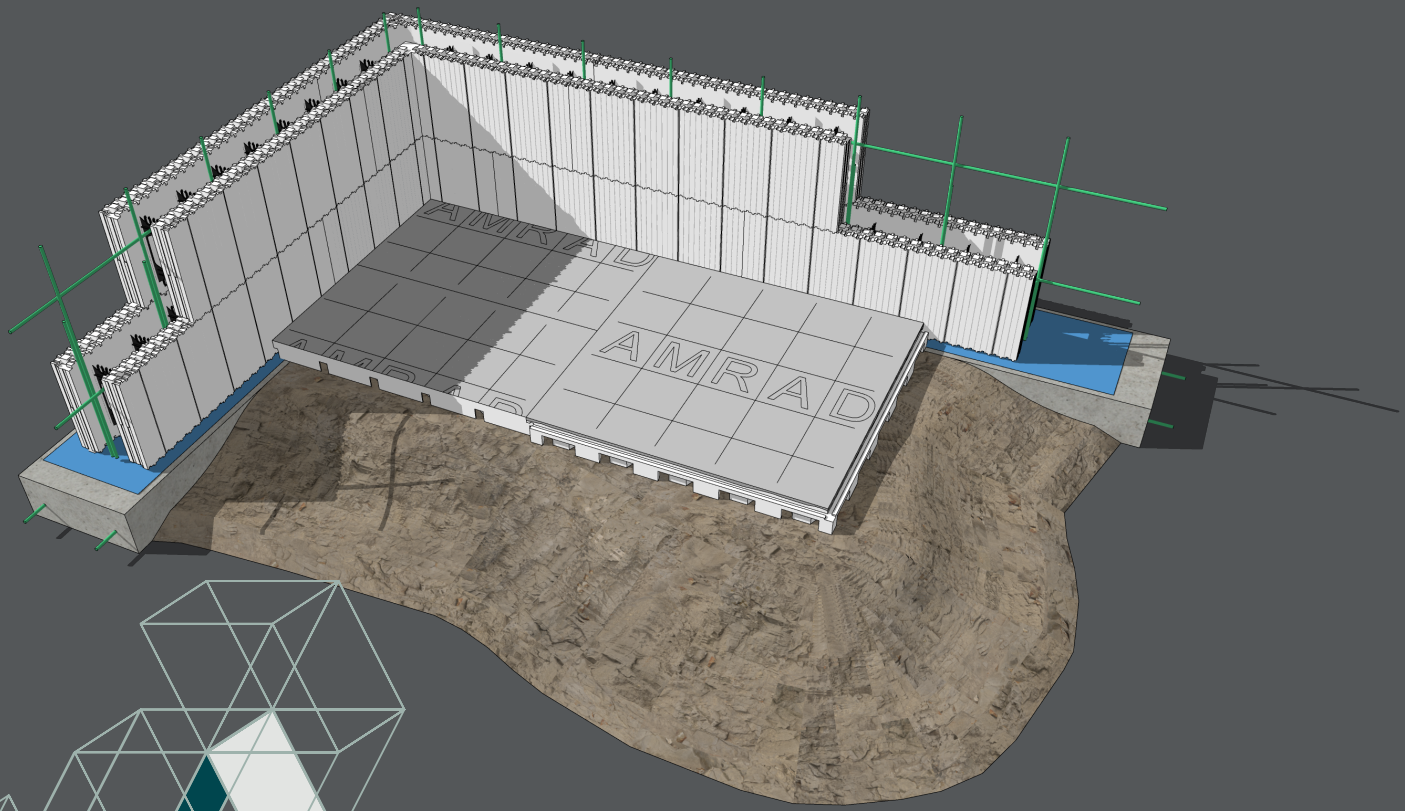
Alleguard

Amrad Installation Manual

PROTECTIVE FOAM SOLUTIONS

INNOVATIVE INSULATION CONSTRUCTION SOLUTIONS FOR ENERGY EFFICIENT AND COMFORTABLE BUILDINGS



8 JUNE 2023

Alleguard

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PREFACE

Amrad is an insulated under concrete slab rigid panel that is part of a radon gas mitigation system. When combined with continuous, active venting, Alleguard's solution will provide a safe and healthy living environment for the occupants. Each panel comes in a standard size, it is lightweight and ideal for use in low rise residential buildings. The system is perfectly suited for use with virtually any foundation system. Amrad is backed-up by Alleguard's renowned customer service and technical support and is available through Alleguard's extensive distributor network across North America.

If any of your questions or concerns are not completely addressed in this manual, feel free to contact us and our staff will be happy to answer your questions. At Alleguard, we pride ourselves in offering our customers an exceptional level of customer service.

Technical Support

Please contact us for any inquiries pertaining to information included in this manual or if you require other technical assistance.

Phone: 1 (877) 470-9991 (toll free)

Email: amvic.technical@alleguard.com

Alleguard Website

The Alleguard website is updated regularly with the most updated information including, product data sheets, construction details and installation manuals. This technical and installation manual is posted on the website, see **www.alleguard.com**

Disclaimer

This document is provided for informational purposes only. The information contained in this document represents the current views of Alleguard Inc. on the issues discussed as of the date of publication. These opinions, as expressed, should not be interpreted to be a commitment on the part of Alleguard Inc. and cannot guarantee the accuracy of any information presented after the date of publication. The user assumes the entire risk as to the accuracy and the use of this document.

This manual provides a basic guide for the installation of the Amrad radon mitigation system and is intended to supplement, rather than replace, the basic construction knowledge of the construction professional. All installations of Amrad must be in accordance with all applicable building codes and/or under the guidance of a licensed professional engineer. In all cases, applicable building code regulations take precedence over this manual.

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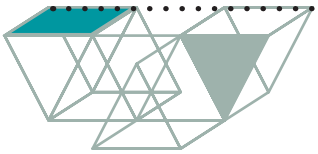


PART 1 INTRODUCTION

Amrad is an insulated radon panel and a key component in a radon gas mitigation system. The panels are molded from high density, closed cell, Type 2 (Type II) Expanded Polystyrene (EPS) insulation. The panels are laid side by side to provide continuous venting, insulation and air/vapor barrier between the ground and the concrete slab.

The insulated panels are designed with integrated channels on the underside and an air and vapor barrier film on the topside. The channels are interconnected and create a void (air gap) between the concrete slab and the soil. They are connected to a vent pipe that includes a running fan allowing for continuous venting air to the exterior. This process creates negative pressure under the slab, drawing any radon gas that is present in that area into it and exhausting it. The unique pattern for the channels allows panels to be installed in virtually any location without compromising the ability of the air to flow from one area towards the exhaust. In addition to this, the air gap serves as a capillary break between the soil and the slab greatly reducing moisture related issues. These Amrad features allow it to replace 4" (102mm) of clean granular fill as required by the building code.

On the topside, the High Impact Polystyrene (HIPS) film functions as both the air and vapor barrier when taped and sealed. It serves dual function by providing the required vapor barrier under concrete slabs while acting as an air barrier to prevent any radon gas from infiltrating into the interior space. The Amrad film replaces the need for a dedicated soil gas retarding membrane as required by the building code. The large, four sided interlock on each panel allows the panels to be easily and quickly installed while ensuring the continuity of the insulation and air/barrier film.

This panelized solution with its unique channel design, void percentage, film and density of foam creates a very strong and durable panel giving builders the ability to build an insulated concrete slab while meeting radon building code requirements and improving the indoor air quality for the occupants.

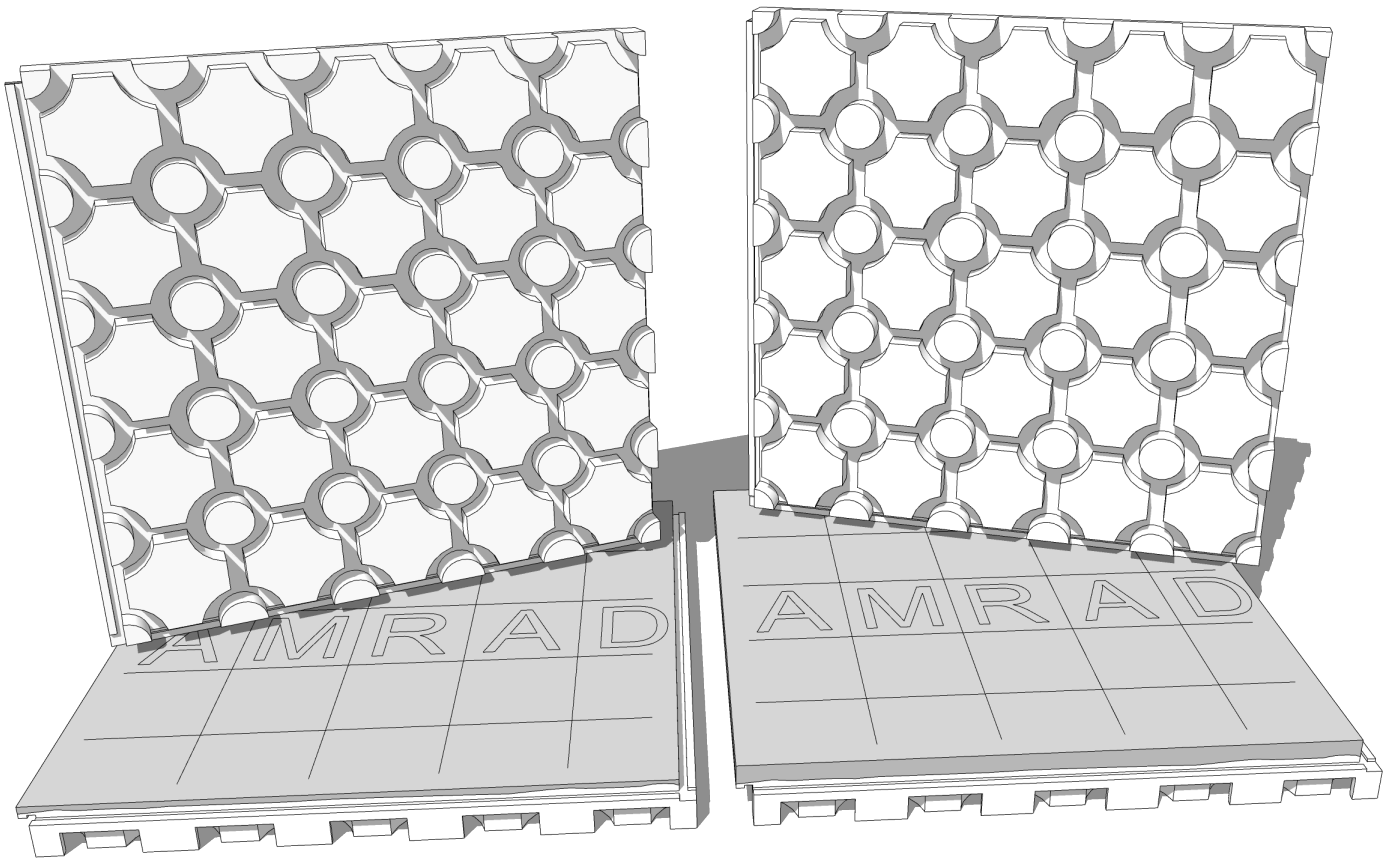


Figure 1 – Panel perspective view showing both channels and film on the bottom and top sides of Amrad

Tool Checklist For Amrad Installation

- □ Utility knife
- □ Tape measure
- □ Protective gear for concrete pour
- □ Protective gloves
- □ Cordless drill with a hole saw bit
- □ Felt-tip marker
- □ Laser level
- □ Foam dispensing gun
- □ Caulk gun
- □ Hot knife
- □ Hand saw
- □ Ruler/straightedge

Material Checklist

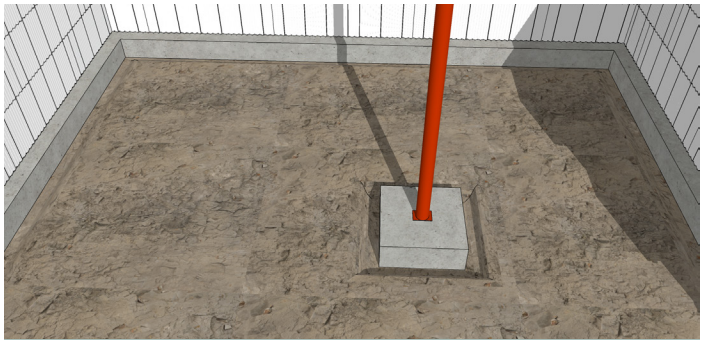
- □ Self adhering waterproofing membrane (e.g. Soprema Colphene® ICF)
- □ Vapor barrier tape (e.g. Tuck®Tape Contractor's Sheathing Tape for PE vapor barrier)
- □ 6 mil polyethylene vapor barrier
- □ Spray foam (e.g. Great Stuff™ Gaps & Cracks)
- □ Sealant (e.g. LePage PL® Acousti-Seal)
- □ Amrad's 4" (102mm) PVC adapter
- □ 4" (102mm) schedule 40 PVC pipe
- □ PVC solvent cement
- □ Welded wire mesh (if needed)
- □ PEX piping (if needed)

Method 1

There are a few ways of installing Amrad panels, we will be covering two of them in this manual. The first installation method focuses on using a self adhering waterproofing membrane to seal the panels to the foundation and to the adapter. The second method uses 6 mil polyethylene vapor barrier and acoustic caulking to replace the membrane mentioned above. Both methods are acceptable and would depend on the installer's preference and local availability of materials.

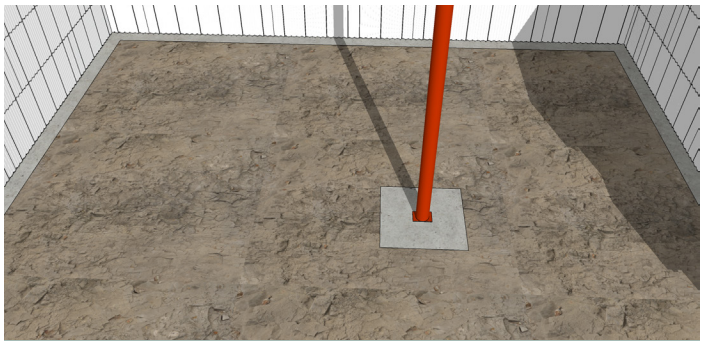
Step 1

- Install any utilities (sewer, plumbing, electrical)



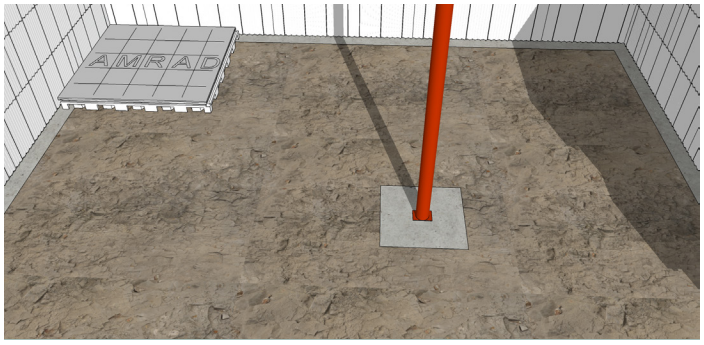
Step 2

- Prepare under slab surface as per engineering and building code requirements.
- Final grading of under slab surface should be flush with top of footing.
- Panels can be installed on undisturbed soil, compacted fill or sand.



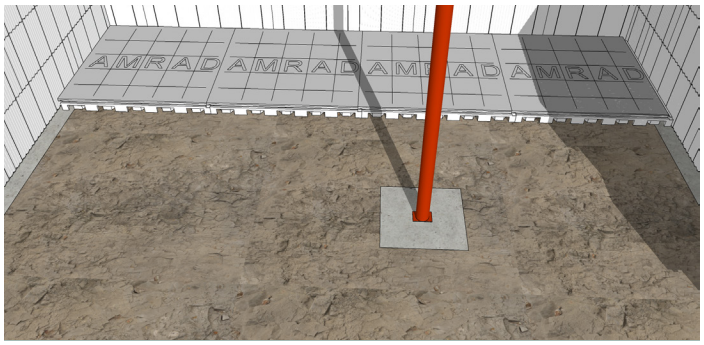
Step 3

- Start from the far left with a full panel.
- Make sure the panel is tightly abutting the foundation wall.



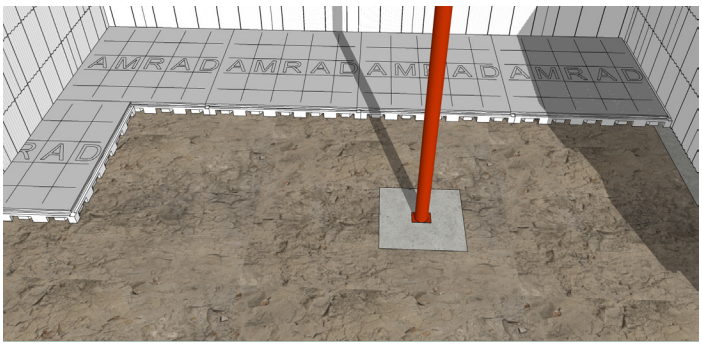
Step 4

- Continue to lay the panels down until the first row is complete.
- Make sure the panels are properly interlocked with each other
- The last panel can be trimmed as needed to fit any dimension.
- Ensure to backwrap all the panels along the perimeter.



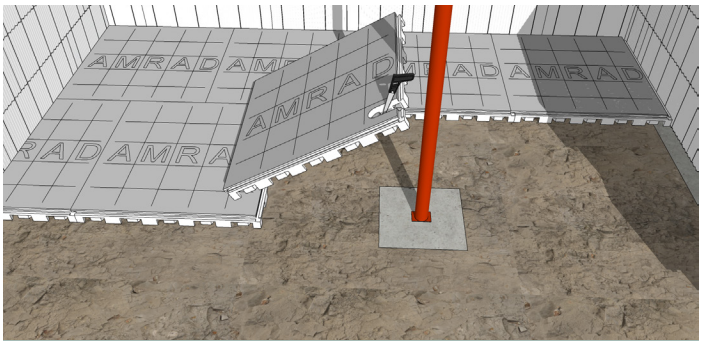
Step 5

- Start the next row with half a panel.
- This will create a running bond pattern which will stagger the seams.



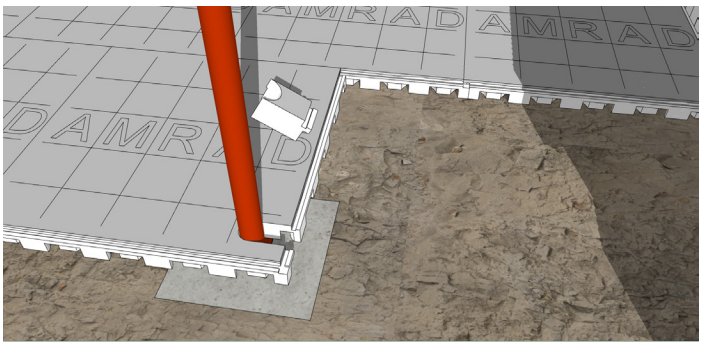
Step 6

- Continue laying down the panels until reaching a column or a wall.
- Cut the panel to fit around the column.



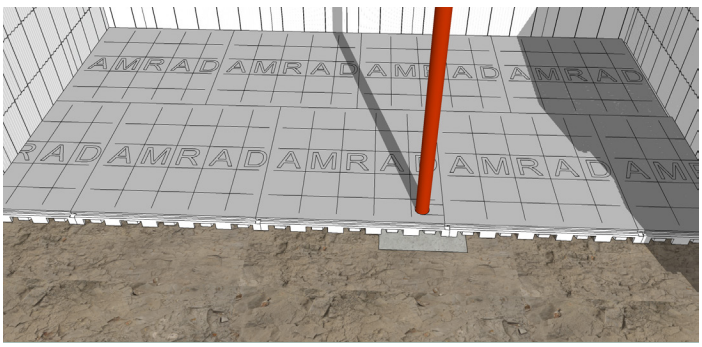
Step 7

- Once the cut panel has been placed, trim the leftover piece to fit inside the opening. Use spray foam/sealant to fill in larger gaps between the cut pieces if needed.



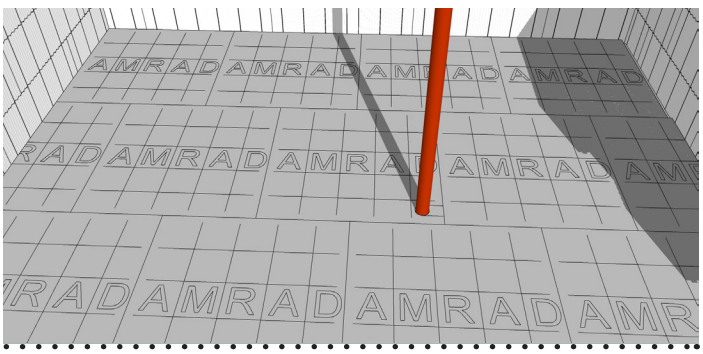
Step 8

- Continue laying down the panels until the row is complete. The last panel can be trimmed as needed to fit any dimension.



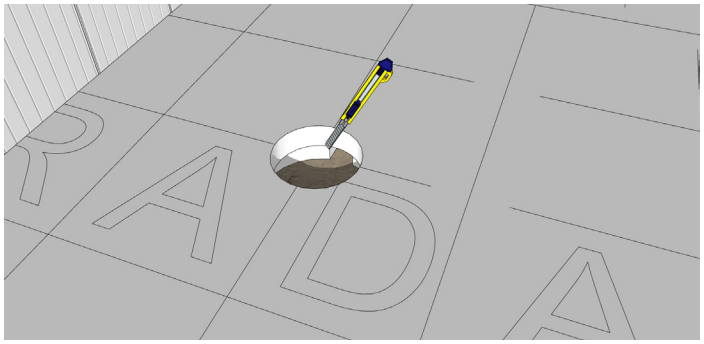
Step 9

- Finish installing the remaining rows following the same alternating pattern.



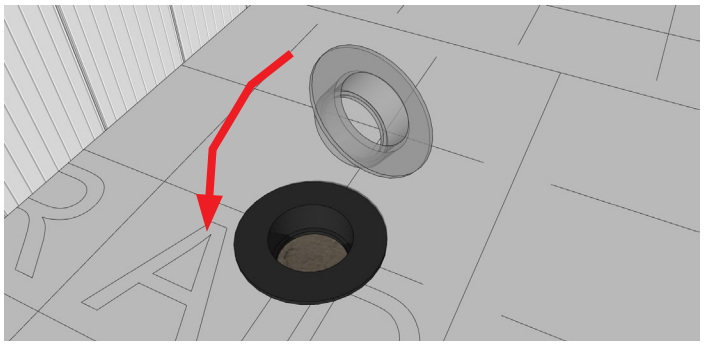
Step 10

- Cut a circular opening in one of the panels for the adapter. Opening should be cut at any intersection of the lines for best air flow.
- Opening should be 4.75” (121mm) in diameter.
- Foam can be cut with a hot knife, hole saw, hand saw or a utility knife.



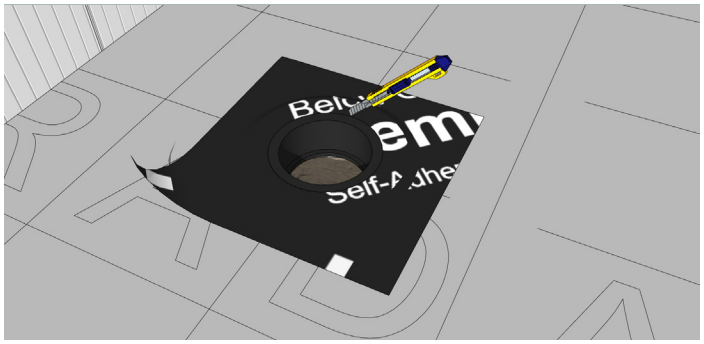
Step 11

- Install the Amrad Adapter by placing it facing down as depicted in the render.
- Alleguard’s Amrad adapter is compatible only with Schedule 40 PVC pipes.



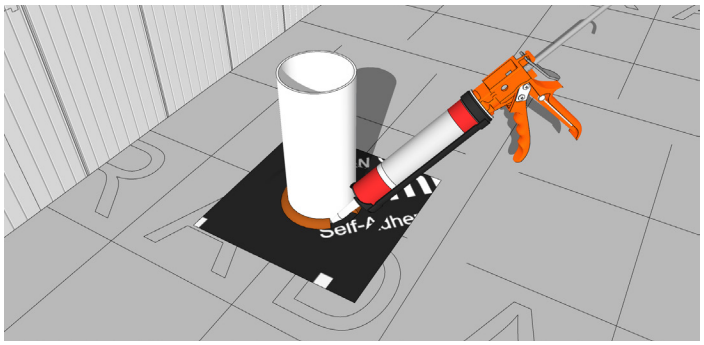
Step 12

- Take a 12x12” (305x305mm) section of the pre-cut waterproofing membrane, center it over the adapter and press down on it firmly to ensure full adhesion. Use a utility knife to cut a 5.5” (140mm) opening in the membrane.



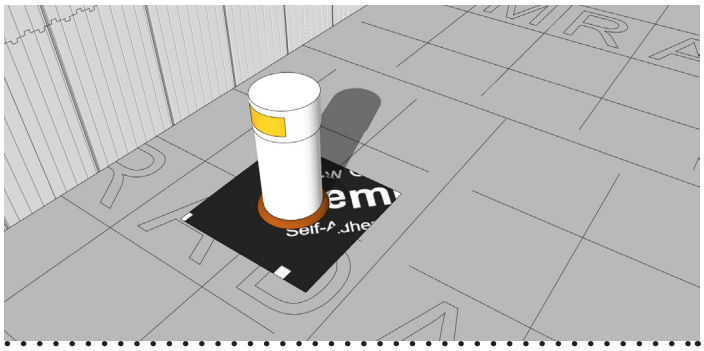
Step 13

- Cut a section of 4” (102mm) PVC pipe to a length of 12” (305mm), apply PVC cement as per standard plumbing practices and insert it into the adapter.
- Apply a bead of sealant between the PVC pipe and the adapter.
- The adapter and pipe function as rough-in for rest of radon gas exhaust system components and extra care should be taken during installation.



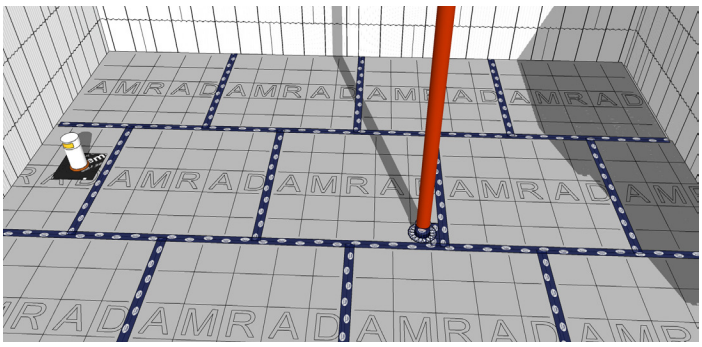
Step 14

- Cap the pipe and mark it with radon information as required by building code.
- Some projects might require more than one exhaust pipe, but for most typical houses, a single rough-in would be sufficient.



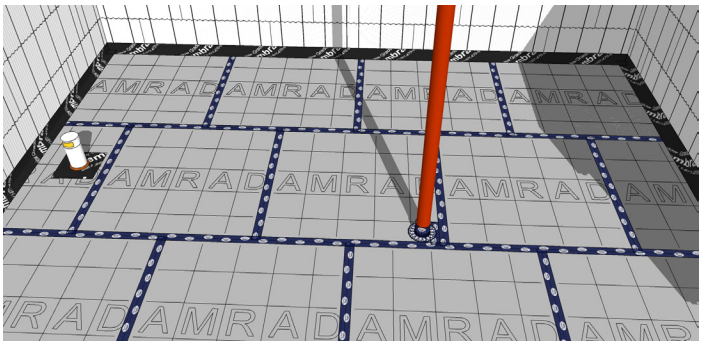
Step 15

- Tape all the joints between panels using an approved vapor barrier tape at least 60mm (2.36”) wide.



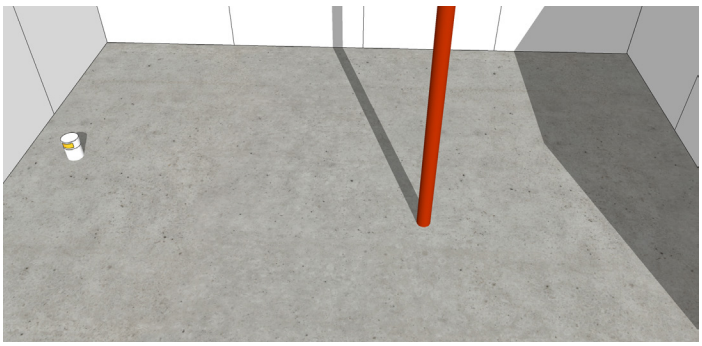
Step 16

- Cut Alleguard’s pre-cut 12” (305mm) self adhering waterproofing membrane into strips and apply it along the perimeter of the slab.
- The membrane should overlap a minimum of 3” (76mm) over the Amrad panels and up the foundation wall (or column).
- When multiple layers are needed, each strip should overlap the previous piece by at least 3” (76mm).



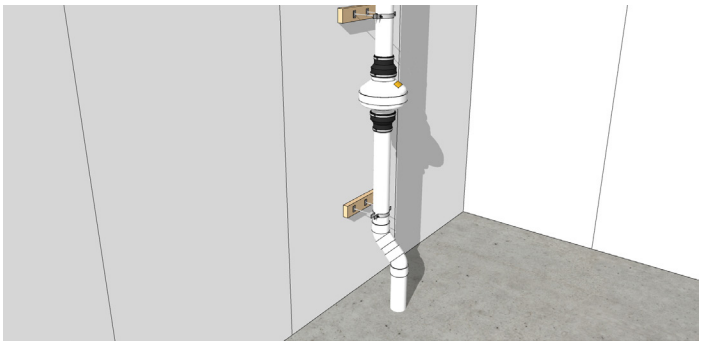
Step 17

- Install any in-slab items such as reinforcement (welded wire mesh or rebar), hydronic piping or blockouts.
- Pour concrete slab as per local building code and engineering requirements.
- Once the slab has cured sufficiently, use sealant along the perimeter and at any penetrating items (e.g. columns, wall, piping, radon rough-in, etc).



Step 18

- Remove the temporary cap from the 4” (102mm) PVC pipe.
- Install the rest of the active radon exhausting vent system. This includes piping and a fan that allows any radon gas to be continuously vented to the outdoors.

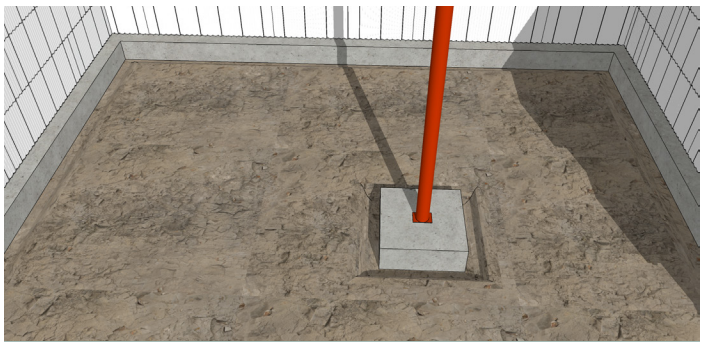


Method 2

The second method of installation is designed as an alternative to the first method using off the shelf materials that are commonly available at any local hardware store. This method is applicable to both perimeter sealing and adapter sealing.

Step 1

- Install any utilities (sewer, plumbing, electrical)



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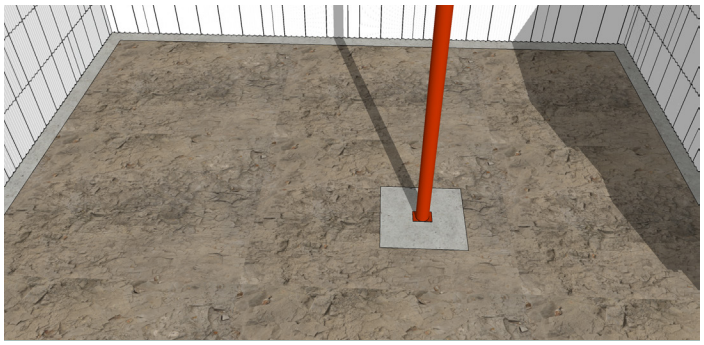

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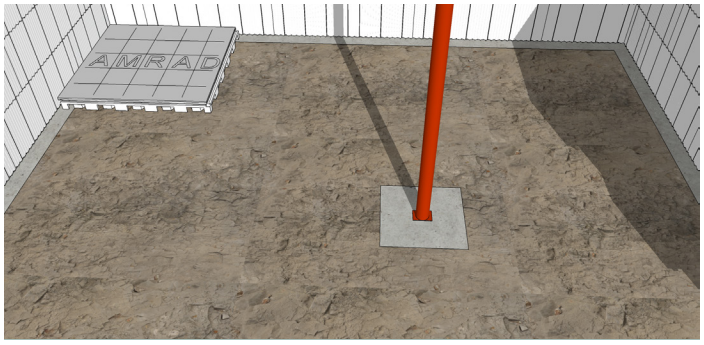

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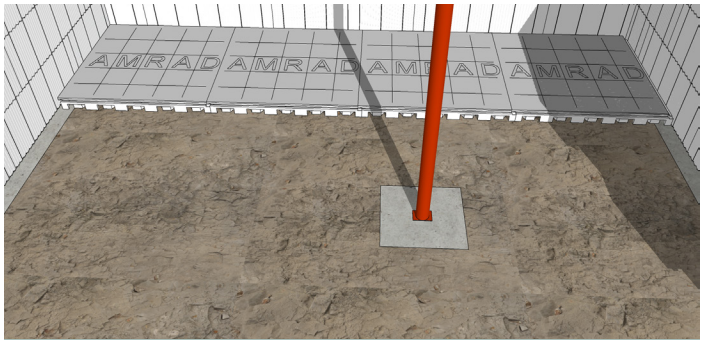

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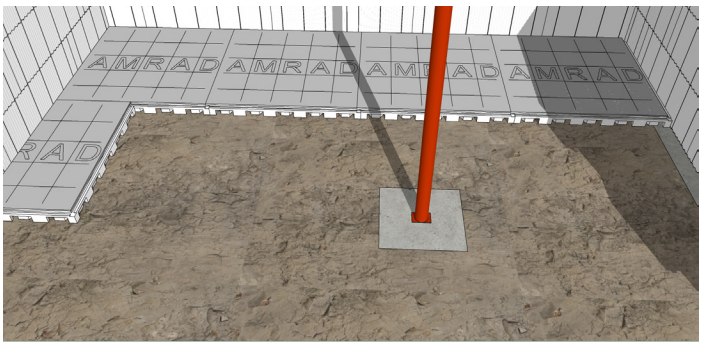

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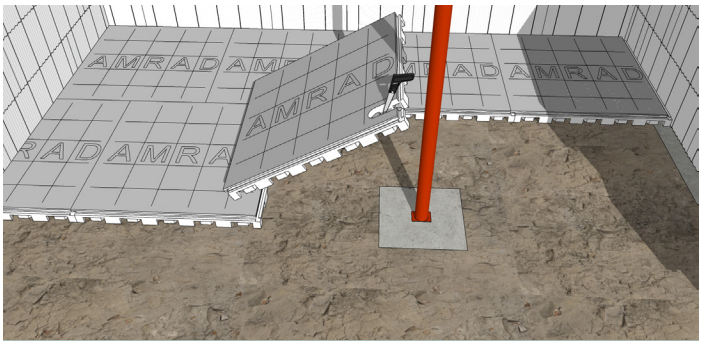

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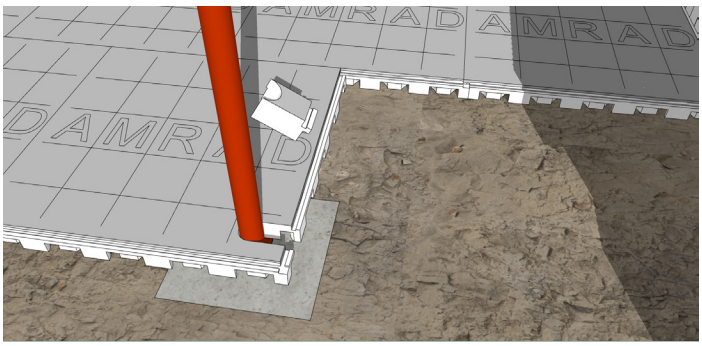

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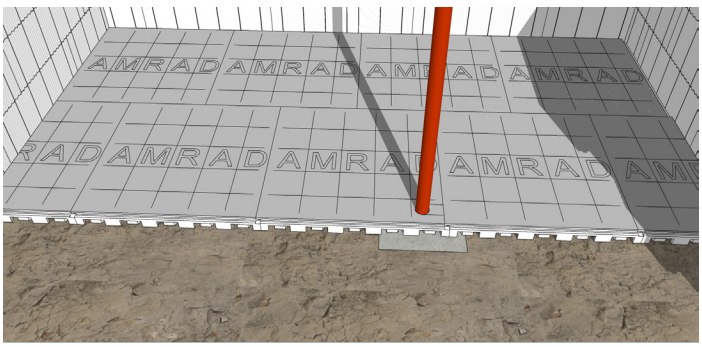

Step 9

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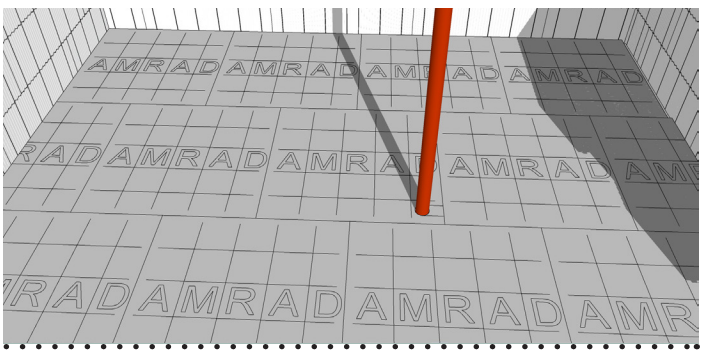

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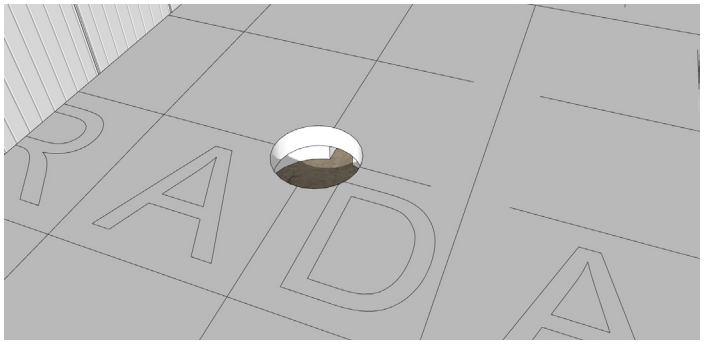
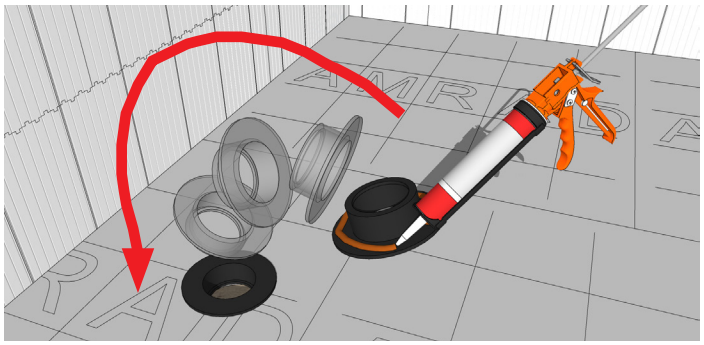


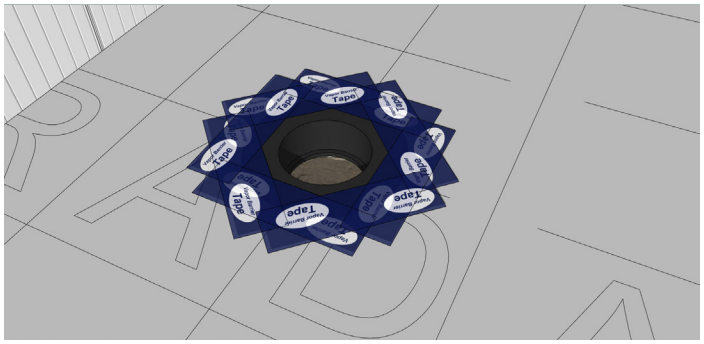
Step 11

- On the underside of the Amrad Adapter flange, place a continuous bead of acoustic sealant.
- Insert the adapter into the circular opening with the flange resting on the top side of the panel.
- Alleguard’s Amrad adapter is compatible only with Schedule 40 PVC pipes.



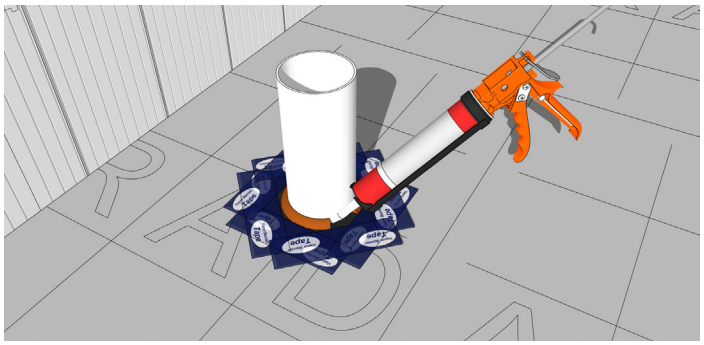
Step 12

- Tape the edges of the adapter flange to the film surface using the vapor barrier tape.
- The tape can be cut into 8 pieces, 8” (203mm) long each and taped the flange in an octagonal fashion.



Step 13

- Cut a section of 4” (102mm) PVC pipe to a length of 12” (305mm), apply PVC cement as per standard plumbing practices and insert it into the adapter.
- Apply a bead of sealant between the PVC pipe and the adapter.
- The adapter and pipe function as rough-in for rest of radon gas exhaust system components and extra care should be taken during installation.



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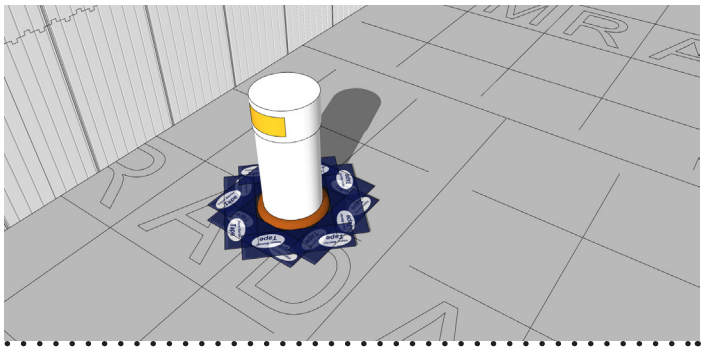
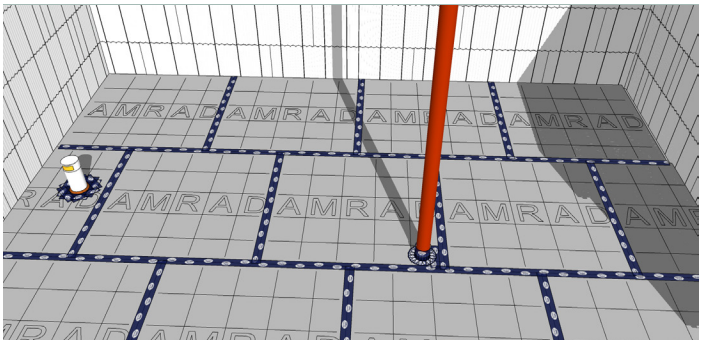
- Cap the pipe and mark it with radon information as required by building code.
- Some projects might require more than one exhaust pipe, but for most typical houses, a single rough-in would be sufficient.



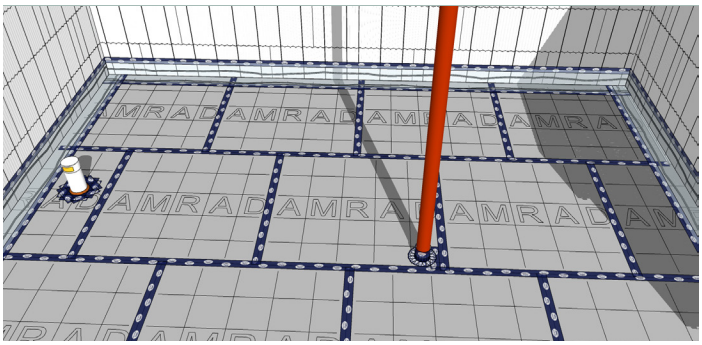
Step 15

- Tape all the joints between panels using an approved vapor barrier tape at least 60mm (2.36”) wide.



Step 16

- Use pre-cut 12” (305mm) 6 mil polyethylene vapor barrier along the perimeter. Use acoustic sealant and vapor barrier tape to secure membrane to the panels and the foundation wall.
- Acoustic sealant installed on foundation wall not be installed higher than 3” (76mm) from top of panel.
- Vapor barrier should overlap a minimum of 6” (121mm) unto itself with the leading edge taped.



Step 17

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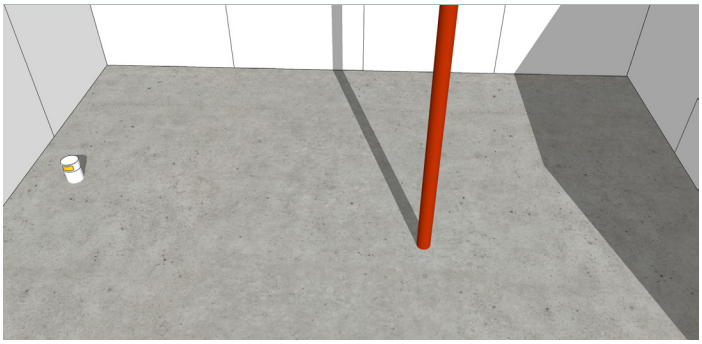


Step 18

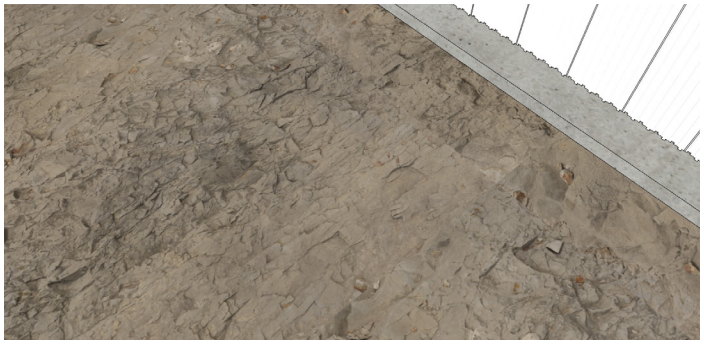
- Remove the temporary cap from the 4” (102mm) PVC pipe.
- Install the rest of the active radon exhausting vent system. This includes piping and a fan that allows any radon gas to be continuously vented to the outdoors.

Sump Pit

A sump pit is a water collecting basin generally located in basements of houses. The combination of a sump pit and pump is used to evacuate water from around the foundation keeping the below grade portions dry. These are commonly installed where flooding or where the water table is above the footing height. When properly installed, sump pumps keep the below grade spaces dry and eliminate issues of dampness.

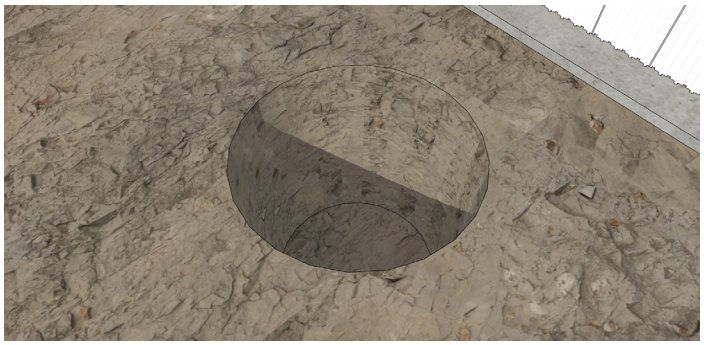
Step 1

- Prepare under slab surface as per engineering and building code requirements.



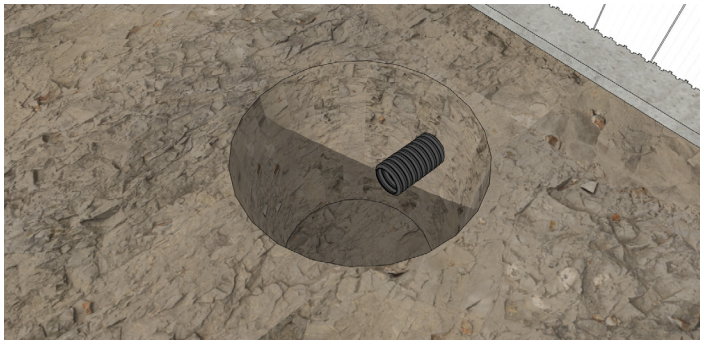
Step 2

- Choose the most suitable location for the sump pit and excavate to the appropriate depth



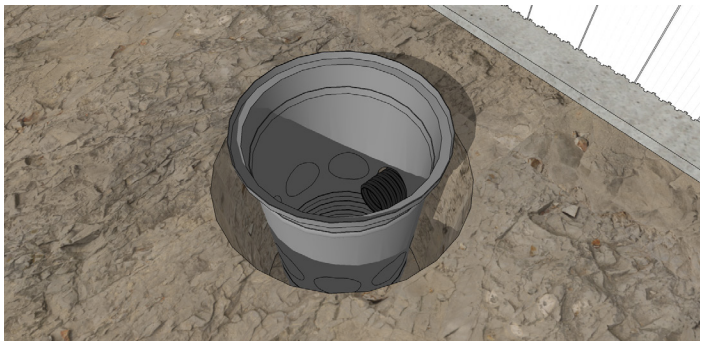
Step 3

- Connect the foundation drain (weeping tile pipe) to the excavated area.
- The connecting pipe should either be below the height of the foundation weeping tile or sloping towards the sump pit area.



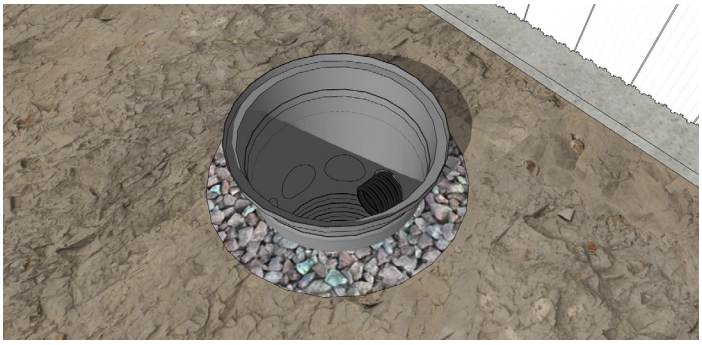
Step 4

- Install the sump tank and connect to the foundation drain.
- The connecting pipe should be protruding at least 2” (51mm) from the inner surface of the sump tank.



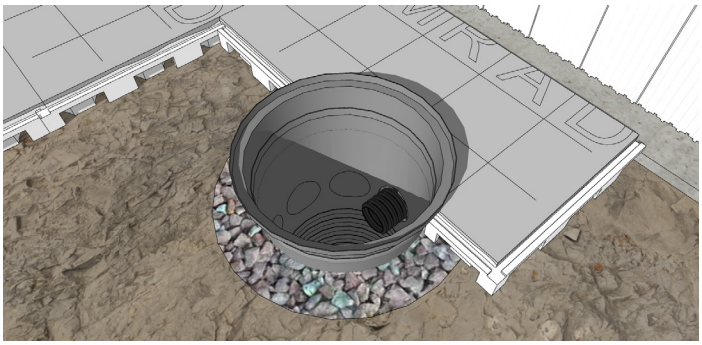
Step 5

- Fill and compact the area around the sump tank using crushed stone/gravel to be level with the rest of the soil.



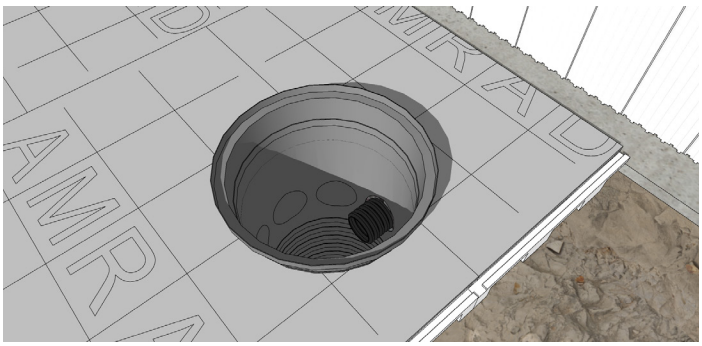
Step 6

- Install Amrad panels around the sump tank as per Part 3 of this installation manual.
- Panels should be flat, level and 2” (51mm) above the top surface of the footing to allow for footing insulation to be placed at a later time.



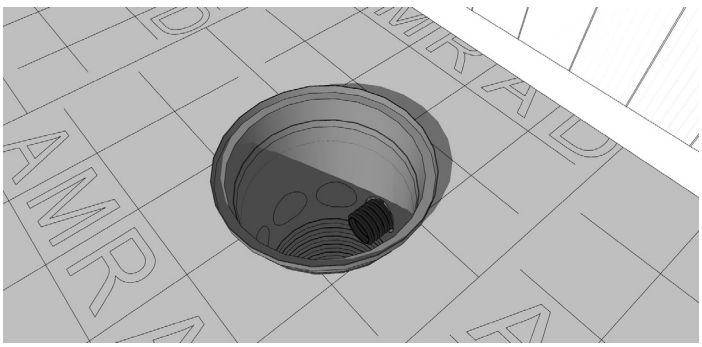
Step 7

- Cut the adjacent Amrad panels to fit as closely as possible to the sump tank.



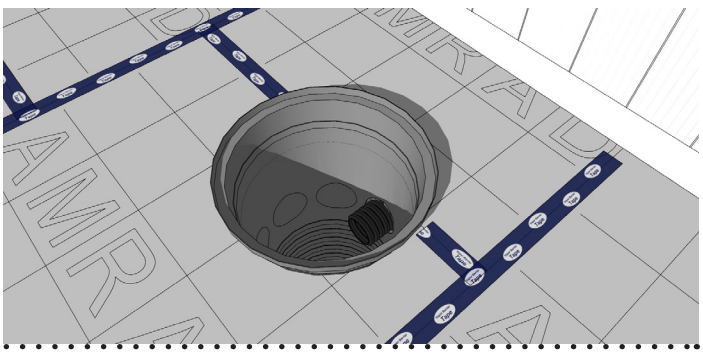
Step 8

- Install the rest of the Amrad panels as per Part 3 of the installation manual.
- Cut strips of 2” (51mm) thick foam insulation to be placed on the footing. Make sure rigid foam and Amrad panels are at the same level.
- This reduces heat loss from the interior to the exterior, mitigating the effect of thermal bridging.



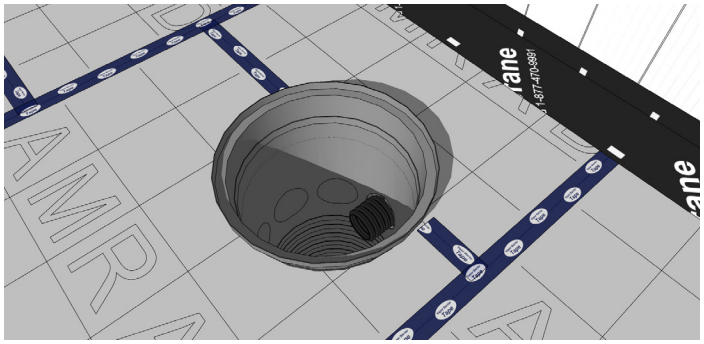
Step 9

- Tape all the joints between panels using an approved vapor barrier tape at least 60mm (2.36”) wide.



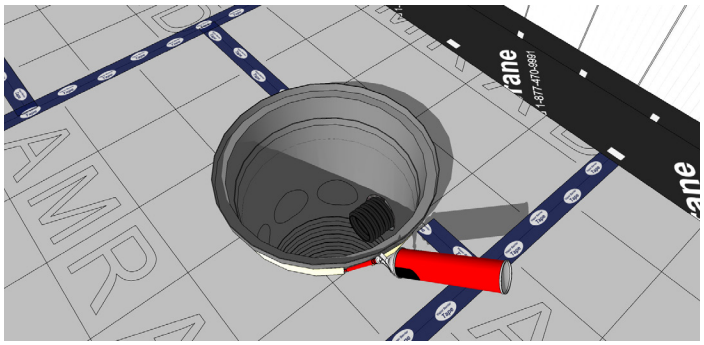
Step 10

- Cut a self adhering waterproofing membrane into strips. Use two strips if footing is much wider.
- Apply the self adhering waterproofing membrane strip along the perimeter. The membrane should overlap at least 3” (76mm) over the Amrad panels and up the foundation wall (each strip should overlap the previous piece by at least 3” (76mm).



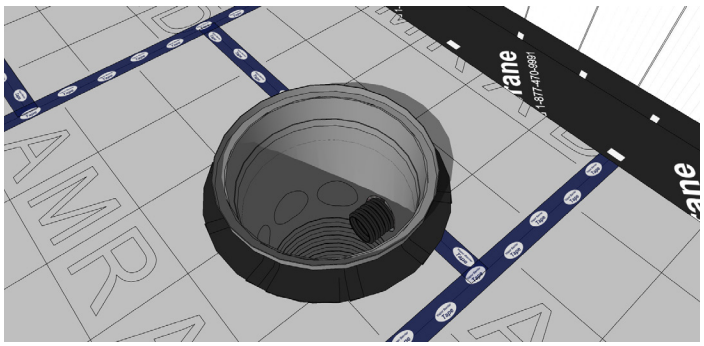
Step 11

- Apply low expansion spray foam insulation between the sump tank and the Amrad panels.
- It is recommended to apply the foam between 40-100°F (4.4-37.8°C) for best results.



Step 12

- Cut a self adhering waterproofing membrane into small sections.
- Apply the self adhering waterproofing membrane strip around the sump tank.
- Each strip should overlap the previous piece by at least 1” (25mm).

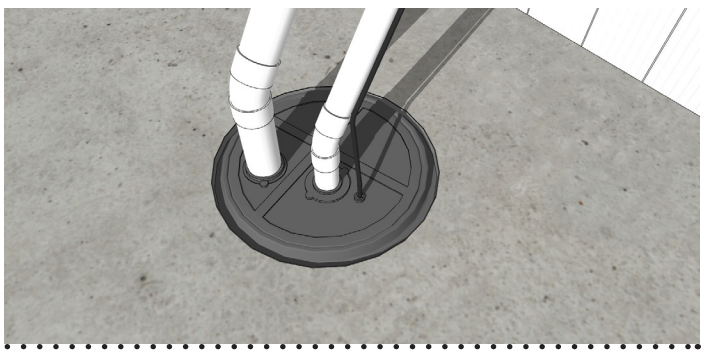


Step 13

- Install any in-slab items such as reinforcement (welded wire mesh or rebar), hydronic piping or blockouts.
- Pour concrete slab as per local building code and engineering requirements.

Step 14

- Install the sump pump along with all the connections including discharge pipe, check valves, vent pipe and electrical connections.
- Sump tank lid can be fabricated or a radon approved cover can be bought. Both solutions are adequate as long as they are properly sealed.



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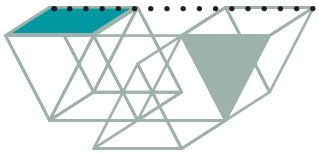

AMRAD

INSTALLATION MANUAL

Alleguard's Amrad is a high quality, innovative under slab radon gas mitigation panel designed for low rise residential applications. Competitive pricing, extensive product distribution and excellent technical support are combined to provide our clients with a simplified approach to a superior finished product. If any questions or concerns are not completely addressed in this guide, please contact us and our staff will be happy to answer any question. At Alleguard, we pride ourselves in offering our customers an exceptional level of customer service.

Disclaimer

Information contained in this document is provided as a guideline only, without any warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, and freedom of infringement.

This document provides a basic guide for installation of Amrad and is intended to supplement, rather than replace, the basic construction knowledge of a construction professional. All installations of Amrad must be in accordance with all applicable building codes and/or under the guidance of a licensed professional engineer. In all cases, applicable building code regulations take precedence over this manual.

Technical Support

Please contact us for any inquiries pertaining to information included in this guide, or if you require any other technical assistance.

Phone 1 (877) 470-9991 (toll free)

Email amvic.technical@alleguard.com

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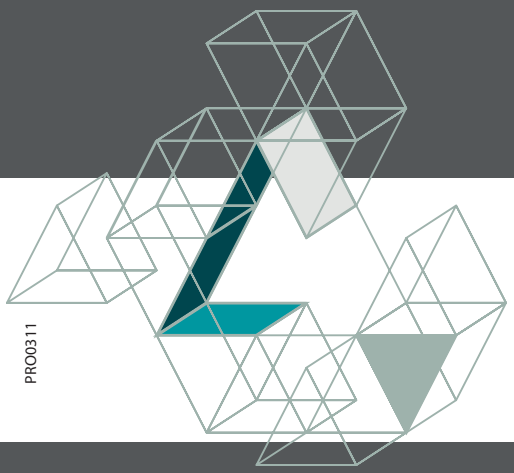

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