

# Part 12 – Below Grade Moisture Protection

## 12.1 – Code Requirements

All building codes in the US and Canada require walls below grade to have damp-proofing or waterproofing protection.

### 12.1.1 – Damp-proofing vs Waterproofing

Damp-proof applications will slow or retard water and water vapor penetration through the foundation walls. When applied properly, damp-proofing can keep basements in a dry condition as long as there is no hydrostatic pressure due to ground water table.

Waterproof applications stop water from infiltrating foundation walls. Waterproof applications in most cases are more expensive than damp-proofing. The investment is well worth it considering the repair costs involved, if a basement wall starts to leak water.

### 12.1.2 – Damp-proofing or Waterproofing According to Building Codes

Damp-proofing is required for foundation walls enclosed within soils where hydrostatic pressure does NOT occur.

If it is determined by a soil investigation report that hydrostatic pressure conditions exist, then the enclosed foundation walls shall be waterproofed. When walls are waterproofed, no damp-proofing is required.

### 12.1.3 – Foundation / Subsoil drainage system as per Building Codes

Proper drainage of the subsoil is required for all walls which retain soil and enclose habitable space. The drain shall be placed around the perimeter of the foundation wall at or below the footing or SOG level. The drains can be made of drainage tiles, gravel or crushed stone drains, perforated pipe or other approved systems. The drains shall discharge water by gravity or mechanical means into an approved drainage system.

Figure 12.1 below illustrates a typical “French Drain” system which has been used successfully for residential construction in North America.



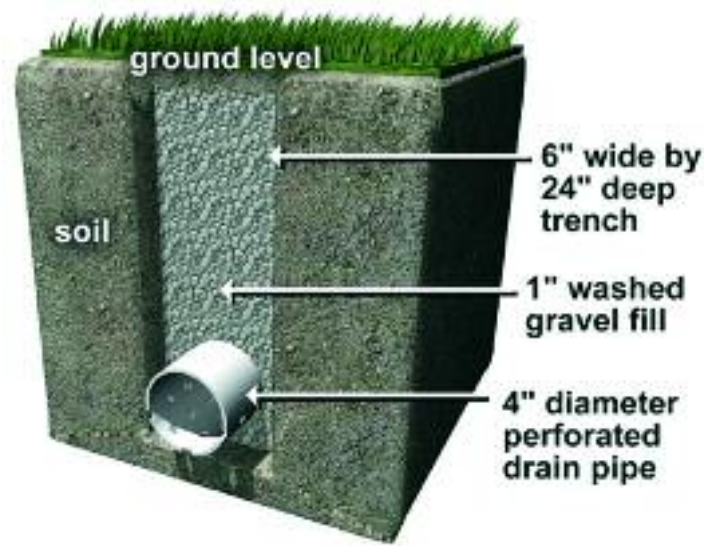


Figure 12.1 – Typical French drain system.

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#### 12.1.4 – Recommendations for Maintaining a Dry Basement

The following are suggestions to help maintain your basement dry and moisture free:

1. Make the extra investment and insist on full waterproofing for your foundation or basement walls. Terminate the waterproofing membrane 2 to 3 inches (50 to 75mm) above grade.
2. Build up the ground around your house so that water flows **AWAY** from your basement walls. Also examine sidewalks, patios, decks, and driveways. These can settle over time and cause water to drain back towards your basement walls (See figure 12.2 below).
3. Extend downspouts so that water flows away from the structure and does not pool next to the basement walls or basement windows (see figure 12.2 below). If downspouts are connected to the sewer system, disconnect them.



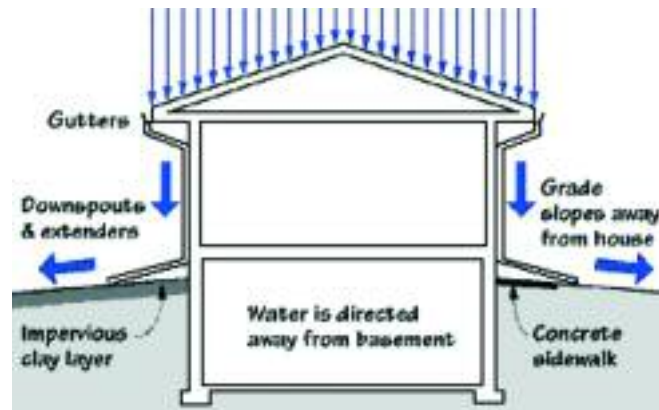


Figure 12.2 – Recommendations for dry basement

## 12.2 – Damp-proofing & Waterproofing Applications for Amvic ICF

There are 3 types of membranes that can be applied to Amvic ICF including liquid applied membranes, peel & stick membranes and dimple sheets.

Each of the three types has advantages and disadvantages. Before deciding on which one to use, consider the following:

1. **Local availability** – Check with the local Amvic distributor for appropriate product availability.
2. **Product Technical Information** – Ensure that product of choice has the proper technical information with regards to specifications, installation instructions and meets the local building code requirements.
3. **Manufacturer warranty** – The product manufacturer should have a product warranty against production deficiencies. Some manufacturers offer up to 30 years of warranty on their products.
4. **Installer Warranty** – The contractor installing the product should offer an installation warranty to guarantee installation and performance for a certain period of time.
5. **Installer Experience** – It is recommended to ask your installer about his experience using the products available.
6. **Price** – Higher performance products will almost always cost more. Carefully weigh the benefits against the costs before making a decision on which product to use.



### Note

*Always follow the manufacturer installation procedures for ICF application.*



### 12.3 – Liquid Applied Damp-proofing / Waterproofing systems

Liquid applied membranes usually come in pails of 5 US gallons each. Depending on which product is being used, the membrane can be applied using a trowel, brush, roller or spray.

To protect the liquid applied membrane from sharp/heavy gravel in the backfill soil, Amvic recommends installing protective boards or drainage composites. The protective boards/drainage composites will be applied over the liquid applied membrane and have the added benefits of additional moisture protection and provide air channels for water to be carried by gravity to the footing drain.



*Figure 12.3 – Spraying liquid applied membrane on Amvic ICF*



Recommended liquid applied membrane products for Amvic ICF include:

1. Blue Seal Waterproof Rubber Membrane – [www.bluesealwaterproofing.com](http://www.bluesealwaterproofing.com)
2. BAKOR, Aqua-Bloc® 720-38 – [www.bakor.com](http://www.bakor.com)
3. Carlisle, BARRICOAT-R – [www.carlisle-ccw.com](http://www.carlisle-ccw.com)
4. Epro, Ecoline-R and Ecoline-S – [www.eproserv.com](http://www.eproserv.com)



### Warning!

*Liquid applied damp-proofing / waterproofing membranes MUST be water based and free of any solvents. Follow the manufacturer installation requirements.*

## 12.4 – Peel & Stick Damp-proofing / Waterproofing systems

Peel and Stick systems are made of membranes which adhere directly to the EPS on Amvic ICF. One side of the membrane has a thin film of glue which is protected by a paper sheet. Once the paper sheet is peeled off, the membrane is adhered in place as per the specific installation guide of the manufacturer.



### Warning!

*Any primer used prior to the peel and stick application MUST be water based and free of any solvents.*

In most cases the manufacturer will also recommend a specially formulated primer to be applied to the face of the EPS before applying the membranes which will help improve their adhesion. Peel and stick membranes may require a protection layer against sharp/heavy gravel. Check manufacturer specifications.



Figure 12.4 – Peel and stick waterproofing membrane installed and ready to be backfilled



Recommended peel and stick membrane products for Amvic ICF include:

1. SOPREMA, COLPHENE ICF – [www.soprema.ca](http://www.soprema.ca)
2. BAKOR, Blueskin® WP 200 – [www.bakor.com](http://www.bakor.com)
3. CARISLE, MiraDri 860/861 – [www.carlisle-ccw.com](http://www.carlisle-ccw.com)
4. Polyguard, POLYGUARD 650 MEMBRANE – [www.polyguardproducts.com](http://www.polyguardproducts.com)
5. Polyguard, POLYGUARD 650 XT MEMBRANE, for waterproofing AND termite protection – [www.polyguardproducts.com](http://www.polyguardproducts.com)

### 12.5 – Dimple sheet Damp-proofing / Waterproofing Systems

Dimple sheet membranes are wrapped around the foundation walls with the dimple side facing the EPS on the Amvic ICF creating an air gap between the back fill soil and the walls. This air gap prevents the build up of direct hydrostatic pressure over the walls and thus moisture in the soil cannot penetrate through to the inside of the basement. When installed properly, dimple sheet membranes have been used with success throughout North America.



*Figure 12.5 – Installed dimple sheet membrane*



Recommended dimple sheet damp-proofing / waterproofing products for Amvic ICF include:

1. Armtec Limited, System Platon – [www.systemplaton.com](http://www.systemplaton.com)
2. DMX PLASTICS – DMX Flexsheet™ – [www.dmxplastics.com](http://www.dmxplastics.com)

## 12.6 – Parging

Most building codes in North America will require the exterior finish siding to start at a distance not less than 6 to 8 inches (150 to 200 mm) above grade level. The exposed EPS area between the grade and the exterior siding finish must be covered. A parge coat (cementitious coat) is most often used to cover the EPS to protect it from weathering effects.

Before applying the parge coat, the EPS must be clean of any dirt or debris and dry to ensure proper adhesion. Amvic recommends using **Durock Prep-Coat B-2000** with reinforcing fiber mesh or equivalent. The parging coat should overlap the damp-proofing/waterproofing membrane by 2 inches (50 mm).

Steps for applying parge coat:

1. Prep the EPS surface.
2. Using a trowel, spread a skim coat of the parging material on the EPS.
3. Embed the reinforcing mesh into the skim coat while still wet. Allow to cure.
4. Apply a second coat of parging and allow to cure.
5. The finished surface may be left as is or painted as required for architectural purposes.



