

## Tech Bulletin: Waterproofing ICF Basements

Amvic ICF is an ideal product to build below grade structures. Properly waterproofed and with appropriate control of drainage, an Amvic ICF basement or daylight basement is completely dry, has no dampness, and maintains a very even temperature through the year.

The process has 4 basic elements:

1. **Grade the surface around the structure such that it slopes away from the foundation so that surface water is carried away from the foundation. Include gutters and downspouts in the design to carry roof water away also.**
2. **Install a foundation drain (“French drain”) around the perimeter of the foundation *below the top of the footing or slab* that vents out to daylight. Wrap the drain in geotextile fabric and cover it with drain rock.**
3. **Apply a waterproofing membrane to the foam block and seal the block from 6” above grade down to and over the edge of the footing. The membrane can be either a liquid applied or a sheet peel and stick type.**
4. **Install a dimple board drainage composite system that protects the waterproofing membrane, provides an additional waterproofing element, and provides an air channel for water to be carried by gravity to the footing drain.**
5. **Back fill with either drain rock or with native soil (presuming the dimple board product is used.)**

Amvic Building System recommends either a peel-and-stick membrane system or a liquid-applied waterproof barrier coat, that is specifically certified for use with EPS foam ICF systems.

**Liquid applied waterproof systems** tend to be less labor to install (fewer hours) and do a superior job of sealing at the block to foundation joint. Water-based liquid applied systems also can be successfully applied when there is dampness or dew on the blocks (not true with any sheet membranes). [Epro ECOLINE-R](#) is recommended and certified for use with the expanded polystyrene blocks of an ICF basement. (many other fluid applied waterproofing systems will either fail to adhere, or will damage the EPS foam of the blocks).



**Waterproofing sheet membranes** also are satisfactory options. Applying them tends to be more labor and more of a problem in some cases (notably in cool and wet weather).

Note that all sheet membranes require (1) the wall to be perfectly dry, (2) to have an



adhesive primer applied before the membrane, (3) the use of a fillet material in the inside corners, and (4) the use of a mastic to seal the edges to the footing/foundation. Failure to use these associated products with the membrane will likely cause the job to fail. Many primers and mastics will dissolve the EPS foam, so selection of one that is certified for use

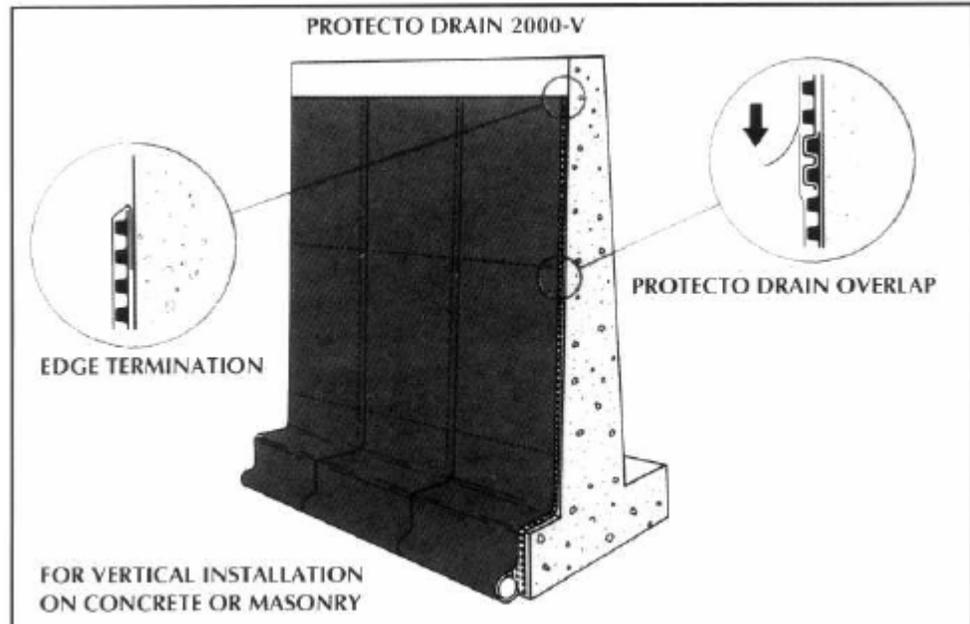
with EPS foam of ICF is essential. Satisfactory sheet membranes are **Polyguard 650**, **ProtectoWrap**.

The waterproofing membrane must wrap the side of the footing and is installed from the footing to 6" above grade. Each strip of membrane overlaps the preceding membrane strip. The membrane must be protected from puncture by a protective mat.

The membrane must be installed as per manufacturer recommendations.

### **Protection for Waterproofing.**

Before backfilling either a protective water barrier drain fabric or a dimpled drain board is installed to provide an air barrier and protection for the waterproofing. The air barrier eliminates any hydrostatic pressure against the wall, and allows any subsurface water to drop freely to a French drain and be carried away from the structure.

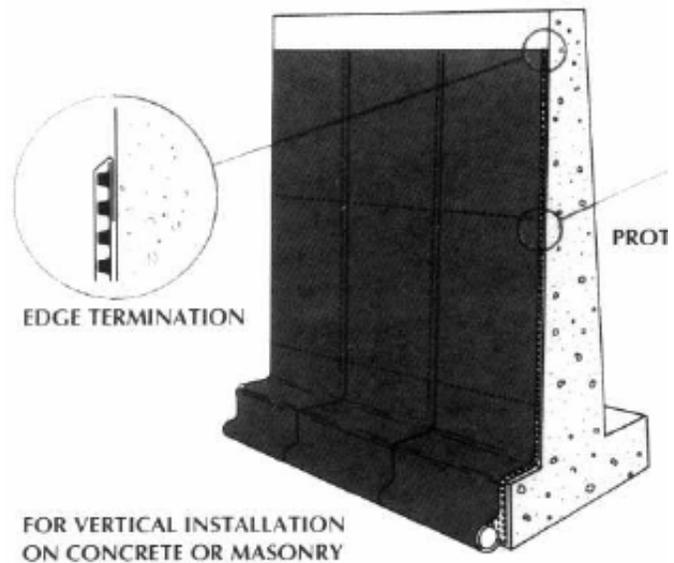


Recommended products include ProtectoDrain 200, CCW Miradrain 2000/6000 or Cosella Doerken DeltaDrain 2000/6000.

**For additional information contact Amvic Pacific at 530-265-9085.**

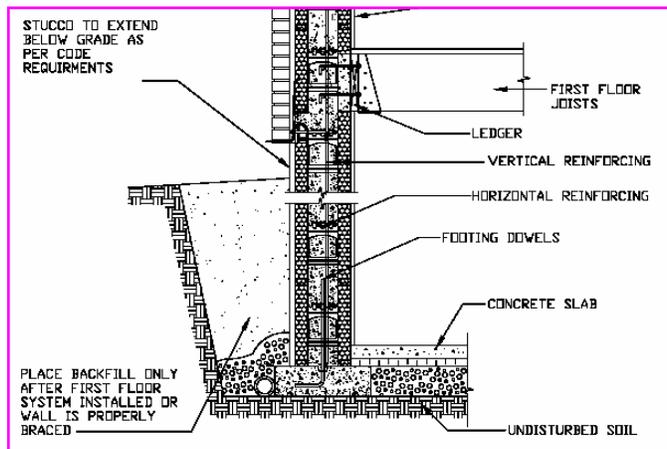
## The necessary 6 elements of waterproofing:

1. Slope surface soil away from the structure so that rainfall is carried away from the structure
2. Install gutters and downspouts to carry roof water away from the basement walls.
3. Install a waterproof barrier from 6" above final grade down to and onto the side of the footing or slab.
  - a. Roll membrane (Polyguard 650LT membrane, ProtectoWrap, or Bituthane are all suitable), or
  - b. Liquid-applied membrane (AquaFlex Eco-Flex or Green Shield, Epro, or ICF Blue Stuff)
4. Install a perforated pipe foundation drain or "French drain" and cover it in  $\frac{3}{4}$ " drain rock with 12-18" of rock. Cover the rock with geotextile filter fabric.
5. Install a protection course and drainage mat on top of the waterproofing course, and over top of the footing drain and drain rock. A dimple drain board such as ProtectoWrap ProtectoDrain 2000, Mirafi's Miradrain 6200, or System Platon should be used.
6. Backfill with native soil, IF a dimple board air barrier with a filter fabric has been installed. If no dimple board, then backfill with drain rock.



### Notes on backfilling:

1. Do not backfill a wall system until the floor above has been installed.
2. Wait at least 2 weeks after pouring the wall-consult your engineer.
3. Do not compact the soil until at least 30 days after pouring (and the floor system is installed).



For more information, contact  
530-265-9085

Amvic-Pacific: