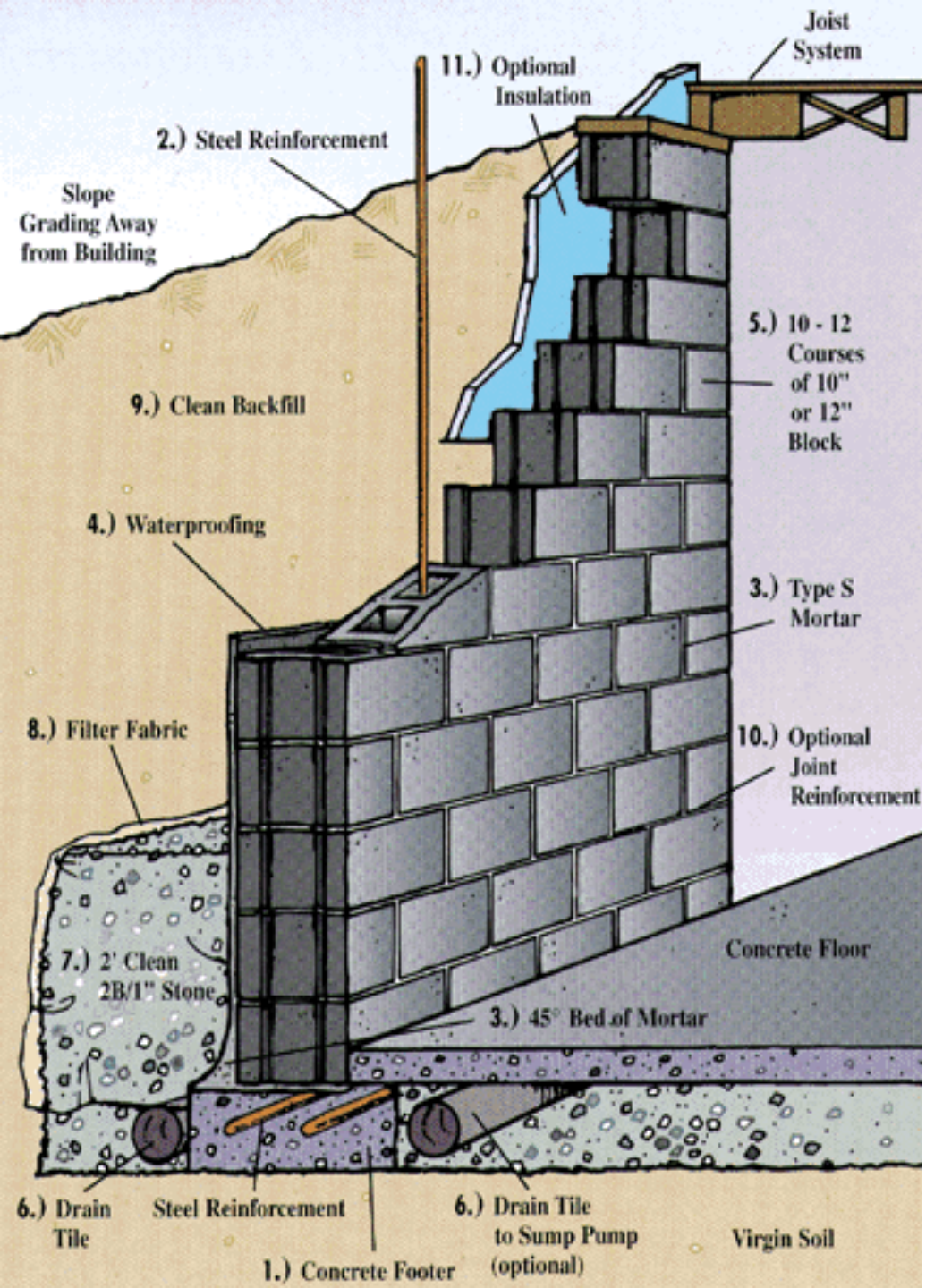


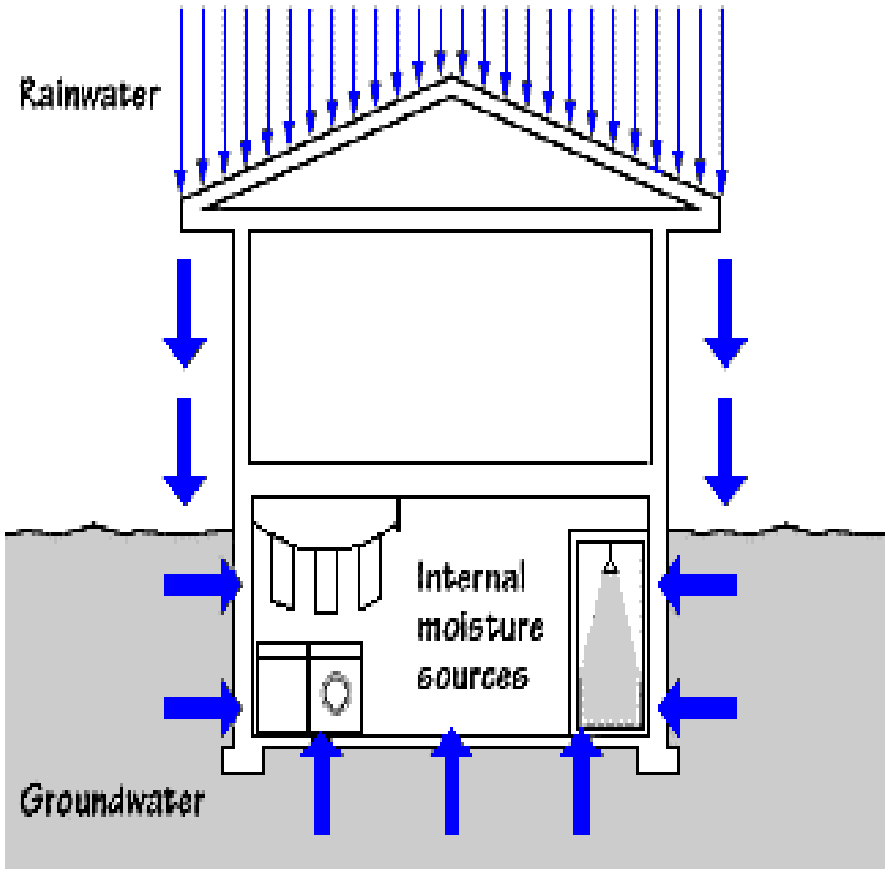
Foundations

Foundation Purpose

- **The purpose of a foundation is to distribute the weight of a structure securely into the ground. Engineering data regarding soil, rock and water conditions are used to design foundations. When foundation failure does occur, it is usually the result of settlement or heaving of the soil that supports the foundation.**

Basement Moisture Problems

- Inadequate Grading around the house
- Defective or missing gutters and downspouts
- Improperly Designed Window Wells
- Ineffective Drain Tile and Sum Pit
- Improper Drainage with Underslab Ducts
- Structural Cracks

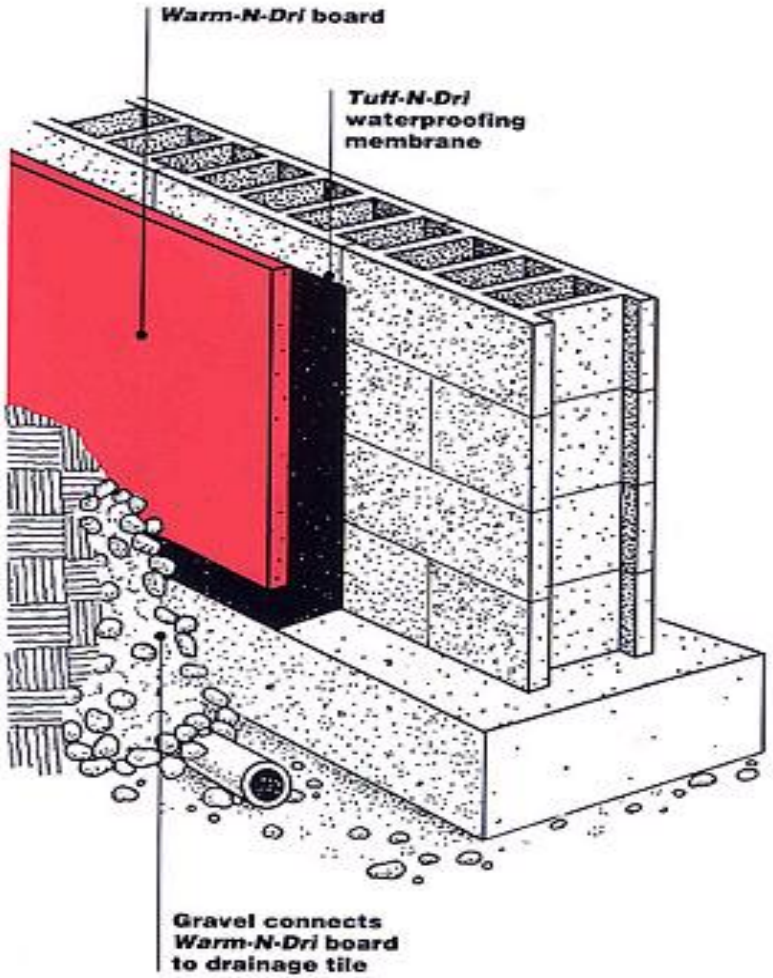


Waterproofing

- Waterproofing a basement is applying a membrane to the basement wall that has the ability to bridge cracks if they should occur in the basement wall.
- Exterior insulation protects the wall and waterproofing membrane from the extremes of the soil and above grade climate.

Waterproofing

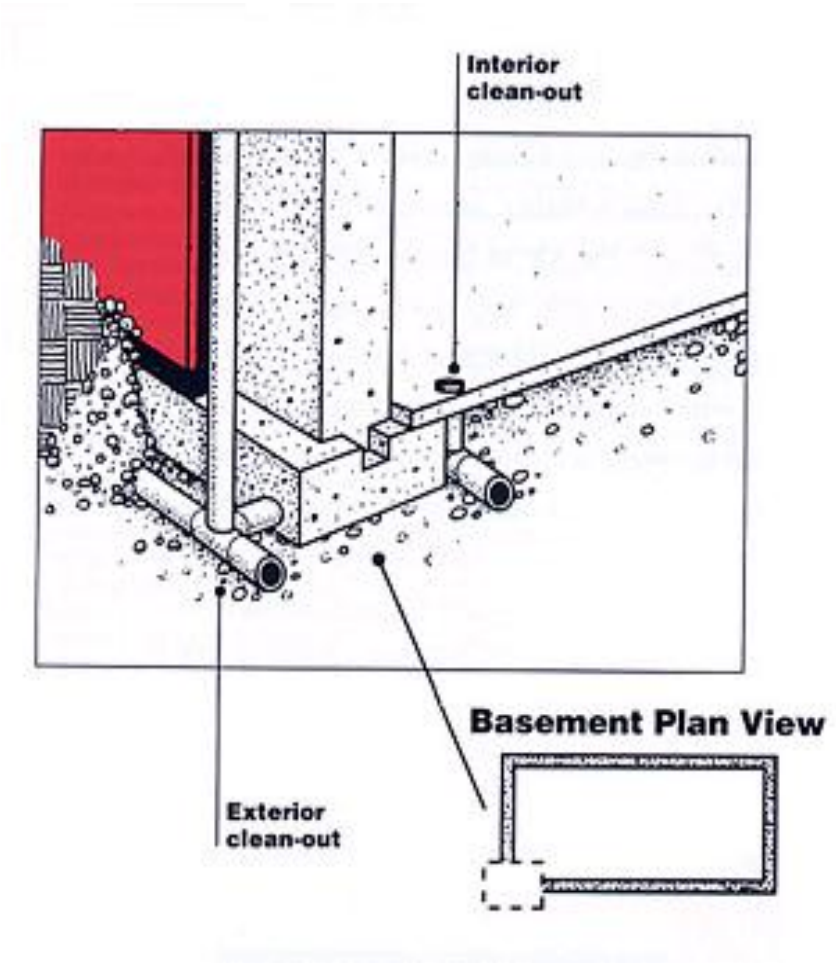
- The most effective line of defense against basement wall water problems is Foundation Waterproofing



Cement Block Foundation

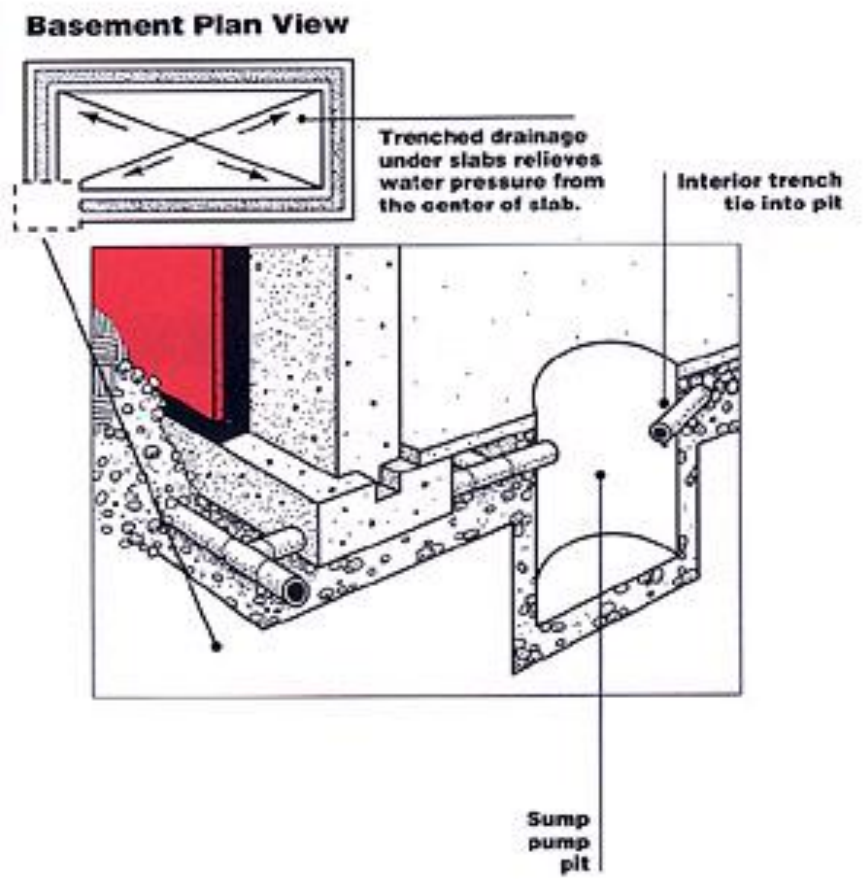
Drainage system

- For most residential applications, a 4-inch diameter perforated drainpipe is adequate. The top of the pipe should be below the level of the underside of the basement floor slab and should be completely surrounded by gravel on all sides.



Interior Sump

- The drainage system should connect to a sump pump or go to daylight for a gravity discharge.

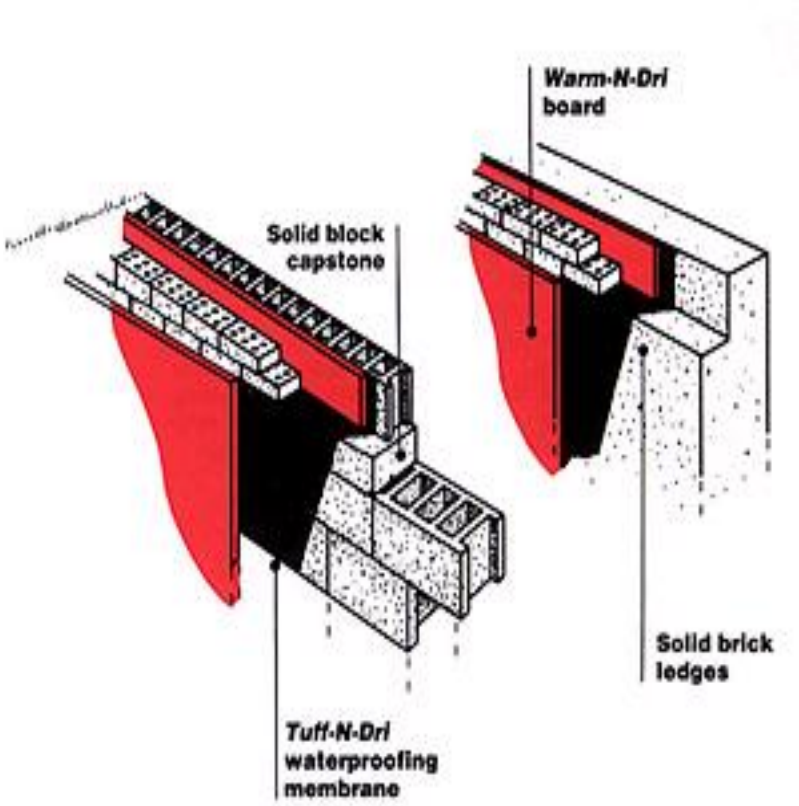


Slab Watertable Protection

- As basements become larger, the slab will be more susceptible to pressure from the water table. It is important to have a minimum 4 -inch layer of clean gravel spread evenly under the slab area for drainage.

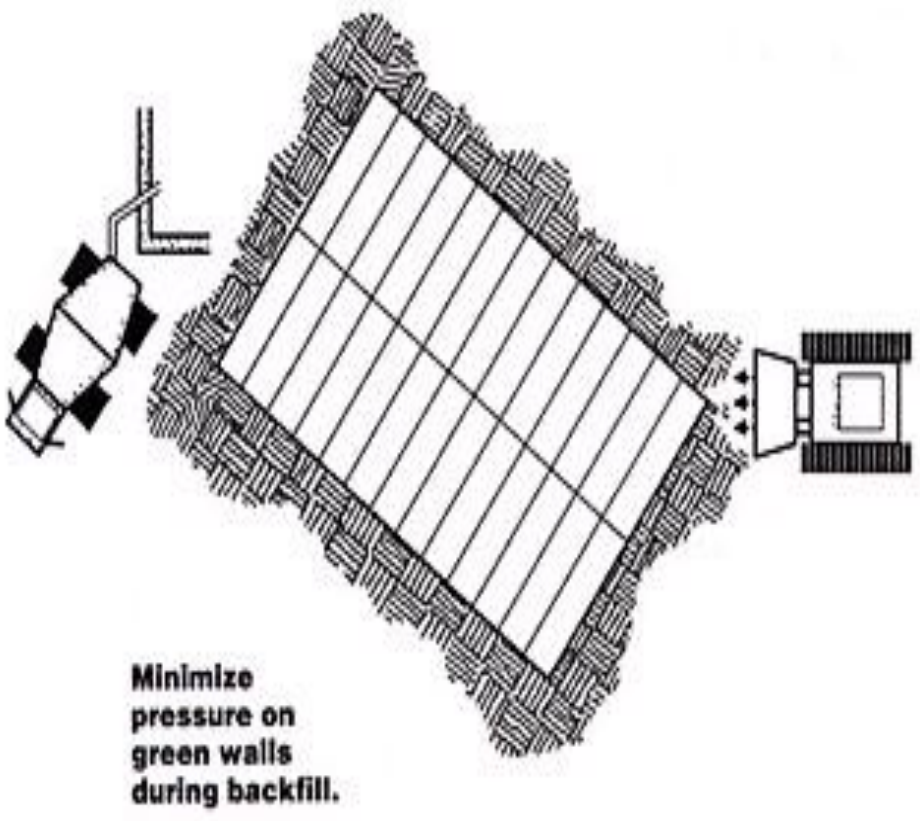
Brick Ledges

- Open brick ledges provide a pathway for water to travel down the basement wall and are a potential source for basement wall leaks. All brick ledges should be sealed and waterproofed.



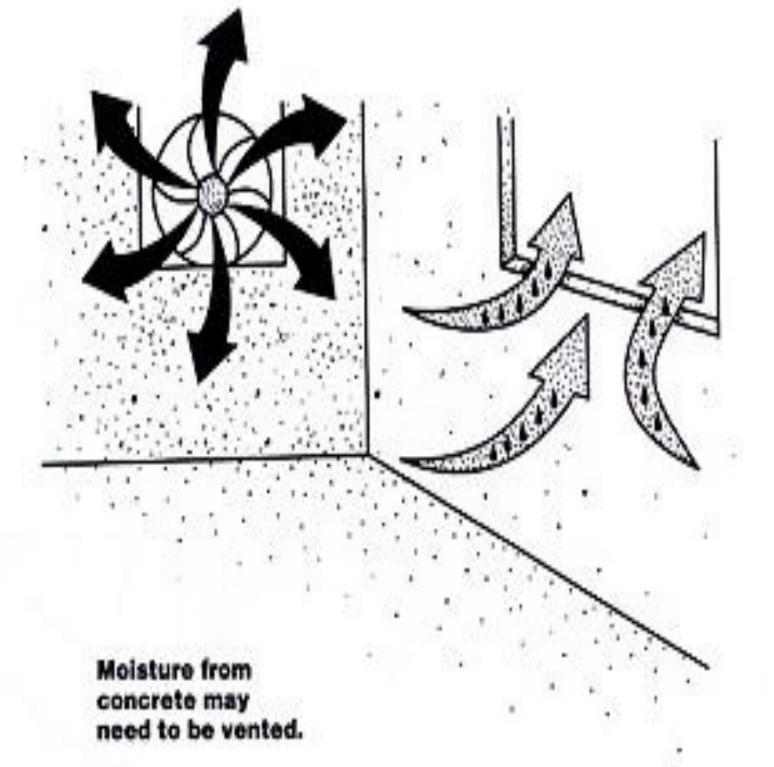
Backfill

- When backfilling around the foundation walls, start slowly at the corners to evenly distribute soil pressures. Then fill the sides. Do not backfill until the top to the walls have adequate lateral support.



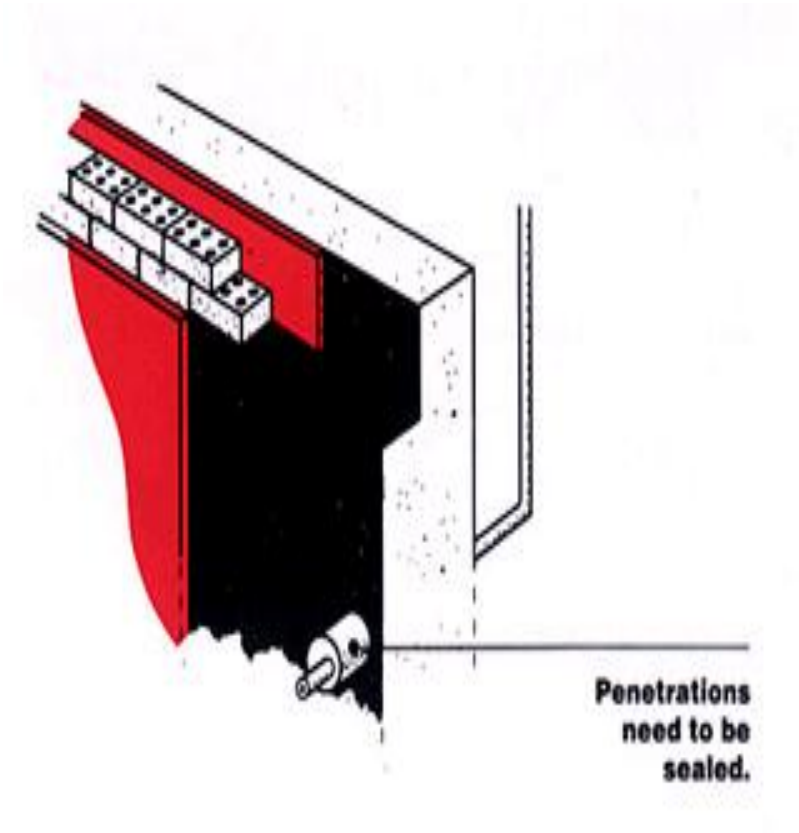
Dry Out Basement

- There are approximately 400 gallons of water in the concrete necessary to build the walls of an average-sized poured wall basement. Also, the slab contains approx. 200 gallons of water. Most of the water will escape in the first 3 to 12 months.
- The basement must be allowed to dry out. **MILDEW!**



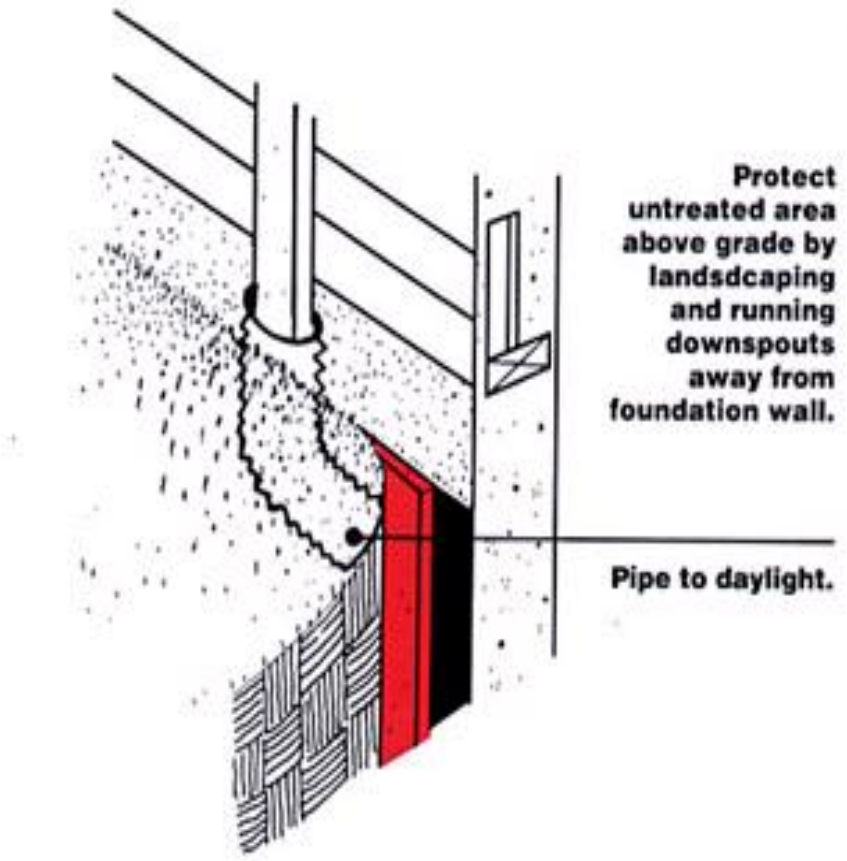
Tie Rods

- Tie rods in poured walls should be broken off inside and outside the foundation walls. All penetrations (including water, sewer and electrical lines through the wall) should be made before the installation of waterproofing.



Landscaping

- The ground surface around your homes should slope downward and away from the wall at least 5% (about 6 inches) over the first 10 feet surrounding the basement wall. This will direct surface runoff away from the home.

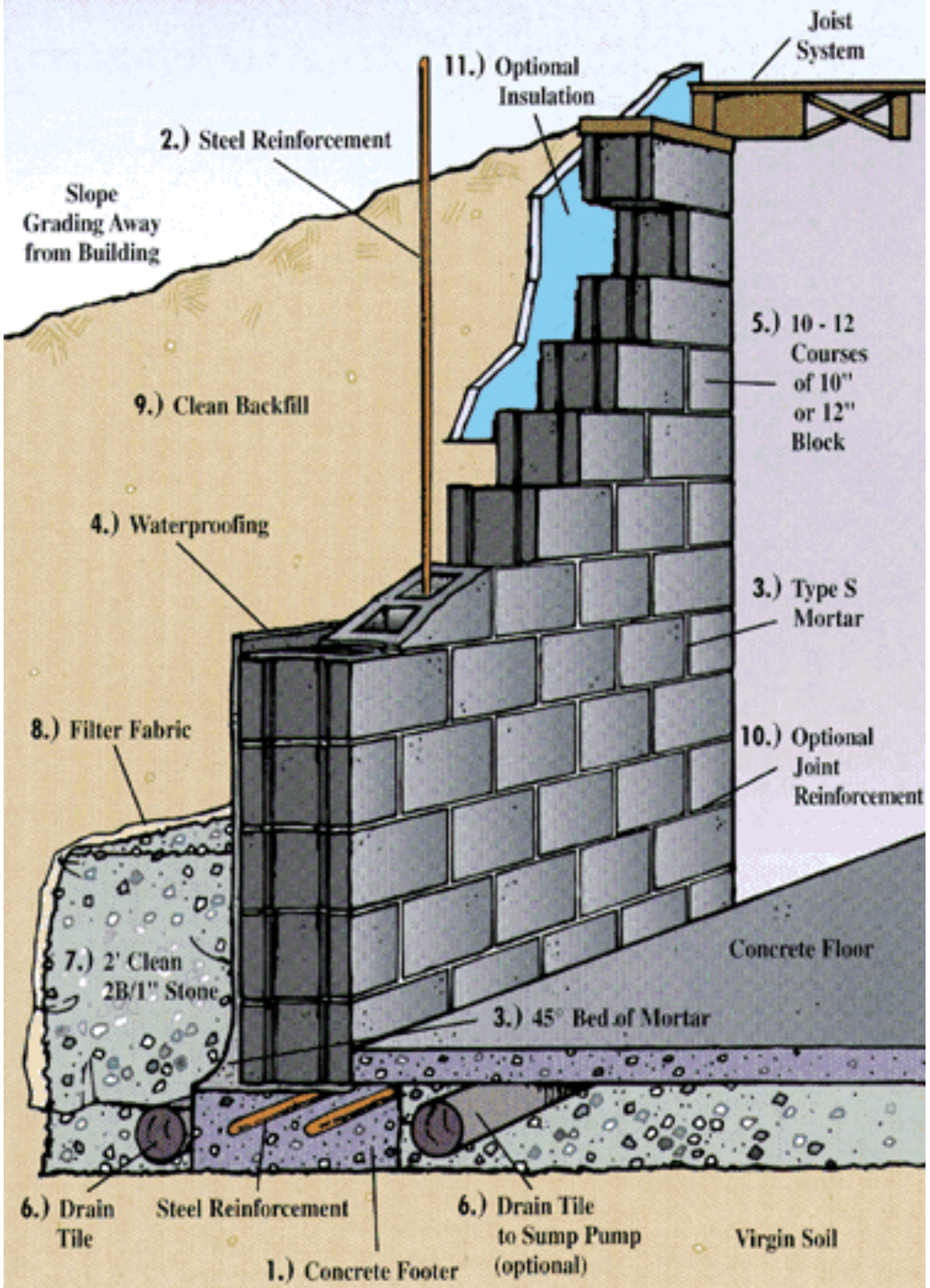


Poured Concrete Walls

- Solid concrete is better able to resist cave-ins caused by lateral pressures.
- More fire resistance-because solid concrete is dense and is joint free.
- More resistant to water-concrete has fewer and smaller voids than concrete block

Block Foundation

- Under average conditions, concrete masonry unit foundations will be under roof before prefabricated walls even arrive on your site, which means you'll be in your new home sooner.


Joist System
11.) Optional Insulation
2.) Steel Reinforcement
Slope Grading Away from Building
5.) 10 - 12 Courses of 10" or 12" Block
9.) Clean Backfill
4.) Waterproofing
3.) Type S Mortar
8.) Filter Fabric
10.) Optional Joint Reinforcement
Concrete Floor
7.) 2' Clean 2B/1" Stone
3.) 45° Bed of Mortar
6.) Drain Tile
Steel Reinforcement
6.) Drain Tile to Sump Pump (optional)
Virgin Soil
1.) Concrete Footer

Styrofoam Foundations

- Lightweight forms—only five pounds each. No need to install stud walls and insulation
- *T*he insulation stays in place.
- R-32 insulating value for less than the cost of building an 8" CMU or poured concrete wall with added insulation to a value of R-19

Problems with Foundations

- Windows and doors sticking
- Roof or basement leaking
- Bricks or walls cracking
- Walls bowing, bulging or leaning
- Drywall separating
- Stair step cracks in masonry mortar joints
- Chimneys tilting or leaning

Colored Concrete

Concrete Driveways

Slab on Grade
w/post tension cables

Slab on Grade

Radiant Floor Heating

- A radiant floor heating system simply radiates heat upward from the floor to provide optimum comfort and many other benefits.
- Radiant energy transfer is caused by a warm surface giving up its heat to a cooler surface.

References

- http://www.x-way.com/udi/
- http://www.concretenetwork.com/concrete/reward_walls/benefits_of_icf.htm
- Concrete Calculator- http://www.concretenetwork.com/concrete/howmuch/calculator.htm
- Colored Concrete- http://www.daviscolors.com/tech/faq/