

# Foundation Drainage, Weather Proofing and Foundation Height

## Foundation Drainage

### Crawl Space and Basement Application

Section R-405.1 IRC. Drains shall be provided around all concrete or masonry foundations that retain earth and enclosed habitable or usable spaces located below grade.

### Approved Methods.

Section R405.1 Drainage tiles, gravel or crushed stone drains, perforated pipe or other approved systems or materials shall be installed at or below the area to be protected and shall discharge by gravity or mechanical means into an approved drainage system. Gravel or crushed stone drains shall extend at least 1 foot beyond the outside edge of the footing and 6 inches above the top of the footing and be covered with an approved filter membrane material. The top of open joints of drain tiles shall be perforated pipe shall be placed on a minimum of 2 inches of washed gravel or crushed rock at least one sieve size larger than the tile joint opening or perforation and covered with not less than 6 inches of the same material.

**Exception:** A drainage system is not required when the foundation is installed on well-drained ground or sand-gravel mixtures soils according to the Unified Soil Classification System, Group I Soils, as detailed in Table R405.1.  
(See attached)

## Foundation Damp Proofing and Waterproofing

### Crawl Space and Basement Application

Section 406.1. Except where required to be waterproofed by Section R406.2, foundation walls that retain earth and enclose interior spaces and floors below grade shall be damp proofed from the top of the footing to the finished grade.

### Approved Methods

Masonry walls shall have not less the 3/8" Portland cement parging applied to the exterior of the wall. The parging shall be damp proofed with a bituminous coating, 3 pounds per square yard of acrylic modified cement, 1/8" coat of surface-bonding mortar complying with ASTM C 887 or any material permitted for waterproofing in Section R406.2. Concrete walls shall be damp proofed by applying any one of the above listed damp proofing materials or any one of the waterproofing materials listed in Section R406.2 to the exterior of the wall.

### High Water Table or Severe Soil-Water Conditions

Section R406.2 Where high water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed with a membrane extending from the top of the footing to the finished grade. The membrane shall consist of 2-ply hot-mopped felts, 55 pound roll roofing, 6-mil polyvinyl chloride, 6-mil polyethylene or 40-mil polymer-modified asphalt. Three joints in the membrane shall be lapped and sealed with an adhesive compatible with the waterproofing membrane.

**Exception:** Organic solvent based products such as hydrocarbons, chlorinated material. Plastic roofing cements, acrylic coatings, latex coatings, mortars and parings are permitted to be used to seal ICF walls, Cold setting asphalt or hot asphalt shall conform to type C of ASTM D 449. Hot asphalt shall be applied at a temperature of less than 200 degrees.

### **Foundation Height**

Section R403.1.7.3 IRC. On graded sites, the top of any exterior foundation shall extend above the elevation of the street gutter at point of discharge or the inlet of an approved drainage device a minimum of 12 inches plus 2 percent. Alternate elevations are permitted subject to the approval of the building official, provided it can be demonstrated that required drainage to the point of discharge and away from the structure is provided at all locations on the site.

### **Finished Grade**

Section R408.6 Finished Grade: The finished grade of under-floor surface may be located at the bottom of the footings; however, where there is evidence that the groundwater table can rise to within 6 inches of the finished floor at the building perimeter or where there is evidence that the surface water does not readily drain from the building site, the grade in the under-floor space shall be as high as the outside finished grade, unless as approved drainage system is provided.