



## **How the Forces of Nature Affect Your Home**

By Marty Coates, President  
Home Builders Association of Dayton

Under normal conditions your home keeps you warm in the winter, cool in the summer, and dry when it rains. But wind, rain, snow, cold, drought, heat and sun all affect the condition of your home and extreme weather can have a severe impact on its structure.

Home builders in the Dayton area are knowledgeable about the weather conditions and build homes with materials that are best suited for our environment, but proper maintenance is important to keep your home in good condition to withstand the forces of nature.

Here is how spring weather conditions take their toll.

### **Wind**

Wind can cause two conditions: up-lift and racking. Up-lift develops when rapidly moving wind creates an area of lower pressure on the leeward roof slope, walls, and inside the house. The homes' inside pressure can push the structural components outward. Home builders can use special connections to attach the roof to the house in areas that experience extreme conditions such as straight winds and tornadoes. Racking can occur when the high wind forces do not hit the house squarely. The home's framing will usually withstand the racking force, but extremely high winds can tear shingles off the roof.

The wind can also create major damage by driving rain up under roof shingles, vertical siding, window frames, doors and roofs. It is important all these construction materials are properly installed and maintained to avoid damage to your home.

### **Rain**

Sometimes the more creative designers and architects, the more vulnerable a home is to rain damage because there are more design breaks in the walls and roof. These breaks can

be susceptible to water penetration if not properly sealed and maintained.

Rain can damage your home in two main areas. First, installation of chimneys, skylights and plumbing vents all create “penetrations” in the roof which are sealed with flashing, caulk and roof cement. All sealing methods eventually expand, dry out and erode so sealing material must be inspected annually and replaced or repaired to prevent water damage.

The second concern is the home’s foundation. The stability of the house depends on the ability of the soil to absorb rain. When soil becomes saturated and can no longer absorb and drain the water, leaks can occur in basements and crawl spaces; and, in extreme cases cause the foundation to shift.

Homes are constructed to stand up to soil conditions in this part of the country. To protect homes, builders install drainage systems that are designed to carry water away from the home so the foundation remains stable and the basement remains dry. Homeowners need to keep gutters and drains free from leaves and debris so that water can easily drain from the roof into drainage systems.

Here are some summer weather conditions that also take their toll.

### **Heat and Sun**

The heat from the sun is another natural force that builders consider when choosing building materials that are best suited to the climate. The sun can cause a home to dry out and prematurely age. Roofing materials can wear significantly faster in warmer climates than in moderate ones. It is a good idea to install an attic fan or ridge vents to help release the hot air because the heat in attics can also cause the wood to dry out. These devices can reduce the cost of cooling your home. Homeowners should always consider fans and vents when re-roofing an older home.

Another consideration is the color of a home. Air conditioners will work harder in darker colored homes than in lighter ones because dark colors absorb more heat than lighter colors.

### **Drought**

Drought can cause soil, such as clay, to shrink and crack and puts stress on a home’s foundation that can be costly to fix. Conversely, water can cause certain soils to expand and damage a home’s foundation. Builders in areas with these types of soils build houses on foundations designed to allow for the stress so the foundation remains stable.

Drought also has an effect on wells because it lowers the water table. Water can become polluted with sediments and unfit for drinking. Homeowners who use well water need to have the water tested for purity regularly.