



Builders Beware of the Whomping Willow

by Walt Keaveny, Risk Manager, MS, PE, PG

Remember the “Whomping Willow” on the grounds of Hogwarts School of Witchcraft and Wizardry in the Harry Potter series? This magical tree has powerful roots and burly branches with the ability to lash out violently and destroy anything in its reach. In real life, willows, along with many other species of trees, do actually cause serious damage to homes. Unless you’re a wise old wizard, you will want to know the top reasons that trees damage homes and best avoidance practices.

Any real estate agent will tell you that trees add value to a home. Trees not only add curb appeal, but they are great for shade, privacy, windbreak, the ecosystem and other things. However, as any homeowner or structural warranty insurance adjuster will tell you, trees can launch an all-out assault on nearby homes both above and below ground.

Top 7 Reasons Trees Damage Homes



1. Invasive Roots

Thirsty tree roots are in constant search of water in soil. Some trees, like willows, can drink up to 200 gallons per day. Soil located under foundations is generally much wetter than soil located next to foundations. As the roots spread under foundations, they extract water causing the soil volume to shrink, resulting in ground and foundation settlement. The deeper the foundation and the lower the expansion potential of the soil, the lower the risk for damage caused by roots. For example, a deep basement founded on non-expansive sandy soil is a lower risk, whereas a shallow slab-on-grade founded on expansive clayey soil is a higher risk.

In addition to foundations, aggressive roots seeking water also travel under concrete flatwork, like walkways, patios and driveways. These roots can either withdraw water from the soil (causing settlement), or grow thicker (causing uplift). Roots also damage underground pipes, rupturing them as the soil moves and roots grow larger. The pipes commonly damaged include the main sewer line and irrigation lines.



2. Branches

Branches that scrape on siding and eaves cause damage, as do falling branches. Branches that scrape on common asphalt roof shingles can remove granules and prematurely cause failure of the shingles.

3. Critter Infestation

Trees serve as a convenient superhighway for critters like rats, mice, squirrels, raccoons, opossums and insects, to access homes. Trees attract birds that defecate on homes and grounds. Flowering trees can attract stinging insects and hives on decks and patios.

4. Blocked Gutters

Leaves, twigs, pine needles, fruit, nuts and seed pods block gutters. Blocked gutters can cause damage to the wooden fascia boards that hold the gutters. In colder climates, blocked gutters can cause ice dams and pooling water on the roof, resulting in roof leaks. Lastly, blocked gutters can cause foundation damage and basement leaks, as rain water that overflows the gutters collects directly next to the foundation.



5. Utility Lines

Tree branches and roots can damage both overhead and underground utility lines serving the home. Overhead lines can be electric, telephone or cable television. Underground lines may include these three in addition to water, sewer and natural gas.



6. Mildew, Mold and Moss

Trees block air circulation around the outside of a home, the canopy blocks sunlight, transpiration increases humidity and foliage in constant contact with the façade can hold moisture. This may result in mildew, mold and moss growth on the exterior of a home. Trees can also cause staining by dripping water and sap.



7. Fire

As many as 4.5 million homes in the U.S. are at high or extreme risk of wildfire. Wildfires destroyed 3,000 homes in the U.S. in 2016. Trees are a convenient conduit for wildfires to reach homes, and spread fire from one home to another. Trees located too close to homes can be an impediment to firefighters battling a fire.

Best Practices to Avoid Damage Caused by Trees

Plant Trees an Appropriate Distance from Homes, Concrete Flatwork and Utilities

Housing and Urban Development (HUD) recommends that “Trees and plantings shall be planted no closer to the foundation of light structures than the anticipated height of the particular plant if there are problems with shrinking/swelling of subsoils. This will minimize uneven drying of the subsoil and possible displacement of structures.” The U.S. Department of Agriculture (USDA) recommends a Wildfire Defensible Buffer Zone with a “minimum of 30 feet if needed for firefighters to protect a structure from wildfire.”

Avoid Trees with High Water Demand and/or Aggressive Root Systems

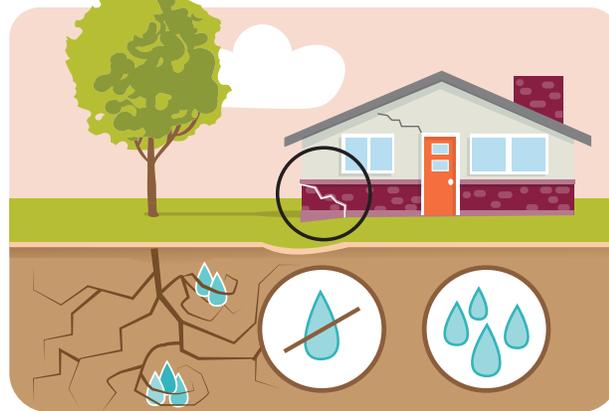
If trees are to be planted close to homes, avoid tree species with high water demand and/or aggressive root systems, generally including willows, poplars, cottonwoods, aspens, silver and Norway spruce, boxelder, sweetgum, sycamore, black alder, black locust, ash, Norway and silver maples, American elm and some oaks.

Use Proper Irrigation

Use proper irrigation near trees, so roots don't need to travel in search of moisture under foundations and concrete flatwork. Sprinkler lines and heads should be located at least 5 feet away from the foundation and directed away from the home.

Use a Root Barrier

A root barrier is a physical underground wall that stops the lateral migration of roots. Root barriers can be used to keep roots away from homes and



Differences in moisture levels, caused by tree roots, can result in soil movement that in turn causes structural defects.

related improvements. Root barriers are commonly constructed as a trench excavated to a depth below the root zone and backfilled with concrete.

Use Caution when Keeping Existing Trees

Some construction codes and owners require builders to save existing trees located near new home foundations. This should be done with caution, under the advice of a qualified professional. Existing trees commonly die when disturbed by new construction, due to cutting or crushing roots, over or under watering, fertilizers, weed killers, suffocating roots, trimming and grade changes. When a tree and root system die, dryer expansive soils in the root zone can regain moisture, causing the soil surface to rise and damage overlying improvements.

Exercise Care when Removing Trees

When removing trees, be mindful that the root systems may have reduced the moisture content in the remaining soils. These soils will regain moisture over time, causing potential swelling and uplift on

new overlying improvements. Remaining soils should be properly moisture conditioned and compacted. Also, be sure to remove all roots thicker than a pencil. Roots will decay, potentially causing settlement of the ground surface. Lastly, if removed trees are to be buried in a debris pit, make sure to clearly mark and record the location of the pit. It is common for homes and improvements built over former debris pits to experience severe distress, as the organic matter decomposes and consolidates, causing settlement.

Consult with a Qualified Professional

When in doubt, consult qualified nursery staff, a certified arborist or a professional geotechnical engineer. Don't plant Whomping Willows or other trees too close to homes unless you have plenty of money at Gringotts Wizarding Bank to pay for the damages. Use recommended best practices and advice from a professional so that trees and homes can peacefully coexist. After all, money doesn't grow on trees...unless there's a spell for that?



About the author: Walt Keaveny, MS, PE, PG is the Risk and Underwriting Manager for America's leading new home warranty company, 2-10 Home Buyers Warranty. Mr. Keaveny is licensed as both a Professional Engineer and Professional Geoscientist with over 30 years of engineering and construction experience. His articles have been broadly distributed by the NAHB and local HBAs.

