

Trees and Sidewalks in Chillicothe



Sidewalks and trees aren't hot topics unless there are conflicts with them. Both sidewalks and trees are crucial in providing important services to our residents and visitors. When there are conflicts between trees and sidewalks, we must be thoughtful in our approach to effectively spend limited dollars and truly address the problem. Surprisingly, there are often efficient and inexpensive ways to repair walks and at the same time retain nearby trees.

Causes of the Conflict between Trees and Sidewalks

Trees receive most blame when sidewalks fail, but construction techniques, old age, inferior construction materials, unstable soil or even traffic patterns also contribute to sidewalk failure more often than acknowledged.

Tree related sidewalk conflicts can be delineated into two types of damage requiring different responses.

- Sidewalk damage from trunk or root flare where the actual trunk or root flare of the tree lifts the sidewalk
- Sidewalk damage from lateral roots where a root emanating from the tree has caused damage to the sidewalk

The cause of trunk/root flare sidewalk damage is a lack of space. In this situation, the sidewalk is in contact with or is lifted by an enlarging tree trunk or root flare. Increasing the distance between the tree and sidewalk is the best way to perform repair while retaining the tree in this type of conflict. There are limited opportunities to root-prune in this situation and put the sidewalk back in the same location. Creative solutions are often necessary to repair the sidewalk and retain the tree.

Sidewalk damage from lateral roots is often easier to repair. Sometimes the offending shallow or surface roots may be pruned. Relocating, narrowing, or modifying the sidewalk materials can reduce the need to root-prune and reduce the likelihood of future infrastructure conflicts.

Trees to Retain and Trees to Remove

Street trees are community assets. They provide tangible benefits that contribute to the quality of life in any town. Street trees absorb air and water pollution. They abate noise pollution, they provide shade and energy conservation and even raise property values and decrease crime and illness.

The value of trees varies according to tree age, size, species and health and structure. Typically bigger trees provide more benefits and are more valuable. The value of large tree decreases when there are infrastructure conflicts or structural defects that predispose a large tree to failure. People often lose sight about two important aspects of community forestry.

- Trees take decades or even centuries to get big.
- Most large trees are not replaceable or renewable in the urban environment due to site constraints and other environmental and social factors.

- Once they are gone, eighty years or more of growth and services is gone.
- In most towns, tree canopies are decreasing. Canopy loss translates into increased pollution, increase stormwater flooding, bigger carbon footprints, lower property values, and many other social, economic and environmental problems.

Trees to Retain....Trees to Remove and Replace

Young trees are in a vegetative growth phase of life. During this phase, they are actively growing. This is when they will conflict with infrastructure.

Once trees mature, they reach their genetic or environmental size and stop growing aggressively. Mature trees rarely do extensive damage to infrastructure. Usually the damage was done long ago when the tree was young and actively growing. In these situations, it is often best to retain the tree. In these situations, a properly repaired sidewalk will last a long time with minimal future damage from the mature tree.

Tree species have varied growth rates. Sweet gums, willows and silver maples are fast growing and have aggressive roots. Sugar maples, oaks, tuliptrees and many exotic species have slow growing and “well behaved” roots that won’t typically conflict with gray infrastructure.

Efficiently and Effectively Repairing Sidewalks near Trees



Bridging over tree roots can take many forms. This is an excellent example of a substantial bridge. But bridges do not have to be this large to protect roots. (Photo taken in Bluffton, SC)

New construction materials and site re-design can provide ample space for the two infrastructure elements (tree and sidewalk) to co-exist. However, existing retrofit sites may not have the necessary space to allow for re-design that increases the distance between the tree trunk and the sidewalk. Below are options for replacing damaged sidewalks while either retaining the existing tree, or improving the design for the next tree.

A common misconception is that trees cause sidewalk failure. Research shows that in Ohio most sidewalks damage begins with substandard materials, inadequate compaction, heavy soils or simply old age. Most of our city’s sidewalks are over 50 years old and some are older. Even when these were constructed, it wasn’t expected that they would function indefinitely.

Most sidewalks over time will settle. Sidewalks that are too thin, don't have a good base or don't have proper joints can fail whether a tree is nearby or not. When sidewalks are laid on clay soil, there will be movement over time. These type soils shrink when they are dry and they swell when they are wet. These type soils often shorten the service life of sidewalks.

If there are trees nearby a substandard sidewalk, especially fast growing trees like water maples or sweetgums, they will seek out the moisture that collects near the sidewalk fissures and they will exacerbate the cracks and movement of the concrete. They tend to have more aggressive roots when they are young than when they are older. Mature trees can actually be more important to save when working on nearby sidewalks, as they are less likely to re-establish roots. Mature trees can have the most value to the community and the property owner. These trees provide the most shade, clean the most air and water, provide habitat all the while adding color and character to our neighborhoods.

When considering sidewalk repair, there are several well established and inexpensive techniques available. The typical approach of ripping out the old and re-constructing a new walk is the most expensive and this can damage to nearby trees. If the tree isn't removed, this type of work can render a tree hazardous.

Techniques like ramping, grinding and leveling are less expensive than redoing a sidewalk. These do not threaten nearby trees.

- Grinding
- Enlarging cutouts
- Ramping or Wedging
- Leveling
- Ramping

Sidewalk grinding:

Sidewalk grinding is a temporary measure that restores the offset or heaved portion of a sidewalk to original grade.

Sidewalk cutouts:

"Borrowing" space from the adjacent sidewalk creates sidewalk cutouts. This alternative minimizes the sidewalk width for a limited distance adjacent to the tree.

Sidewalk meandering: Meandering—realigning the sidewalk's direction of travel—allows for more growing space for trees in an aesthetically appealing way. The amount of growing space created can be substantial and, therefore, sidewalk meandering is usually the most feasible way to retain large, mature trees. Also, increased distance from sidewalk edge to lateral roots or trunk flare allows for root pruning, when necessary, to occur further from the trunk, which reduces direct contact between the sidewalk and tree roots or trunk. Sidewalk meandering often requires permission from the abutting property owner to dedicate more of their property to the public right-of-way.





Sidewalk ramping: Sidewalk ramping allows existing roots to remain intact by raising the base layer and repouring concrete over the roots to create a gradually sloped ramp. It is used when removal of roots would compromise the stability of a tree. Damaged sidewalk slabs are removed and 4-6 inches of topsoil is placed on top of the existing grade. Sand or gravel and a base layer or crushed limestone is placed adjacent or around the subject roots. A new sidewalk is then installed on top of this new base.

Leveling: Leveling is a technique where a hole is drilled through the sidewalk and silicone/concrete liquid is pumped underneath the slab to raise it. This is becoming a common technique to extend the service life of sidewalks.



Flexible paving materials: Flexible paving comes in many forms, which include: interlocking pavers, common brick and pavers and rubber (Dublin, Ohio uses rubber.) This is the most tree friendly of all the sidewalk repair options.