



A Homeowner/Home Builder's Guide Tree Conservation on Residential Construction Sites



The pathway to tree conservation on residential construction sites has long been paved with good intentions, lack of knowledge and some misinformation. The process can actually be straightforward and successful when a few simple planning tools are employed prior to site grading and construction.

Keep these key points in mind when planning for tree conservation:

- How tree root systems are arranged
- How much impact tree roots can absorb and recover from
- Construction techniques to minimize root damage
- Realistic perspectives about what is reasonable to conserve
- Tree age; young trees usually survive construction damage better than old trees

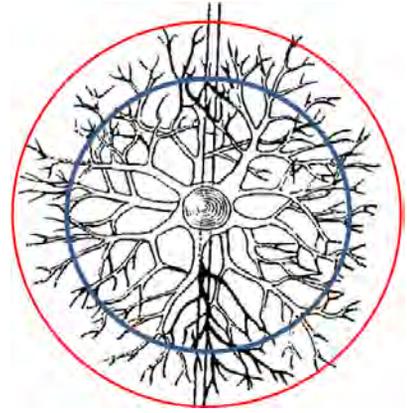
This document is designed to give homeowners and home builders tools to make better tree conservation decisions for long term tree health. Decisions can be difficult when having to choose between individual trees. The best strategy is to have a certified arborist assess all trees on the lot and make recommendations concerning which ones have health issues and which ones are good candidates for conservation. Poor quality trees can be removed (cut down and stumps ground, not pushed over) prior to grading and construction to make that process easier and less expensive.



The following step by step process is a simple way to determine which trees are good candidates for keeping around in a sustainable home landscape.

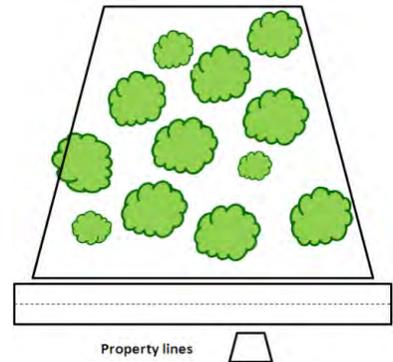
How trees grow:

Tree roots usually extend way beyond the edge of the branches or drip line. In fact tree roots can extend 1.5 feet (red circle) for every inch of trunk diameter measured at 4 feet above the ground. The critical root zone (CRZ here in blue) is the area that must not be impacted by grading, trenching or soil compaction. Activities in this area may damage roots, causing the tree to become stressed and possibly die. The CRZ is calculated as 1.25 feet for every inch of trunk diameter measured at 4 feet above the ground.



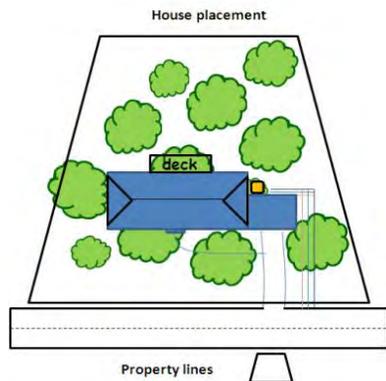
Where to start:

The easiest way to begin is to locate the position of the existing trees on a copy of the plat and measure their trunk diameters. This will give you some idea of where the trees and tree roots are located. Sometimes, an aerial photograph that depicts property boundaries is a good place to start.



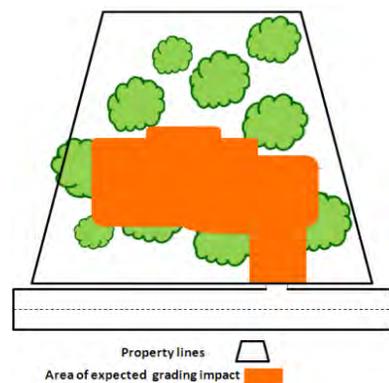
Where to put the house:

Many homeowners try to site the home so as to save as many trees as possible. This is not always the best idea. Ideally, access to the home should drive its location on the lot. Remember to consider all driveways, walks and utility locations. Once you have the house situated, place an outline of it over the locations of the existing trees on the plat map.



Locating the footprint:

The building footprint is only part of the area that will be impacted. Draw an outline 10 feet outside the house, walk, and drive footprint. This will account for any construction or grading that will be conducted in areas directly adjacent to the house. Include a 3-foot outline of all utility lines, including cable TV.



Critical Root Zones:

It is important to see where the critical root zones lie with respect to the construction footprint. Draw a circle representing the root zones based upon the 1.25 feet per inch of trunk diameter root zone radius rule, centered on each tree.

Total root impact:

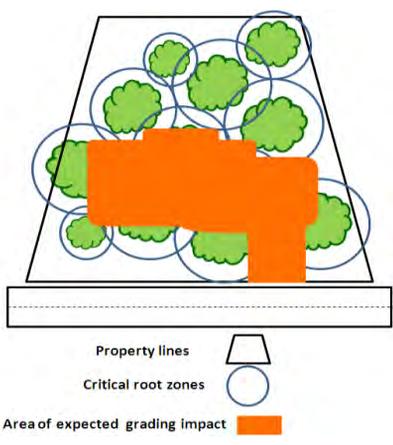
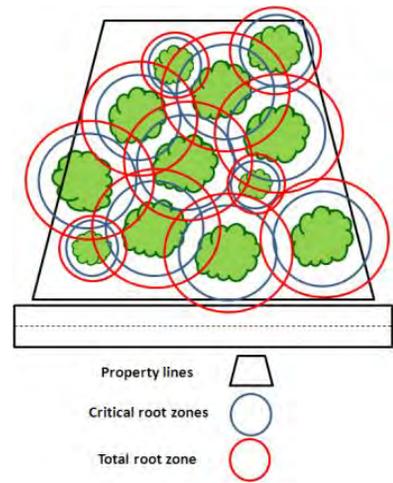
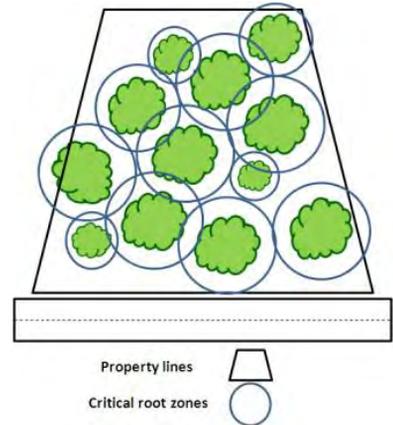
Should you wish to see what the total root zone area impact of the construction will be, lay another wider circle over the center of the trunk representing the 1.5 feet per inch of trunk diameter root zone radius rule, centered on each tree. This shows that a home site can be filled with overlapping and intertwined root systems that can affect each other when damaged by construction activities.

Construction and roots:

Now lay the construction footprint you created over the plat and see the degree to which the home building will impact the trees. Remember that damaging just 30% of the CRZ can cause the death of a tree.

Construction can damage roots during:

- foundation installation
- grading, grade cut and fill
- trenching
- utility installation including septic
- irrigation system installation
- soil compaction from parking of construction equipment
- walk and driveway installation



Nutrient-absorbing tree roots are rarely found deeper than 14 inches in clay soils.

What can you keep?

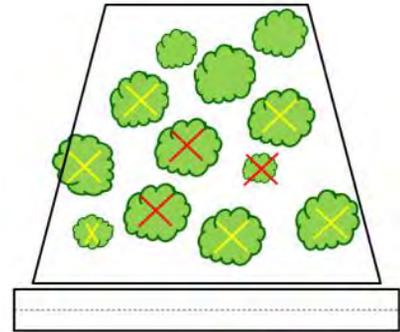
Now that the opportunity to impact the trees' root systems is readily apparent, plan to remove the trees that would bear more than 30% critical root zone construction damage. The remaining trees will require some maintenance to minimize the damage they receive.

When you do it right:

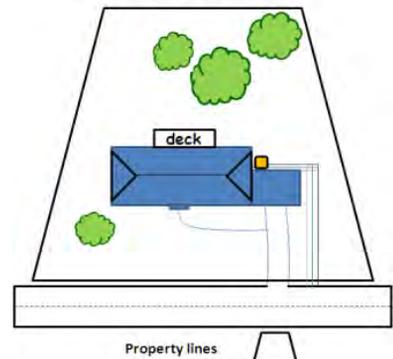
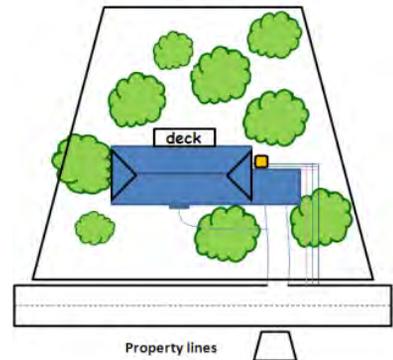
It may be tempting to leave a questionable tree in the landscape or to skimp on maintenance of trees judged fit to remain. The cost of removing a tree after the house is built can easily be triple the pre-construction removal cost or double the ongoing tree maintenance cost.

When you don't:

Trees sometimes do die from unforeseen complications, even when the best precautions are taken. These deaths are usually a function of mistakes made by someone other than Mother Nature. The four trees remaining in the adjacent image are far fewer than those that could have been conserved with a well designed and properly carried out construction plan.



3- Trees to remove prior to construction
6- Trees to manage prior to construction



Tree conservation is not a matter of luck, but rather a matter of planning and experience. If you are unsure of your skills, it is best to contact an ISA Certified Arborist. The Certified Arborist can assess tree health, assist in selecting likely candidates for conservation, and if you wish, help with the pre and post construction maintenance of the trees.

Tree Conservation Techniques / Details

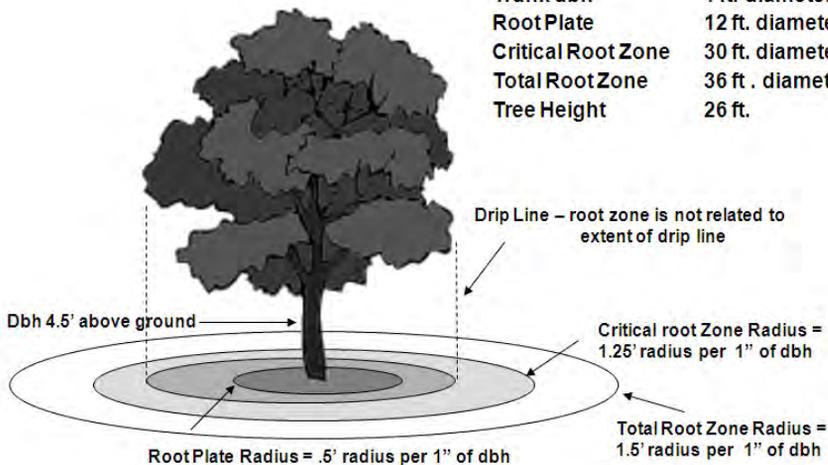
The following tree conservation and construction details can help you and your builder understand the dos and don'ts for construction activities around trees. For more detailed information please visit our web site at GaTrees.org and look for "Community Forestry."

Definitions for Root Zone Detail:

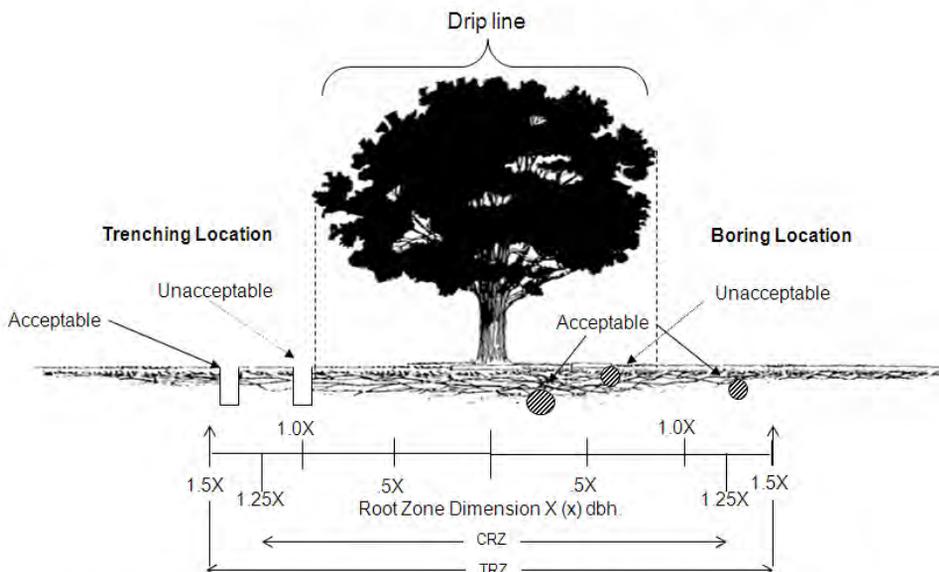
- Tree Dbh** – diameter breast height measured 4.5 feet above the ground.
- Root Plate** – area of rapid tapering roots supporting the vertical weight of the tree.
- Critical Root Zone** – a minimum root area needed to sustain a healthy tree.
- Total Root Zone** – maximum extent of root area of healthy tree.
- Drip Line** – furthest extent of live branches; bears no relation to root zone.

Root Zone Example details:

Trunk dbh	1 ft. diameter
Root Plate	12 ft. diameter
Critical Root Zone	30 ft. diameter
Total Root Zone	36 ft. diameter
Tree Height	26 ft.

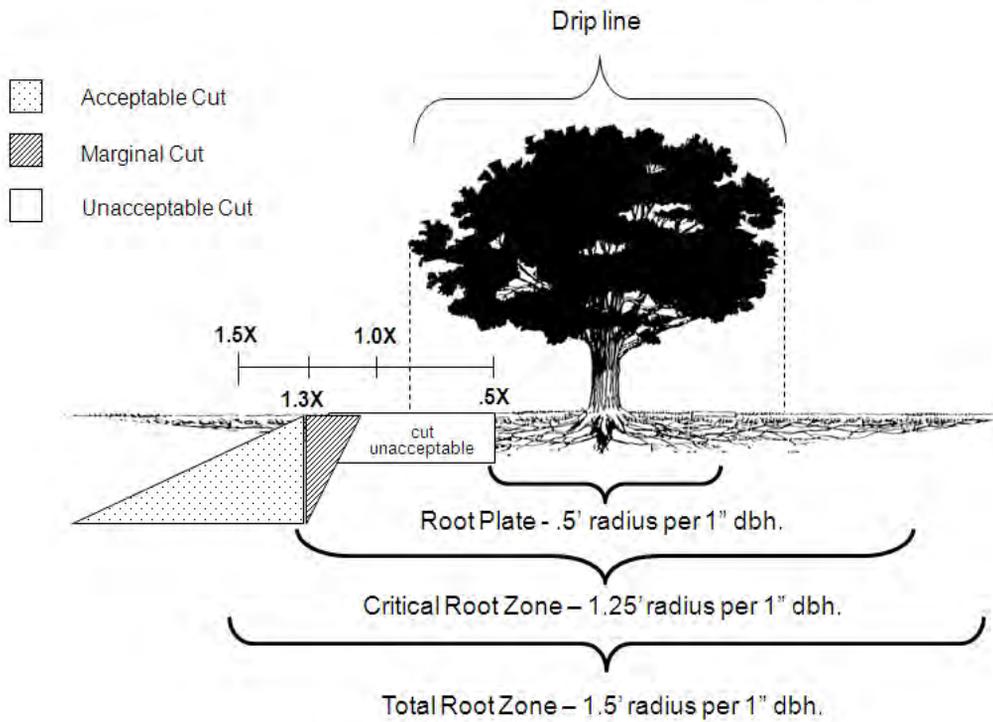


Acceptable Utility Installation Within Tree Root Zones

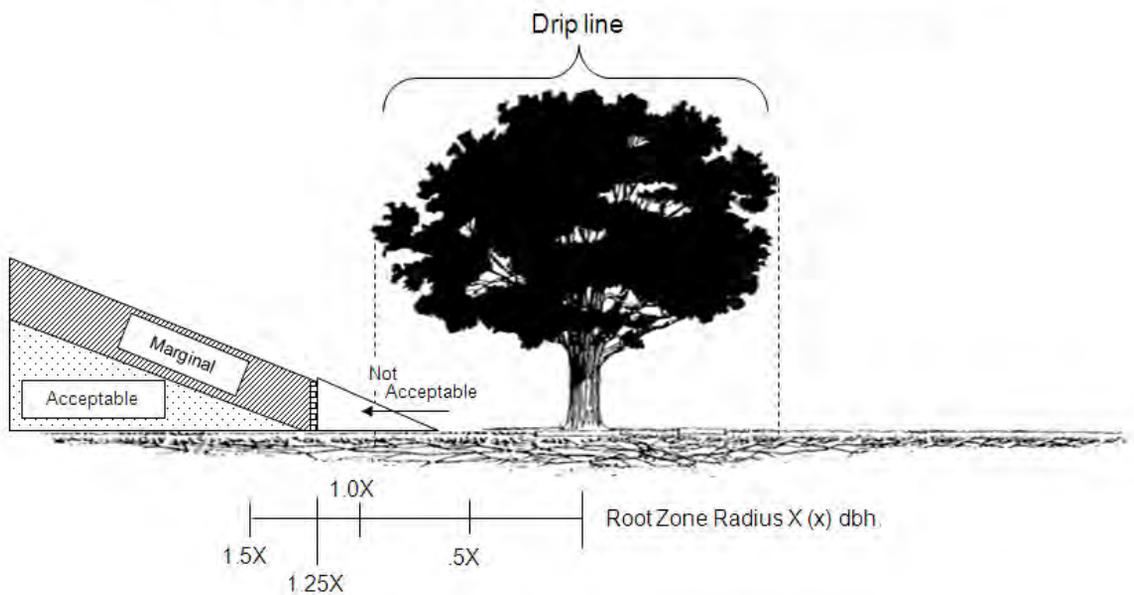


All trenching should be conducted outside the Critical Root Zone (CRZ). When impacts must occur within the CRZ, boring beneath the existing root zone is acceptable – typically 24" – 30" deep. This includes the installation of all utility and irrigation systems.

Acceptable Grade Cuts Within Tree Root Zones



Acceptable Grade Fills Within Tree Root Zones



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