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TREE PRESERVATION PLANNING

So you are building a new house! You have selected a Realtor and instructed them to look for that perfect wooded setting. You have interviewed three Architects, four builders and two landscape companies. Great! You're ready, right?

Well not exactly! You are planning to purchase a wooded lot: Who better to help you select it than an Arborist who consults about Tree Preservation during Construction. Is your Realtor qualified the help you choose a wooded lot that will be suitable to build on? Has your Architect or Builder won any national awards for Tree Preservation during Construction? How do they answer the following questions?

- The average depth of the root system of a tree is as deep as it is tall? T F
- Trees die whether we do anything for them or not. T F
- All trees respond to construction the same. T F
- It is only the digging of the foundation that causes tree problems. T F
- We don't need an Arborist we will have a Landscape Architect look at the project after the construction is done. T F
  Driveways, Sidewalks, Sprinkler Systems, Fences, Landscaping, and landscaping do not affect trees. T F
- Our contractors will all be careful with your trees. T F

The answers to all these questions are all false. If you really want to build in a woods who better to help you than an Arborist. Especially an Arborist who specializes in Tree Preservation during Construction. An Arborist is a must for any Tree Preservation Project. One valuable tool that an Arborist uses is a Tree Preservation Plan.

Purpose of the Tree Preservation Plan

The purpose of a tree preservation plan is to protect the mature trees on the site of the future development. Whether the site is a wooded lot or a lot with a couple of trees. The fact that the trees have been undisturbed for years means they will need particular care to encourage survival.

Whenever there is construction, there is increased stress on the trees throughout the project. This creates a greater possibility for tree decline and failure as trees respond

differently to stress from construction than from normal circumstances. The goal with a Tree Preservation Plan is to minimize the impact of construction on the trees.

In wooded areas, especially ones that have been undisturbed for many years, trees live in harmony, protecting and supporting each other. There tends to be fewer disturbances from environmental factors like wind, and the root systems are shaded and protected. Therefore, any tampering within the area increases stress levels. Trees are exposed to many new factors. For example, there is commonly mechanical damage to the trunks and limbs. As trees are unable to replace damaged tissue, they instead block off the area by a process called compartmentalization. This is a process of building scar tissue around the wound to block disease and decay from entering the rest of the tree. Due to this energy consuming process, a trunk wound that removes as little as 30% of the bark may be fatal to a tree. Protecting the trees from damage is crucial.

One of the biggest problems with construction is the damage it does to the root systems of the trees. There is a classic misconception that roots are "as deep as the tree is tall". They are not! **The root systems of most of the trees are very shallow.** Roots are generally within the first 12-18 inches of the original grade, with a large majority of the fibrous roots are with in the first 6-8 inches of the soil.

Besides mechanical and root damage, trees may also be exposed to changes in water sources and sunlight. Under normal circumstances, trees must acclimate to a new environment created by a change in any one of these factors, resulting in increased stress levels. However, during construction, all of these factors may be a concern at the same time, making Tree Preservation Planning very necessary. It is the Arborists goal to help the trees whenever possible. The procedures the Arborist will recommend are to limit stress to the trees chosen to be preserved.

In protecting the trees from construction damage one of the main focuses should be protecting the critical zone of the root system from damage. There are various means of protecting the trees and their roots during the construction process, including:

- Installation of fencing to protect the root zone.
- Installation of signage for preservation zones.
- Construction fertilization of key trees.
- Construction root pruning of trees where root disturbance is necessary.
- Implementation of a watering program.
- Installation of a tensiometer for water regulation.
- Post-construction vertical mulching in areas of high soil compaction.
- A Homeowner's Handbook for continued preservation efforts.

Unfortunately, even with all of these efforts, there is no way to guarantee the trees will not die during or after the process. There is, for one, what we call the "lone tree affect". The fact is that trees in a group support and protect each other. During construction projects, certain trees in a group may be removed. When this happens, a change in the environment of the remaining trees occurs. Due to this change, this tree

may die. There is little that can be done in this case. However, we can do our best to protect the trees and give them a fighting chance.

Many of the species have a low to moderate tolerance for construction. These will need particular attention throughout the construction process, as well as after. Oaks, ashes, and hickories are predominant in the area. These are all moderately capable of handling construction stress. Their response depends on mostly on how much soil compaction and water stress is around. There are also American hornbeams, which are moderately tolerant of construction. They typically have problems with root loss, but also with the chestnut borer, which attacks during periods of environmental stress. Other species on the lot include black cherry and dogwood, both of which are much less tolerant of construction. These species especially need to have adequate water and care to have a chance at survival. It is important to take into consideration the species when setting a preservation plan.

The site clearing and the construction process are the next steps to be undertaken. Each of these steps poses potential risk to the root system of the tree. The foremen on site are to be made aware of the root system structure and our desire to preserve the tree.

When looking at the types of species on this site, there are certain concerns to be aware of.

1. All trees whose roots have been disturbed will need adequate water throughout the construction process, including the trees on the hillside. This is especially important through dry, hot months. The trees need 1 to 1.5 inches of water per week in deep waterings.
2. The soil compaction should be monitored in the preservation areas. In areas where compaction is high, procedures such as vertical mulching should be considered.
3. Fertilization should be done annually to help reduce the stress on the trees and keep them healthy.

Finally, the five years following construction present a window in which further care is to be undertaken. Tree preservation is an ongoing effort. A written Post Construction Plan should be prepared that will explain further steps to continue the tree preservation process.

Conclusion

The preserved trees are valuable assets to the property. To plan to build in a woods only to loose the trees would be a pity. All effort should be taken to preserve the trees during construction, as well as after the fact, to help the trees deal with the stress.

To insure success, the tree preservation project needs the cooperation of all contractors involved. The site clearing contractor, the site foreman, each individual construction worker, the developer, the Consulting Arborist, and the homeowner can all take credit if the preservation project is successful. For years to come, as we all drive by the development, we can look up and say, "Hey I had a part of that!"

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About the Author,

Judson R Scott is one of two Registered Consulting Arborists in the State of Indiana. He is the President of Vine & Branch Inc. a tree and landscape company. As a Registered Consulting Arborist he advises Attorneys, Developers, Golf Course Superintendants, Architects, Engineers, Insurance Companies, as well as homeowners concerning their trees and landscapes. He has over twenty six years of experience in the Arboricultural field and can be reached at Vine & Branch INC. 317-846-1424 or by email at Treeconsultant@aol.com.

Tree Preservation Plan Particulars

The forest trees should be protected during the construction process. The following steps are suggested for their protection. (See Attachment B for Spanish translation)

Specifications for Site Clearing

The following work must be accomplished before the construction occurs within the dripline of tree:

1. The site contractor is required to meet with the consultant at the site prior to the beginning work to review all work procedures, access and haul routes, and tree protection measures.

2. The tree protection fencing is to be installed and proper "Do not enter" signs affixed.

3. The lot clearing that is to be completed should be undertaken by qualified Arborists and not by the demolition or construction contractors. The Arborists should remove the trees in a manner that causes no damage to the mature trees that are to remain.

4. Small trees to be removed within the tree protective zones shall be removed by hand or with equipment sitting outside the tree protection zone. Stumps should be removed by the use of a stump grinder so as to cause as little root disturbance to the remaining trees.

5. All trees shall be pruned in accordance with the ANSI Z-133 Guidelines and the ANSI A 300 standards. Copies available upon request.

6. Any damage to trees due to site clearing activities shall be reported to the consulting Arborist within 6 hours so that remedial action can be taken. Timeliness is critical to tree health.

7. There is to be no tree felled so as to touch the trees that are to remain. Any limbs that conflict with the crown of the remaining trees should be hand pruned off before felling.

8. There is to be nothing roped off to the remaining trees during the site clearing process.

9. There is to be no parking within the tree protective zone.

10. There is to be no fuel storage or filling of equipment within the tree protective zones

Pruning Specifications for Trees to be preserved

1. The preserved trees should be pruned to:

    a. clear the crown of diseased, crossing, weak, and dead wood to a minimum size of 1 inch in diameter;
    b. remove stubs, cutting outside the branch bark collar as it is defined in the ANSI A 300.

2. Where temporary clearance is needed for access, branches shall be tied back to hold them out of the clearance zone.

3. All pruning shall be performed by qualified Arborists. All pruning shall be in accordance with the Tree Pruning Guidelines (International Society of Arboriculture) and/or the ANSI A300 Pruning Standard (American National Standard for Tree Care Operations) and adhere to the more recent edition of ANSI Z133.1.

4. Interior branches shall not be stripped out.

5. Pruning cuts larger than 4 inches in diameter, except for dead wood, shall be avoided.

6. Pruning cuts that expose heartwood shall be avoided whenever possible.

7. No more than 20 percent of live foliage shall be removed within the trees.

8. While in the tree, the Arborists shall perform an aerial inspection to identify defects that require treatment. Any additional work needed shall be reported to the consultant.

9. Any Lightning Protection system to be installed in the trees should use the standards set forth in the National Arborist 1987 Guide and consulting the yet to be released ANSI guidelines (copies available upon request).

Construction Specifications

1. All underground utilities, downspouts or irrigation lines and landscape lighting shall be routed outside the tree protection zone. If utility lines must cross through the protection area, they shall be tunneled or bored under the tree.

2. No materials, equipment, spoil, or waste or washout water (especially concrete equipment and tools) may be deposited, stored, or parked within the tree protection zone (fenced area).

3. Additional tree pruning required for clearance during construction must be performed by a qualified Arborist and not by construction personnel.

4. Any herbicides placed under paving materials or in the foundation footings must be approved by the Consulting Arborist in writing and be safe for use around trees and labeled for that use. Any pesticides used on site must be tree-safe and not easily transported by water.

5. Any grading, construction, demolition, or other work that is expected to encounter tree roots must be monitored by the Consulting Arborist.

6. A tensiometer should be installed within the critical root zone to monitor the moisture during the construction process.

7. The preserved trees shall be irrigated so that it will receive one inch of water per week. Usually this is a 1-2 hour drip irrigation. The desired irrigation shall wet the soil within the tree protection zone to a depth of 30 inches.

8. Mulch should be added to the critical root zone of preserved trees to keep the roots from drying out due to new climate that we are making for the tree.

9. Before construction, the preserved trees shall be root pruned, cleanly cutting all roots to a depth of ten to eighteen inches. Roots shall be cut by manually digging a trench and cutting exposed roots with a saw, vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root-pruning equipment.

10. Any roots on preserved trees that are damaged during grading or construction should be reported to the Consulting Arborist. They should be exposed to sound tissue and cut cleanly with a saw.

11. Spoil from the house foundation shall not be placed within the tree protection zone, either temporarily or permanently. It is suggested that the spoil be placed in a space away from the forest trees.

Construction Specifications Continued

12. No burn piles or debris pits shall be placed within the tree protection zone. No ashes, debris, or garbage may be dumped or buried within the tree protection zone.

13. Maintain fire-safe areas around fenced areas. Also, no heat sources, flames, ignition sources, or smoking is allowed near mulch or trees.

14. There is to be no parking within the tree protective zone.

15. There is to be nothing hung from, attached to, or roped off to, the tree during construction.

16. There is to be no storage of anything within the protective root zone.