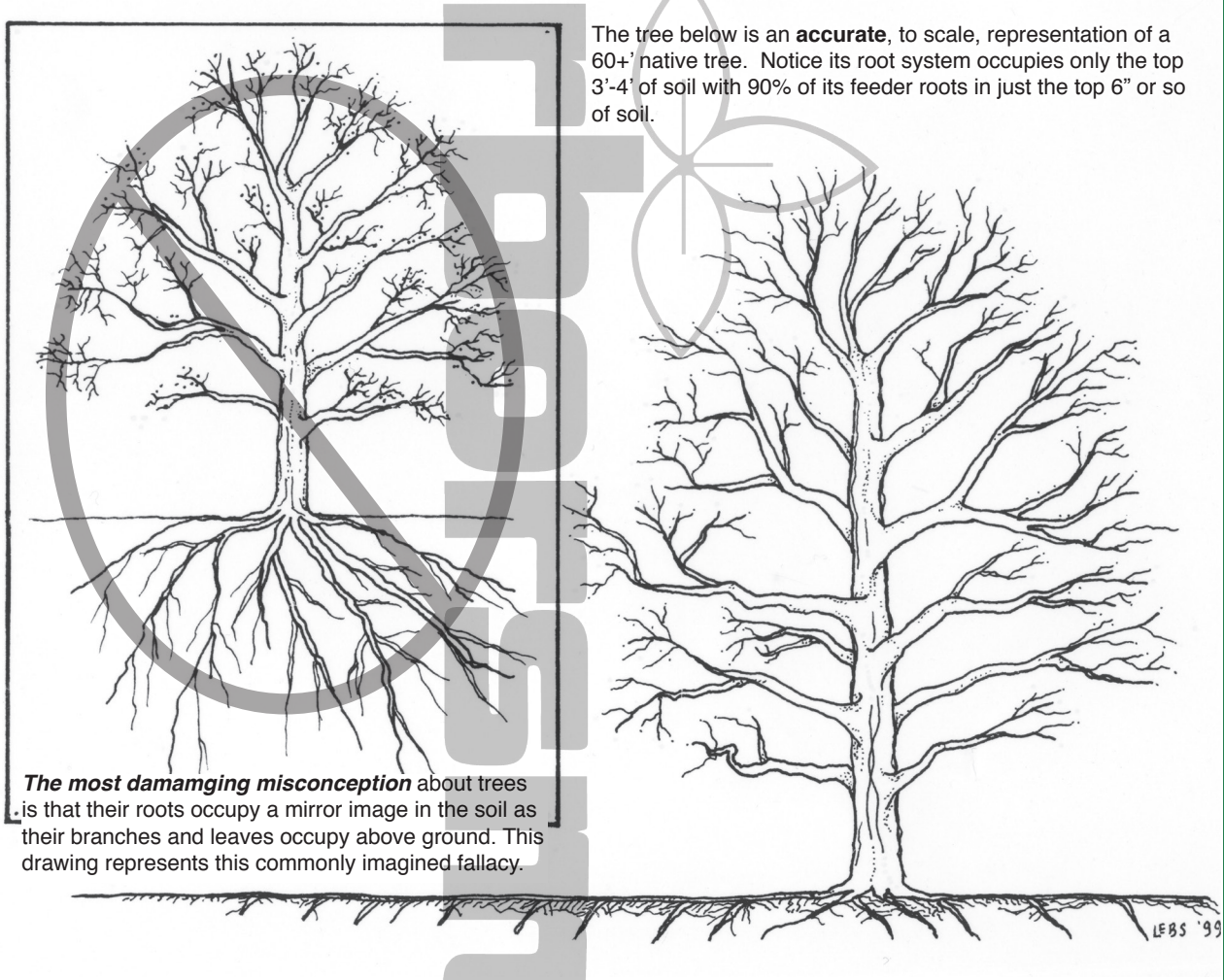
Tree Preservation

Planning an addition or construction project on a site with mature trees presents special problems. Pre-planning is a must if the trees are to be preserved in the long term. Once the construction has begun there is little that can be done to "save" the trees. When you call an architect or builder, ***be sure to call your arborist too***.



The most damamging misconception about trees is that their roots occupy a mirror image in the soil as their branches and leaves occupy above ground. This drawing represents this commonly imagined fallacy.

The tree below is an **accurate**, to scale, representation of a 60+' native tree. Notice its root system occupies only the top 3'-4' of soil with 90% of its feeder roots in just the top 6" or so of soil.

The entire tree, roots and crown, must be considered when contemplating construction. Since we can see what's growing above ground, we believe we are demonstrating concern for a tree's health during construction by placing boards, a fence, or retaining wall around the trunk. These precautions cannot protect a tree's delicate roots. ***Root protection is the key to tree preservation.***

Most of us have the mistaken idea that a tree's roots occupy the same three dimensional space below ground as above it, but in reality the clay soils of the Midwest send roots in a horizontal direction.

Believe it or not, a 70' native oak or sugar maple is supported to a depth of only 4', with 90% of the trees' feeder roots occupying only the top 6" of soil, which is the only place they can find life giving oxygen. Because a tree's root system needs oxygen to survive, it is located near the soil surface and, therefore, is much more fragile than we normally imagine. As a result, a 100 year old specimen tree will be weakened and laid open to attack by life threatening organisms by something as simple as digging a 12" trench 5' to 10' from the trunk of the tree.

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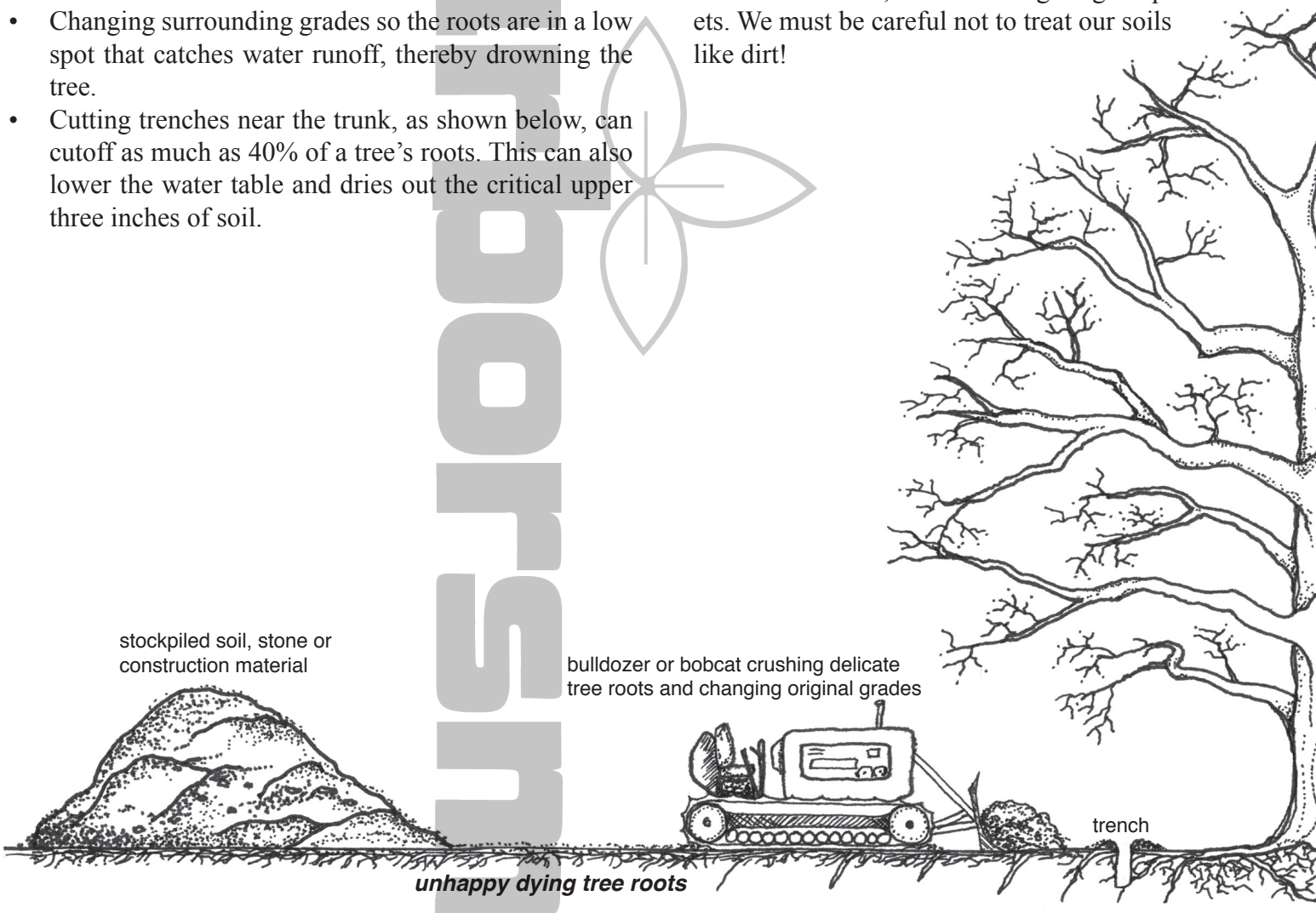
How to kill your tree:

A mature tree can be lost by:

- Filling over its roots with as little as 2" of clay fill.
- Cutting away as little as 3" of the soil surface in it's root zone.
- Changing surrounding grades so the roots are in a low spot that catches water runoff, thereby drowning the tree.
- Cutting trenches near the trunk, as shown below, can cutoff as much as 40% of a tree's roots. This can also lower the water table and dries out the critical upper three inches of soil.
- Allowing heavy equipment to drive, or even park on the root zone of a tree. This causes a concrete-like soil, with no life giving air pockets. We must be careful not to treat our soils like dirt!



unhappy dying tree roots

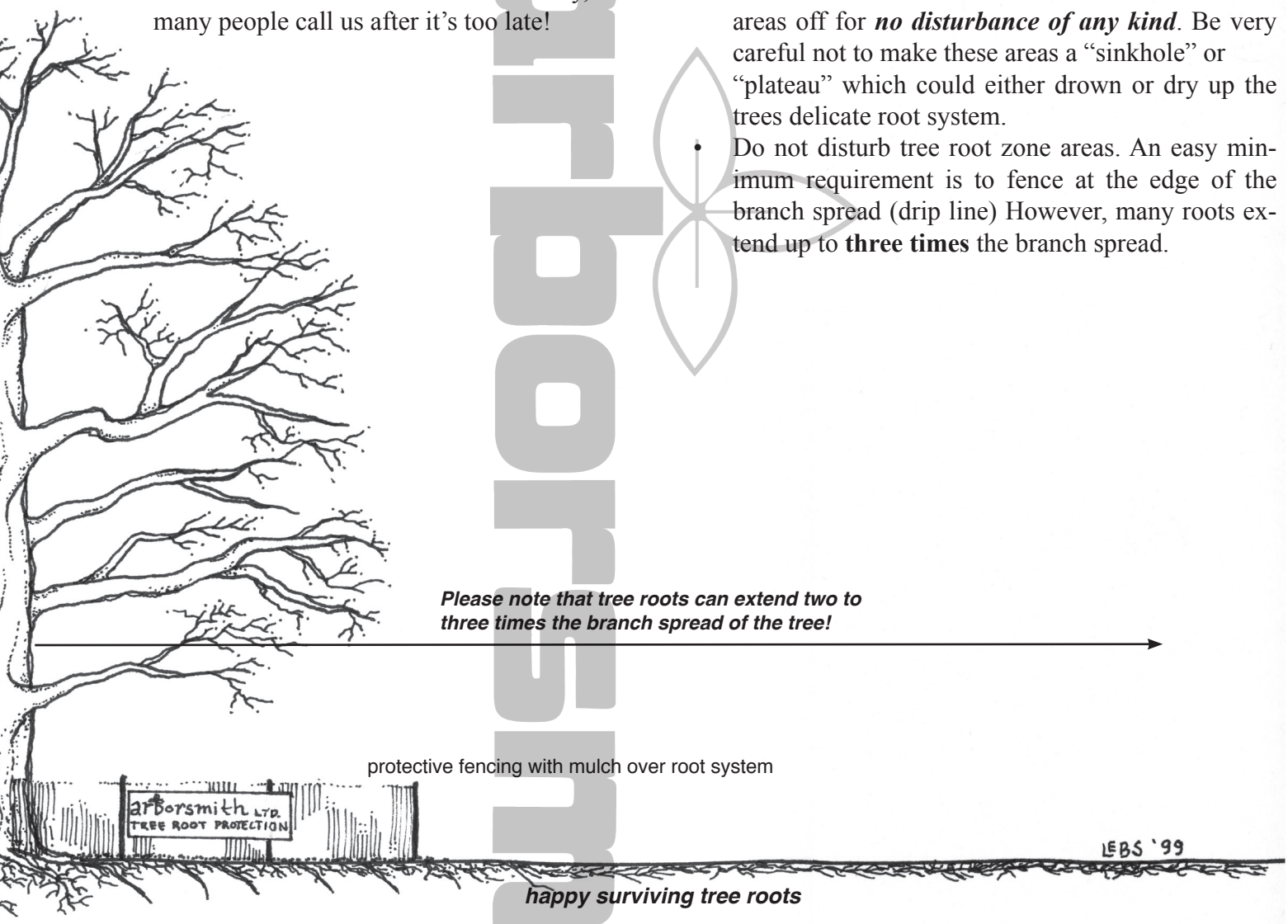
There are other effects construction may have on tree roots.

- When trees are taken out of a forest setting and isolated, the soil surface temperatures can increase by as much as 70°F. We often separate trees from each other by surroundmg them with buildings, pavements, or sod. This practice cooks the beneficial soil organisms to death, and desiccates roots.
- When a prairie ecosystem (lawn) and a forest ecosystem (trees) are put together in a landscape, one of the two will suffer. In nature these two ecosystems are always battling for dominance, because tree roots and grass roots fight for the same soil space and oxygen. If the tree is already under stress from construction, the grass will probably out compete the tree, and finish it off.
- Remember that a lawn is easily established in one season, whereas trees take decades to reach maturity.
- Some by-products of construction actually poison the soil, such as: water run-off from concrete truck cleaning, limestone stockpiling or roadbeds, buried building debris, and even paints and solvents. All these examples kill tree roots and destroy their ability to take up water and nutrients.
- Reflected heat off glass, pavement, or walls may dry or burn trees and their roots.
- Even temporarily stockpiled soil will suffocate roots.
- Do NOT plant aggressive groundcovers under trees because they also kill tree roots. Examples include: hosta, pachysandra, vinca, english ivy, and euonymous.

How to save your tree:

Here are some rules of thumb in tree preservation:

- Consult an arborist or urban forester ***first***, for each tree and situation is different. Sadly, too many people call us after it's too late!
- It is best to keep trees in groups, to maintain a more forest like environment. Isolate and fence these areas off for ***no disturbance of any kind***. Be very careful not to make these areas a "sinkhole" or "plateau" which could either drown or dry up the trees delicate root system.
- Do not disturb tree root zone areas. An easy minimum requirement is to fence at the edge of the branch spread (drip line) However, many roots extend up to **three times** the branch spread.



happy surviving tree roots

- Mulch with 4" to 6" of wood chips inside protective fence area to retain moisture and moderate the soil surface temperature.
- Explore the possibility of auger drilling under a tree's root zone instead of trenching through it. The little added cost of this procedure pays for itself many times over in the life of your trees.
- Root pruning, before digging can ***sometimes*** be helpful to avoid additional damage but each situation must be evaluated because sometimes it does more harm than good.
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If these guidelines are not met, then how can we extend the life on construction impacted trees?

- If you dig a trench, put the soil back as soon as possible and mulch to the drip line with 4"-6" of organic mulch, such as wood chips. This helps return the soil surface to a healthy growing medium.
- Watering during droughty periods, heal=vily but infrequently. (Ask for our *Watering Abstract*™). Underground watering systems ***almost never*** help, and usually hurt, mature trees.
- Do NOT trim, except to remove deadwood, for at least one growing season after construction. This gives the trees' food producers (its leaves) a full season to maximize growth for new root develpoment.
- Mulching and annual acidifying can help counteract pH changes related to construction.
- Consider planting some young trees to reestablish the natural cycle of regeneration.

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Conclusion

Trees die most often after construction because soil is spread over the roots (even as little as 2") and because construction equipment gets driven over the roots. Trimming and fertilizing is no way to try to save a tree that has been impacted by construction. As a matter of fact, studies have shown that fertilizing a stressed tree does more harm than good.

Planning ahead is the only way to preserve your mature trees. Yet, doing our part to save mature native trees is a worthy undertaking, and certainly worth the little extra effort involved. The cost involved is only a small percentage of the total expenditure on any building project. However, it will always pay for itself, because a mature oak, hickory, or sugar maple not only adds value to a landscape aesthetically, but just as important, reduces energy consumption during summer months by 10% by providing shade that would otherwise take decades to achieve. Even real estate appraisers recognize that mature trees contribute up to 15 % of your property value.

Tree preservation is everybody's business. Not just for economics, but because native trees are a part of our natural history and add so much to the quality of our life. Do your part by planning for your trees. We will all breathe a little easier!

These recommendations can be confirmed by:

Chicago Botanic Garden
Morton Arboretum
International Society of Arboriculture
Illinois Arborist Association

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