TREE CARE INDUSTRY
The Official Publication of the National Arborist Association
Volume 7, Number 5 - May 1996

ARBOURIST'S ROLE IN SAVING TREES
Robert Herrera, Greater Nebraska Tree Service

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Arborist Safety and Training Programs
Lifeline to Successful Operation

By Ken Palmer

In most industries, safety and training are keys to success. The tree care industry is no exception. Whether working as a utility, municipal, institutional or commercial arborist, the nature of tree care work means that we must deal with risks. For arborists, safety means risk management.

I have been working in the tree care industry since the mid-70's. During my first decade, I gained 90 percent of my knowledge and skill on the job and from co-workers. However, I also picked up some questionable ideas. It was not until I entered my first tree climbing competition in the mid-80's that I realized how much I could learn by interacting with other professionals.

Because most tree workers tend to work in semi-isolation, learning more advanced technique can be a challenge. Unless we make an effort to become involved, we risk becoming out of touch with modern technology. Since 1991, I have worked extensively with climbers, riggers and chain saw operators from around the world. It's fascinating to see human ingenuity at work. Tree workers are finding new solutions to common challenges every day. By sharing information, we advance the industry.

In recent years, we have seen the introduction of interesting techniques and equipment to meet the challenges of working in urban forests. Over the years, I have enjoyed introducing arborists to new ideas through seminars and demonstrations, and seen eyes light up with excitement over the prospect of tree work becoming safer, easier and more efficient.

It's exciting to see the industry blossom, but it can also be very intimidating when things change so quickly.

A learning curve comes with any new technique. Too often, a worker becomes frustrated and gives up long before he has the chance to master a new skill. The most effective way to deliver practical information to tree workers is through hands on, interactive training sessions. Proper training starts on solid ground by teaching the student to "plan the work and work the plan." Proper training empowers the student with a thorough understanding rather than sketchy, abstract ideas.

It is important not to inundate the student with too much information at once. And, students must use what they have learned as soon as possible, or they begin to lose it. The goal should be to build confidence and enhance productivity through more consistent results.

A more professional attitude is inevitable. Everyone wins.
There is nothing a businessperson likes better than a “competitive advantage.” The question is, “What constitutes a competitive advantage and how do you achieve it?”

Does it come from being smarter than the next person? Having a better understanding of managing a business? Being more innovative? Being more perceptive of the marketplace? Providing better service? Performing more efficiently? Charging less? Not complying with regulations? Cheating on performance? There are probably another 20 possibilities, and one time or another you have seen them all. That’s the nature of competition. That’s business.

You can’t spend your time worrying about what the other guy is doing. What you are doing is what matters. Are you doing the best you can do? Can you do better?

Everybody can do better. It’s a question of priorities, focus and execution.

Unfortunately, we all have our little hang-ups, our pet projects and our own personalities with which we must contend. It becomes a matter of balance. In my opinion, the last place we need to focus is on the competition. You have to be aware of what is going on around you, but what others are up to shouldn’t be your major concern. You should have other priorities, but some people just can’t ignore the competition.

“He gives the work away.”
“Those crews are paid off the books.”
“He doesn’t carry workers’ compensation insurance.”
“He’s a hacker.”
“He’ll tell them anything to get the work.”
“He’s not certified.”

And on and on it goes...

If your competition can get you to spend all of your time complaining about them, they have taken you out of the game. Forget the competition.

If your competition can get you to spend all of your time complaining about them, they have taken you out of the game. Forget the competition. They will always be there—one company today and another tomorrow—but they won’t be a factor.

You will never be better than the other guy, or more than a victim of competition, if you don’t pay attention to your own business. Focus on your performance, your employees, your quality, your everything.

When you do, you will prevail and the competition will no longer be a factor in your affairs.

Robert Felix, Publisher
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OUTLOOK
By Robert Felix
Forget the competition! Pay attention to your performance first.

MANAGEMENT EXCHANGE
By Susan B. Haupt
Tips on ways to keep trusted employees from embezzling company funds.

CUTTING EDGE
New products and news in the industry.

INDUSTRY INPUT
Candid comments from our readers.

WASHINGTON IN REVIEW
By Brian Barnard
Washington wants more information from tree care companies.

The Arborist's Role in Tree Preservation
By Nelda Methany and James R. Clark

Safety Is No Accident
By Peter Gerstenberger

Arborists must understand how work-site development proceeds, and provide input at key times during project design to help preserve a site's valuable tree resource.

Create a written company safety program. There is no excuse for not being prepared.

ON THE COVER
Mary Ann Beale and Jim Clark review tree protection fencing at a project in Charlotte, NC.
THE NEW POULAN PRO 190 ARBORIST.
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Arborists are often called upon to "save" trees during construction. It is our experience that attempts to create and enforce preservation programs during construction are largely doomed. Successful tree preservation programs require that trees be considered as a critical component of the project from the beginning of the project's design. It is only through careful planning that adequate space can be provided, and appropriate design and construction procedures specified.

Designing for Tree Preservation

Successful tree preservation is intimately linked to the development process. To be effective in the process, the arborist must understand how development proceeds and be able to communicate with the project team and governing agencies. The arborist needs to provide appropriate input at key times during the project design and implementation.

Project design is at first conceptual in nature, and becomes more detailed as plans are refined. In the design effort, identify which trees are suitable for retention and the amount of space needed for adequate protection. The next step is to determine what impacts will occur and how the tree will respond. Then, if development constraints will not allow as much space as advised, the arborist may suggest where modifications need to be made. If impacts cannot be reduced, the arborist must determine whether the tree is unlikely to survive and should be removed.

Arborists must remember, however, that our expertise is trees, not engineering or design. There is only so much leeway in modifying plans. The simple fact is that structures, be they buildings, roads, patios or utility trenches, must be built in such a way that they are stable and safe. Therefore, specific engineering standards regarding soil compaction, footing and foundation design, and depth and separation of utilities must be attained. In many situations, the building standards and local codes allow limited flexibility for modification.

Tree Preservation Process

From a strictly arboricultural standpoint, the preservation process consists of the following steps:

1. Evaluate the tree resource on the site
2. Identify trees suitable for preservation
3. Identify an appropriate Tree Protection Zone
4. Assess potential impacts to trees based on development plans
5. Suggest modifications to plans
6. Identify tree work needed prior to clearing and grading
7. Prepare preservation specifications to be included in construction documents
8. Monitor trees during construction
9. Prepare post-construction maintenance plan

Evaluating the Resource

The most important role the arborist plays
in tree preservation is to provide accurate information about the tree resource. The resource evaluation should describe the character of trees at a level of detail appropriate for the project and the phase of planning. Although general tree information may be adequate for early planning, at some point detailed information about individual trees will be required.

Where development will occur near trees, complete information about the tree health and structure is needed, including:

- species
- size
- health/vigor/vitality
- structure
- pests/diseases
- crown class (dominant, codominant, intermediate, suppressed)
- live crown ratio (or height/diameter ratio)
- crown integrity (ragged percent)
- dripline measurement

The tree survey is used to identify trees suitable for preservation, work needed prior to clearing and grading, protection specifications and any other tree-specific tasks. Individual trees are identified on a map, usually by tag number.

### Evaluating Suitability for Preservation

One of the goals of preservation is for trees to remain assets to the site for years to come. Therefore, trees must be carefully selected to make sure that they will survive construction, adapt to a new environment and perform well in the landscape. We combine these considerations into a single term: suitability for preservation.

When evaluating suitability for preservation consider the following factors:

1. **Tree health**

   Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

2. **Tree structure**

   Trees that contain extensive decay or other severe defects and are likely to fail be-

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Tree Preservation Zone Guidelines

<table>
<thead>
<tr>
<th>Species Tolerance</th>
<th>Tree age</th>
<th>Distance from trunk</th>
<th>feet/in. trunk diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Young</td>
<td>0.5 foot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;1/4 life expectancy</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Mature</td>
<td>0.75 foot</td>
<td></td>
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<tr>
<td></td>
<td>1/4-3/4 life expectancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overmature</td>
<td>1.0 foot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;3/4 life expectancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>Young</td>
<td>0.75 foot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mature</td>
<td>1.0 foot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overmature</td>
<td>1.25 feet</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>Young</td>
<td>1.0 foot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mature</td>
<td>1.25 feet</td>
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<tr>
<td></td>
<td>Overmature</td>
<td>1.5 feet</td>
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Evaluating Impacts

It is virtually impossible to retain trees on a construction site without the trees incurring some degree of either injury or change in their environment. A reasonable goal, however, is to hold the impacts to a minimum. When impacts are too severe, either the plans must be changed or the tree removed. The arborist's abilities to determine the severity of impacts and to evaluate the tree's prospects for survival are key to successful preservation.

How development and construction will occur is communicated on drawings. Therefore, the arborist should become skilled in reading and interpreting plans. Trees must be accurately located on all plans if they are to be adequately considered and protected. Their location is as important for design and development as any other information about the potential for successful preservation. When combined with the basic tree survey information, it allows the project team and the monitoring agency to agree on the nature of the site's tree resources. Whether assigned to individual trees or assemblages within a stand, the suitability for preservation is a key finding by the arborist.

Identifying a Tree Protection Zone

The tree protection zone is the area around the tree or groups of trees in which no grading or construction activity is to occur. The size and conformation of the zone depends on several factors including:

- species sensitivity to impact
- health and age of the tree
- root and crown conformation
- development constraints

The question of how close we can encroach on a tree is a difficult one to answer. It is commonly thought that a healthy tree tolerates removal of approximately one-third to one-half of its roots. However, rooting patterns are highly variable, so it is difficult to know at what point 30 to 50 percent of the roots have been impacted.

Most guidelines for tree preservation advise holding construction and grading outside the dripline. Based on a typical root structure, even that restriction could lead to removal of over half the tree's roots. Yet, we find that most vigorous, broad-canopied trees survive well if the area within the dripline is protected. Indeed, for many species, it is possible to encroach some distance within the dripline without extensive damage.

There are problems with using the dripline as an indicator. Leaning trees which have the trunks located at one side of the canopy clearly have many support roots away from the lean, beyond the canopy. Obviously, narrow-canopied trees, such as Lombardy poplar or lodgepole pine would not be adequately protected. Nor would closely spaced trees growing in stands that have narrow crowns. As a way to protect these types of trees, Miller, et al. (1993) recommended identifying a "critical root radius" that was 40 percent of the tree height.

We find that there is such variation in root distribution and tree response given the species, age and size, that general guidelines based on the dripline are not very useful. (The dripline can be successfully used in communities where tree retention focuses on broad canopied trees, such as oaks.) A more appropriate guideline is based on ranges in trunk diameter that considered the age and vigor of the tree. We have adapted that concept to include species tolerance to impacts. (See table above.)
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A number of factors must be considered, involving pruning, root-cutting, soil compaction, drainage, etc.

Assessing Extent of Injury to Tree Roots

When excavations will occur close to trees it is important to know how much root damage will occur, not only from a standpoint of tree survival, but also for stability. Assessing the extent of root injury is a seemingly simple task of overlaying the root pattern with the grading and construction plans and estimating what will be removed. Unfortunately, root systems are neither symmetric in form, nor entirely predictable in their depth.

When evaluating root impacts, the arborist should:
• estimate depth and spread of roots
• dig in area of excavation to accurately determine impacts
• consider both stability and survival
• know the sensitivity of species
• assess the condition of tree
• measure the density of crown
• factor in exposure to wind, storms

Verifying Plans in the Field

Where grading will be close to trees and when knowing the precise amount of impact that will occur is critical, it is important to stake the construction and grading in the field. It is quite common for plans to be a few to several feet off from surveyed locations in the field. Plans often go through several generations of drawings. At each phase, as maps are photo-enlarged and originals stretch in reproduction, errors are compounded.

Determining Tree Response to Impacts

Once the impacts have been identified from the plans, the next step is to evaluate how the tree will respond biologically to the changes imposed. Will it survive with adequate health and structural stability to be an asset to the site?

Impacts to trees are cumulative over the entire period of development. Rarely does the tree experience just one impact that affects its growth. Rather, a series of changes occur to which the tree must respond and adapt. First roots are injured and the site microclimate altered by clearing. Then further changes occur during grading and installation of improvements. Construction of adjacent structures cause another series of impacts damage. Finally,

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The Arborists Program

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Excavation of trenches can often retain existing pipes. Roots can be bridged in a similar manner.

Finish grading and landscaping alter the tree's microsite. The arborist must anticipate and protect the tree from a multitude of events and impacts.

The challenge for the arborist is to determine when impacts will be too severe for the tree to survive, not only in the short term, but also in the long term. To our knowledge, there are no quantitative methods to calculate that critical level. Our ability to predict how a given tree will respond is strongly dependent on our experience and knowledge of the species, with consideration to the individual tree's age and condition.

Tree Survival

In our experience, projects that consider trees during design and construction rarely experience short-term tree death. The exceptions have been when significant mistakes were made in design (e.g., grades on plans were incorrect), or construction activities were careless or negligent.

Rather than dying quickly, trees may decline gradually and eventually reach the point where removal is required. This pattern is typical when impacts are indirect and cause chronic stress to which the tree never adapts. The tree may ultimately be killed by insects or diseases that successfully attack it.

Long-term survival, over a period of years and decades, involves interaction of several biological, physical and environmental factors:

**The specific tree:**
- age
- health
- species tolerance
- previous exposure to wind and sun
- vigor

**What changes will occur will depend on:**
- amount of root injury

Minimizing Tree Injury

Since in most cases we cannot completely eliminate construction impacts to trees, our goal is to minimize injury to a tolerable level. There are a number of ways this can be accomplished, depending on the specific conditions and requirements at the site. First, and foremost, the goal is to protect trees rather than repair injury.

Following are a few techniques to minimize tree injury during construction:

1. **Fence trees prior to demolition or grubbing**
2. **Minimize soil compaction**
   - Limit traffic and storage areas
   - Protect soil surface with deep mulch
   - Specify minimum compaction on non-load bearing areas
   - Use extra reinforcement in paving materials
   - Avoid use of heavy equipment around trees
3. **Minimize excavation**
   - Maintain natural grade around tree
   - Use discontinuous footings on retaining walls
   - Modify paving materials to reduce depth of pavement section
   - Route utilities around trees, combine utilities in one trench
   - Lay irrigation lines on soil surface, cover with mulch
   - Tunnel lines rather than trench
   - Use pier foundations with grade beams above grade rather than slab foundations
4. Minimize changes in water supply and drainage
   - If there are changes, attempt to re-produce ‘natural’ conditions through maintenance

5. Minimize pruning
   - Consider location of low limbs when designing structures, uses under trees

6. Minimize competition
   - Avoid planting and irrigation under sensitive native trees.
   - Control growth of competitive plants (e.g. vines, understory plants)

Construction and Post-Construction

Although most decisions about tree preservation must be made before construction begins, activities during construction and post-construction phases can be critical to successful preservation. Most importantly, the arborist must help ensure that the programs and details specified in the Tree Preservation Plan are implemented. The players present on a project change as it moves from design to construction. The arborist can provide important continuity among these changes. For while trees cannot be preserved during construction, they can be killed.

Construction Phase Monitoring

The Arborist’s role during the construction phase is fourfold:

1. Protect the Tree Protection Zone
   - The arborist may be asked to monitor the status of tree preservation measures. Maintenance of the integrity of the TPZ can be the most significant monitoring activity. Space is often at a premium on construction sites and the open areas defined by the TPZ are attractive locations for all sorts of activities.

2. Assist with changes in the field
   - Few projects proceed without changes in the field. This occurs for a variety of reasons. For example, plans and field situations may not match. Alternatively, an item may have escaped notice or not been discovered until construction. The arborist must participate in the decisions surrounding an issue.

3. Monitor injury to trees and provide corrective action
   - Few projects proceed through construction without some injury to trees. Plans and changes may require work within the Tree Protection Zone. The arborist must be prepared to recommend mitigations and corrective actions where damage has occurred be it pruning, irrigation or another treatment.

4. Communicate with the project superintendent
   - In our experience, one of the most critical factors in the success of a tree preservation project is the commitment of the project superintendent, the on-site manager of all construction activity. Their interest and willingness to support tree preservation actions, like maintenance of the tree protection zone, is an absolute need. The arborist must acknowledge the range of demands for time and money facing the superintendent in completing the project.

   We see the arborist’s role to advise and facilitate. We should not be expected to take on a regulatory one of policing the site. This is especially true where the arborist’s client is the development team. The arborist should report problems, lapses and failures to their client.

   For each of the arborist’s roles, a well-

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Tree Impact Evaluation Checklist

Tree characteristics
- Species tolerance to impacts
- Tree age/longevity
- Tree health and vigor
- Root depth and extent
- Conformation of canopy
- Structural stability

Site development
- Disturbance that will occur within rooting area
  - Distance from trunk and depth of excavations e.g. grade changes, underground utilities, pavement section, footings, foundations
  - Root area exposed to compaction
  - Root area covered by pavement
  - Pruning requirements e.g. clearance, overhead utilities
  - Irrigated landscape (compatibility with tree, trenching for system)
  - Removal of adjacent vegetation (root damage, changing microclimate, exposure)

- Disturbance to overall site that could affect tree
  - Diversion of runoff (to or from tree)
  - Installation of subdrains or drainage swales (lowering water table)
  - Altered drainage patterns increasing erosion
  - Altered drainage patterns/vegetation removal increasing siltation
  - Walls/foundations damming underground water flow
  - Road fill over streams, check dams altering water flow and sedimentation
  - Change in capacity for soil water recharge

Post-Construction Activity
At some point, the developer will relinquish ownership/control of the project. The new managers may be individual property owners, a community association, the municipality (or a designated agency) or some other group. The transfer is usually preceded by an on-site inspection, often with remedial action.

The arborist may be asked to update information in the tree survey or report, provide a list of actions taken during construction or prepare a detailed post-construction maintenance plan. A homeowner’s management guide may have been previously prepared. The nature of any work is determined by the needs of the new owners and local regulations.

It is important that the client and new owners acknowledge the need for remedial care and monitoring. Effects of construction activity on tree health and stability may not be evident for some time. Trees must be inspected regularly for vigor, pests and structure. New owners must be clearly informed of this requirement.

Follow-up treatments include:
- Pruning
- Irrigation
- Mulching
- Pest management (including unwanted vegetation)
- Fertilization
- Hazard management (tree and target)
- Fire management
- Replanting/regeneration
- Removal of damaged trees

Tree Preservation Is A Cooperative Effort
Tree preservation requires the interaction of many professionals. Talk to them, understand what they need to get their job done, and work out a way to accomplish their goals while protecting the trees as best you can.

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Safety

Safety Is No Accident

By Peter Gerstenberger with Les Kozaczek

We cannot predict the outcome or the eventuality, so preparedness is of little use.

What then is "bad luck?" I define it as when a hazard meets with a lack of Preparedness. A hazard, which is something that is causing or is likely to cause harm, is Opportunity's evil accomplice. While some may dismiss an accident or tragedy as something that simply happens, this unfavorable outcome often can only occur when the individual has been passive.

Here's an example of the various forms of luck:

In April 1985, a tree worker narrowly escaped death. He had cut off a four-inch limb and was holding the cut end to guide it down. He failed to take note of the 13 kV line. He failed to realize that he might not be able to control the limb. The brush end made contact with the conductor ... BAD LUCK.

The current going through the limb and the climber's body caused his muscles to convulse wildly. His convulsions apparently brought the butt of the limb into contact with the tree trunk. This completed a path to ground, and he was spared ... DUMB LUCK.

A coworker, recognizing that the tree was still "hot," used a non-conductive pole-pruner to break contact while instructing the homeowner to contact 911. The coworker performed an aerial rescue as he had been trained, and qualified medical help arrived at the moment he brought the victim to the ground ... GOOD LUCK.

Of the three types of luck, the good and the bad kinds dominate our everyday lives, and certainly our work. Our actions, or inactions, determine the outcome. All accidents are preventable.

Setting Up the Safety Culture

Safety begins with management's clear and unequivocal commitment to maintaining a safe work environment.

STEP ONE in setting up a safety culture—and the best way of communicating management's commitment to employees—is with a mission statement and written company policy. The mission statement introduces the goals of the safety program, and the policy provides the specifics for achieving those goals.

STEP TWO is assigning responsibility. Every employee of the company from the top down has some responsibility to the safety program. Only by clearly defining each person's responsibility and effectively delegating duties can the program move forward.

Employees must be capable of accepting responsibility. Typically, the problem employee is the one who refuses to or seems incapable of accepting the responsibility that comes with the job. Identify these employees quickly: Your company safety culture cannot support people such as this and be completely healthy.

Employers must be capable of relinquishing responsibility. Anyone who has raised children can relate to this. Employees, like children, tend to live up to your expectations.

Most if not all employees should play a role on your company's Loss Management Committee, the group that meets regularly to address specific policies and procedures. Regardless of the makeup of your committee, all employees should be encouraged
to offer suggestions for improvement.

**STEP THREE** in the safety culture is outlining specific policies and procedures. These are usually grouped into two general types: policies and procedures mandated by an outside entity, such as OSHA; and those specific to your operation that were developed by your company's Loss Management Committee.

Company policy must address all recognized hazards. By far, the best single source of information to help you shape your company's safety policy is the ANSI Z133 Standard.

In the late 1960's, a young man was electrocuted while pruning trees in southern New York. His mother appealed to various agencies to do something that would make tree care more safe. As a result of her efforts, the American National Standards Institute initiated an effort to develop a tree care safety standard. A committee of tree care safety experts was formed. The first standard entitled, "American National Standard for Tree Care Operations—Pruning, Trimming, Repairing, Maintaining and Removing Trees, and Cutting Brush—Safety Requirements" was published in 1971 and identified as the ANSI Z133.1 Standard. This standard identifies all of the currently recognized hazards of this profession and stipulates the safe practices to be used in dealing with each. In the absence of an OSHA Standard that specifically addresses tree work, the Z133 Standard was, and still is, enforced by OSHA.

The entire Z133 Standard should be incorporated by reference into your company policy. Copies of the Standard are available through either the National Arborist Association or the International Society of Arboriculture.

The Z133 Committee revises the Standard about once every five years. With the great influx of new technology into tree care, particularly in the area of tree climbing, there are always innovative techniques and equipment not specifically addressed in Z133. Therefore, use great discretion before allowing undocumented practices to enter into your operation. If you feel it may be necessary, write to the Z133 Committee, care of the ISA, PO Box GG, Savoy, IL 61874-9902 and seek clarification or an opinion in writing.

Now that we are out of the concep-tual area and well into the nuts and bolts of tree care safety, a few other areas in my opinion deserve extra attention.

**Electrical Hazards**

All arborists should be trained not only to avoid electrical hazards, but to work safely around electrical conductors. Too many arborists think, "I don't need electrical hazard training, since I don't ever plan on doing line-clearance work ... I'm safety-conscious and I know enough to stay away from high voltage lines." These people are at risk.

If they don't take precautions, arborists whose usual job is dropping a tree in a customer's back yard face as much risk of electrocution as the line clearance tree trimmer who spends his days near lines carrying 12,000 volts. A street lamp circuit, a cable TV wire, even a phone line can be energized with enough voltage to kill. Indirect contact through a green tree branch or other conductive object is an ever-present threat. One doesn't have to touch a wire to be electrocuted.

In May 1994, a new standard (OSHA
29 CFR part 1910.269) took effect. Better known as the Vertical Standard, these regulations impact the utility industry, including line clearance contractors, as well as all residential, commercial and municipal arborists who come within 10 feet of an overhead electrical conductor.

According to the Vertical Standard, a line clearance tree trimmer is a tree worker or trainee who, through related training and on-the-job experience, is familiar with the special equipment, techniques and hazards involved in trimming trees proximate to overhead conductors.

The qualified individual must be able to identify energized wires and other electrical apparatuses proximate to trees, know their maximum nominal voltages, and, based on this information, know the minimum distances to be maintained from such wires.

“Nominal voltage” refers to a rating. For instance, a climbing line has a minimum nominal breaking strength. Similarly, in a utility’s system, a certain size conductor on a certain type of insulator has a maximum nominal voltage, which is the maximum voltage the system is designed to carry.

This means that the tree worker, to quote an OSHA official, “Has to know, in essence, that electric overhead power lines are carrying enough voltage to kill him. He has to be able to determine what the voltage is from the lines, because the clearance distance depends on the voltage of the line.”

Federal regulations stipulate that employees must be trained in work practices and safety procedures to perform their every day operations. That training must be documented and ongoing. Training can be in classroom or on the job, but it must establish employee proficiency in the work practices involved and show employees how to comply with OSHA 1910.269.

A critical point of the Vertical Standard for employers to consider: The standard requires that the employer self-certify that each employee has received the training required. Thus, the employee must demonstrate proficiency, and the employer must verify and document the employee’s proficiency.

If you ever hear the term, “Certification Program” used to describe electrical hazards training, it is probably a misnomer. OSHA regulations state clearly that only the employer can certify. However, the term certification is sometimes defined more broadly as the validation of the tree worker’s technical as well as safety knowledge.

### Tree Work Around Conductors

Let’s assume for the moment that it has become necessary for you to work in proximity to electrical conductors and that you are “qualified” to do so by virtue of your training and experience.

Here are some of the basics for performing tree work around conductors:

1. There’s no such thing as insulation on a wire. Any coating on a wire is weather-proofing intended to lengthen the service life of the wire, not to protect the hapless arborist who grabs it. Utilities may occasionally place a sleeve or blanket over a section of wire to protect workers in the tree work area.
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vicinity or prevent an electrical short, but this is the exception rather than the rule.

2. There’s no such thing as protective equipment, except maybe a Class B hard hat. Utility linemen rely on rated, insulated and tested gloves, sleeves and hot sticks. Nevertheless, tree care is hard on equipment, and there is no reasonable way to guarantee the dielectric integrity of personal protective equipment that a lineman might use. Therefore, the tree industry relies on avoidance techniques and recognized, safe work practices that place the worker out of harm’s way.

3. While everyone understands that wires carry electricity, bear in mind that trees can be energized. Several standard precautions should be taken before climbing:
   - If it appears the tree is in contact with a conductor, spurs should not be worn.
   - For the same reason, always check for conductors before climbing.
   - Climb the side opposite the conductor, select a crotch that would swing you away from the conductors should you slip and fall.

4. Use only non-conductive tools to work on branches near wires. It is advisable to position yourself on a limb adjacent to the one you are cutting, or “break back” the limb from the conductor with a non-conductive tool prior to work with a hand or chain saw. It is also acceptable to use hand saws and chain saws if you use ropes to secure and control limbs in a way that will positively prevent contact with the conductor.

5. When felling trees next to conductors, always put a pull line in the tree to control its fall.

6. Never attempt to dislodge a hanger on a conductor with anything but non-conductive equipment.

7. It is advisable to discontinue work near electrical hazards in wet weather.

8. Bucket operators have to be especially careful that their booms don’t come in contact with conductors. Always face the wires, and never maneuver the boom be-

---

**Creating a Written Company Safety Program**

1. Introduction
2. Management’s Statement of Commitment
3. Responsibilities:
   - Manager/Safety Coordinator
   - Supervisors
   - Crew leaders
   - Sales people
   - Field employees
   - Office Staff
4. Joint Loss Management Committee
5. Safety Rules and Regulations
   - Specific required programs:
     - Electrical hazards awareness
     - Personal protective equipment
     - Hazard communication
     - Hearing conservation
     - DOT/Hazmat
     - ANSI Z133 compliance
   - Company-mandated programs
5. Disciplinary Policy
6. Accident Reporting
7. Training Requirements
8. Emergency Response Procedures
10. Safety & Health Communication/Paperwork

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tween conductors. Above all, be sure that your unit is fully insulated and tested. A thin film of oil or dirt on the boom can destroy its insulating properties, as can the wrong hose or even the wrong type of hydraulic fluid.

9. Storms create especially hazardous work conditions. Be on the alert for downed conductors, and be sure that the utility has made conditions safe before working.

**Aerial Rescue**

If a climber or bucket operator is injured or incapacitated in a tree, the person most qualified to render timely assistance should be a co-worker. Becoming proficient in aerial rescue techniques is one of those employees' responsibilities we discussed in the beginning of this article.

This article is not a primer on aerial rescue techniques. The point I wish to convey is that aerial rescue training is as much a part of job preparedness as remembering to wear a hard hat. If you practice aerial techniques regularly, and under a variety of conditions, you will possess the necessary skills should an emergency arise.

Take the time to practice rescues every month if you can.

Aerial rescue should be an integral part of your job planning. When you arrive at a work site, plan your work activities as though you will need to perform a rescue. That includes having the appropriate rescue gear out and available at the job site. Rescue gear consists of a clean, dry rope and saddle, throw line, pocket knife, pole pruner or saw, and a well stocked first aid kit. Post emergency phone numbers on the dashboard of your truck.

I am also a proponent of setting an access line in trees where the lowest crotch may be difficult to reach. The time spent during an aerial rescue simply getting into the tree can be significantly reduced if you follow this simple step.

If an accident does occur, assess the situation before you race to the rescue. Although this advice may run counter to your instincts, don’t rush in without thinking:

- Who is around to help—another...
worker, the homeowner, a pedestrian?
• Get anyone you can to call for help and possibly help you perform the rescue procedure.
• Is there an electrical conductor involved?
• Is the victim's rope safe to climb?
• Does the cause of the accident pose any immediate danger to you?

Use the safest, fastest rescue technique. Time can be of the essence, especially if the victim has received an electrical shock. Since every situation is different, knowing the safest, quickest way to perform an aerial rescue involves preparedness, the right equipment, practice and common sense, so the rescuer doesn't become a victim.

Personal Protective Equipment
Companies with successful policies that increase use of personal protective equipment (PPE) have demonstrated that PPE use can severely cut lost time and increase productivity. Workers shun personal protection equipment for many reasons, including discomfort, stress, inaccurate risk perception, machismo and aesthetics. None of these reasons is effectively countered by cajoling or disciplinary tactics.

Instead, encourage workers to wear PPE by stressing at least three things:
• Work on the “process,” not the individual worker.
• Open lines of communication with workers about PPE.
• Make workers at least partially responsible for deciding what personal safety equipment the company buys.

Studies have shown that workers not involved in PPE selection will be far more prone to noncompliance. For instance, if a worker feels stupid wearing Clark Kent-type safety goggles, then his supervisor is the only person who will ever see him wearing them. On the other hand, if he's allowed to choose a style that he feels suits him better, then he'll wear them far more often. That kind of personal preference is exactly why workers should be involved in the whole PPE process.

Safety education is an excellent “low-pressure” way to get workers to accept PPE. Courses that include hands-on techniques in hazard communication will increase peer pressure to work safely—even when the supervisor is not watching.

A checklist on individual safety compliance—possibly filled out anonymously by workers' peers—is also a good tool.

None of the most effective techniques for encouraging workers to wear PPE are quick fixes. Rather, they are modifications in personal habits and behaviors that can take time to be fully adopted by the worker.

Even while involving workers in all PPE decisions, the employer is responsible for maintaining an acceptable commitment to safety and health in the workplace.

Summary
If you need help setting up your safety program or have specific questions pertaining to safety, call the NAA or your regional or state arborist association, talk with your insurance agent, or seek out your peers for advice. May you have only good luck.

Peter Gerstenberger is Director of Safety & Education for the NAA, and Les Kozacek is Staff Writer for TCI.
Good Deeds Create Media Coverage

Those among you wrestling with ways to bring the media spotlight on your excellent tree care company might want to take a leaf out of Rod Irwin’s book. Irwin, who owns and operates ArborCare Tree Experts in Berks County, PA, recently was given a full-color full-page feature in the 75,000-circulation Reading (PA) Eagle-Times newspaper.

How did Irwin stage this media coup? Simple. He responded to a call to renovate—at no charge—a local historic white oak.

When asked why he among the many other tree care firms in the area answered the call, Irwin says simply, “I just thought it was important that this tree, which is part of the nation’s heritage, wasn’t left to die.”

Irwin’s good deed, which meant donating a couple days’ labor and some material, brought him the invaluable third-party endorsement and positive media visibility you can’t buy at any price.

Other tree care companies seeking wider visibility would do well to get involved with community projects. The resulting media coverage might not be as sensational as Irwin’s, but, a good name is a valuable commodity and creating and maintaining one should be factored into the cost of doing business.

Beat a Path

The 1996 ISA Annual Conference and Trade Show in Cleveland from Aug. 11-14 promises to be the largest ever. Attractions such as the Rock ‘n’ Roll Hall of Fame, Sea World and Cleveland Zoo make the 1996 conference a must.

The conference kicks off with a Tree Academy, a series of workshops featuring new roping and rigging equipment, techniques for removals, and cabling and bracing. Other topics include a workshop on Plant Health Care and two sessions on job estimating presented by Howard Eckel and sponsored by the NAA. Two skills training workshops will be held, as well as a field trip to review root problems.

The formal program starts Sunday with the Field Day at Wade Oval, where more than 30 manufacturers will demonstrate the latest in buckets, chippers, stump grinders and chain saws. The International Jambo-

ree features the world’s top tree climbers. The opening reception will be in the Rock ‘n’ Roll Hall of Fame and Museum.

Monday, Aug 12. marks the presentation of the International Awards and the opening of three days of educational sessions that will include moving trees, as well as pre- and post-transplant maintenance; perspectives on hazard trees and the legal duties and liabilities associated with hazard tree recommendations; sustainable urban forests; advanced pruning concepts; root-disorder diagnosis; innovative concepts in PHC; climbing techniques; vegetation conditions; outage studies; utility contractor perspectives on specifications and bidding processes; deregulation; education of the urban forestry workforce; urban grants; the Internet; atmospheric effects of trees; and a tour of The Davey Tree Expert Company.

Researchers and educators will listen to 15 separate papers on the latest research in the profession.

The Wednesday closing banquet will be held in the Cleveland Convention Center Music Hall. The 72nd Annual Conference and Trade Show offers a great opportunity for obtaining the latest information, networking with professionals from around the world, looking at the latest equipment and enjoying Cleveland.
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All too often, newspaper headlines announce a new case of employee theft. The article that followed the above headline concerned a small, well-respected firm in a neighboring town. It was started by one person in the mid-1970s. The owner serves on several business and civic boards and is active in the Chamber of Commerce and Rotary Club. He knows how to manage his company and has been quite successful. Yet, in less than three months, a bookkeeper was able to steal almost $15,000 from him before being exposed.

What happened? Somebody stole money. A bookkeeper or any other employee who has access to company funds, and who wants to embezzle, will always find a way. It happens to banks, charities, religious organizations and businesses large and small. It can happen to your business. There are so many ways to steal.

In one instance, an accounts payable clerk included the amounts for her own telephone and electric bills in the checks she wrote for the company’s payments. The owner had failed to check invoices before he signed checks. The scheme went on for years before an outside accountant happened to catch it during a routine year-end audit.

A payroll clerk put his non-working wife on the payroll. The company used a payroll service, and the owner allowed the clerk to use a signature stamp to expedite the weekly distribution of pay checks. The theft was not discovered until the owner noticed the name of his employee’s wife on a W-2 form early the following year.

A sub-contractor of a small company insisted on being paid in cash, so the company owner arranged with his bank to be able to make large cash withdrawals. It is never a good idea, under any circumstances, for a company to make cash payments—except small, incidental purchases. Even then, a receipt should always be obtained and kept on file.

This company, unfortunately, compounded its mistake by not setting up with the bank a secure method to identify and control these cash withdrawals. Predictably, a competent, long-time employee, and old friend, was able to write and cash checks, using the money to buy drugs. A substantial sum was stolen before the shortage was discovered.

The owner solved the problem in a unique way. He worked out a way that would keep the employee working and get the company’s money back. They agreed that a substantial sum was to be withheld from the employee’s paychecks until the stolen amount was repaid, with interest. In addition, the employee agreed to be subject to frequent, unscheduled drug tests, which he would pay for himself. So far, this agreement has been working well.

Another company was not so lucky. The owner had become quite concerned because she had not been receiving financial reports. They had been arriving later and later until, finally, they stopped altogether. The responsible employee, a nephew who had worked in the office for a long time, always had an explanation. There were delays in
receiving paperwork, or problems with the computer, or a variety of other, vaguely plausible excuses. The nephew finally began giving her sketchy, handwritten reports. She wasn’t pleased about the lack of detail in these reports but hesitated to question him.

One day, federal tax authorities walked in the door and said the company had not been remitting the withholding and Social Security taxes deducted from employees’ pay checks. How could that be? She, the owner, had signed all the forms and checks. The company had always deposited the taxes on or before the due date.

The facts finally came out. Her nephew had been stealing for well over a year. Almost all of the company’s money was gone. The tax payment checks had never been sent. Instead, he had been writing and cashing checks made out to himself for those tax amounts. This was just one of several ways he had been stealing from the company. He had also destroyed most of the company’s bank statements and checks, so there was little documentation available to prove what had actually happened.

The result was that the company went out of business. The owner had no choice but to sell her assets in order to pay the taxes, interest and penalties. When a company withholds payroll taxes or collects sales tax, or any other state and federal funds, it is acting as a trustee of government money. You commit a crime when your company does not remit these funds to state and federal tax collection agencies. They will not wait. It is their money.

This particular kind of employee embezzlement, in effect, causes the company to embezzle from the government. It is a vicious circle, with the employer ultimately responsible. All the warning signs had been there, but the owner failed to follow up on her suspicions. If you think something is wrong in your company, something probably is. Don’t wait. Call your accountant. Call your lawyer. Act carefully and quickly to protect yourself and your company.

Don’t assume that because employees are relatives or close friends they can automatically be trusted. Frequently, people start “borrowing” small amounts of cash that they intend to pay back. Unfortunately, this borrowing usually continues. It eventually snowballs beyond the point where they can ever hope to put the money back. They are in over their heads, and they keep right on stealing. Why not? It has been going on for a long time, they haven’t been caught and think they probably never will. Some never are.

Don’t let this happen to you! Develop a Cash Control System, so that your employees will not be tempted to steal. Continually monitor your system and the people who use it. Even a trusted person, your watchdog, can stop watching and start stealing.

There is an old, established organization in a neighboring state that receives a substantial volume of mail. A large percentage of the envelopes contain cash. After more than a decade, the managers determined that a long-term, faithful employee had been taking relatively small amounts of cash on a daily basis. It was impossible to establish the exact amount taken, but the estimate was in the tens of thousands of dollars.

In late spring, the organization hired a highly recommended, experienced professional with excellent credentials who was eager to help them solve their obvious problem. Unfortunately, before the summer was over, the organization discovered that their new employee, this professional whom they trusted and counted on, had stolen large quantities of the very cash he had been hired to secure.

What can you learn from all this? A company owner has to be continually vigilant about monitoring cash flow. A well planned, executed and supervised Cash Control System is essential to prevent employee theft. In a small company, it is the owner/manager who has to be the key person for the prevention of embezzlement and fraud.

Have your accountant or financial advisor work with you to review your present Cash Control System. Identify any weaknesses and set up procedures to prevent embezzlement. Do this for the benefit of your employees as well as yourself. Careless cash management invites theft. Don’t do that to the people who work for you.

The examples used in this article are based on a large number of incidents of embezzlement that I have either read or been told about. The incidents used to illustrate this article have been changed considerably and do not represent any one company or incident. I want to thank all the people who were willing to talk and write to me about their experiences.

Susan Haupt is senior vice president of the Haupt Tree Company in Sheffield, MA, and president of the National Arborist Association. She recently wrote A CASH CONTROL SYSTEM, an NAA Management Guide and one of a collection of guides available exclusively to NAA members. For more information, call 1-800-733-2622.

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Courtesy of The American Society of Mechanical Engineers
STIHL is keeping tight wraps on new products planned for introduction at this year’s Louisville Expo. Historically, the company has chosen the Expo to introduce some surprising innovations. The 020T chain saw was first shown at Louisville, as was last year’s big news maker—the 023C with its easy chain adjustment system. Industry insiders predict that at least one new saw will be unveiled this year. STIHL distributors recently attended the company’s annual sales meeting in Palm Springs, CA. While there, attendees were shown a number of new products, including the saw shown here. STIHL will have an indoor and an outdoor booth at the Expo.

New elastomeric hose protection shields that greatly extend hose life are now available from Parker Hannifin Corporation’s Hose Products Division. The flexible shield extends hose life by protecting it from the abrasion that commonly occurs when a hose rubs against another hose, metal or concrete. The shields can be installed without disconnecting and come with securing nylon cable ties. The shields, available in 4-inch, 6-inch and 8-inch lengths, can be trimmed to satisfy a variety of situations. They are extremely cost effective for isolating fluid lines from direct contact with other lines, components or structural members, and are highly resistant to gasoline, lubricants and most solvents. For a copy of product bulletin 4400-13.16, contact Parker’s Catalog Services Dept., 17325 Euclid Ave. HP-000, Cleveland, OH 44112, or call 1-800-C-PARKER.

A dedicated U-Handle makes the difference on Echo’s new SRM-3110, a powerful trimmer/brushcutter in the new SRM-3100 series, which offers commercial users all the power, features and versatility to complete even the toughest jobs with ease. And its increased power and torque allow for longer cutting sessions. Cranking out 11 percent more horsepower and 35 percent more torque than the old SRM-2501, Echo’s SRM-3110 features a commercial-duty 30.5cc dual-piston ring engine with Pro-Fire Electronic Ignition and purge pump, and an all-position diaphragm carburetor for fast, easy start-ups. The low-tone muffler allows for quiet operation, and the vibration-reducing engine mount, cushioned handles and nylon web shoulder harness reduce operator fatigue. Standard is an extra large capacity trimmer head, which holds 50 feet of .105 diameter Cross-Fire trimmer line. For more information, contact Echo Inc., 400 Oakwood Road, Lake Zurich, IL 60047, or call (708) 540-8400.
Hodges Manufacturing Co., now has patented self-propelled hydraulic and walk-behind stump routers. The 93 hydraulic model makes a wider swing, goes deeper and cuts higher than any other unit on the market in its class. The wheels move hydraulically from 34 inches for going through gates, to 52 inches for towing and operating on a hillside. It’s a towable unit that won’t tip over, and will still go through gates and tight places. The 96 hydraulic model has a 42-inch swing, will cut 12 inches deep, and will cut stumps 20 inches high. This unit is 35 inches wide and comes with 5.70 X 8 lug-grip tires. All the hydraulics are warranted for one year. The walk-behind units take stumps out 12 inches below ground. They have automatic brakes and patented push-down handles. Low maintenance and proven customer satisfaction make Hodges the best buy in the stump removal business. Information: Hodges Mfg. Co., Inc. Rt 4, Box 328B, Mountain Home, AR 72653. Phone: (800) 525-6312. Fax: 501-492-6801.

The Shindaiwa EB480 backpack blower sets a new industry standard for performance and noise-reduction—it runs at only 69dB—allowing for operation in noise-restricted areas. At only 5,000 rpm, the EB480 boasts a superior 415cfm air volume performance. Other specifications: 2-cycle engine with 2-ring piston and chrome cylinder for long life; displacement of 43.6cc; blowing speed of 180 mph; fuel tank capacity of 70.5oz; a dry weight without tubes of 19lbs. 13oz; a fuel shutoff for increased simplicity and reliability; and a Walbro carburetor. Its convenient tube design swivels vertically for smooth operation and easy storage. The upright handle on the tube gives excellent directional blowing control, and a durable padded harness adjusts easily for increased comfort and reduced operator fatigue. The Shindaiwa EB480 is warranted and comes with a seven-day, money-back guarantee. Established in 1981, Shindaiwa Inc., produces and supports high-quality, hand-held outdoor power equipment worldwide. Contact: Maria Campbell or Dave Dahlstrom, 503-692-3070.

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Tree Care Industry Exposition '96 (TCI EXPO '96) will pack the new Charlotte Convention Center, in Charlotte, NC, with more than 130 exhibitors and hundreds of attendees, Nov. 7, 8 and 9.

TCI Expo '96, is co-sponsored by the National Arborist Association and the International Society of Arboriculture, and offers free to the public a chance to see and try the most comprehensive range of cutting-edge tree care technology, products and services ever brought together under one roof.

Also offered at the nationally-acclaimed annual convention will be seminars and demonstrations of interest to the tree care professional and the general public.

Seminars include the Smart Manager Series and Expert Practitioner Series, which allow you to customize your educational experience to fit your needs. Other seminar speakers and topics will be announced soon.

Live demonstrations include climbing, rigging, aerial rescue and electrical hazards procedures.

Also offered at the convention are Pesticide Applicator and ISA Certified Arborist CEUs and, of course, great industry networking opportunities.

The new Charlotte Convention Center held its Grand Opening in February 1995. This brand new, state-of-the-art facility offers convenience, accessibility and an active uptown location. Numerous restaurants, galleries, historical sites and museums, shops and city tours are just a few of the adventures uptown Charlotte has to offer.

The host hotel for this year's TCI Expo '96 is the Westin Hotel Charlotte, formerly the Omni Charlotte. The hotel is located at 222 East Third Street, just across from the Convention Center. Room reservations can be made by calling 1-800-228-3000. Callers must identify themselves as a member of the TCI Expo '96 group.

For information about reserving a booth or attending TCI Expo '96, please contact: The National Arborist Association, P.O. Box 1094, Amherst, NH 03031-1094; 1-800-733-2622; Fax: 1-603-672-2613.

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The Vermeer Charitable Foundation, administered by family members of the Vermeer Manufacturing Company in Pella, recently made a grant of $10,000 to the National Arborist Foundation (NAF). The NAF’s mission is to be a vehicle for funding endeavors that will benefit the commercial arborist profession in its efforts to protect and enhance the global environment.

The Vermeer Charitable Foundation’s grant was recently matched dollar-for-dollar with newly raised funds at the NAA annual Winter Management Conference in San Diego, California. “These funds have been set aside as seed money for the creation of a special endowment fund. This money will provide for future scholarships to advance arboriculture and horticulture students’ educational endeavors,” said NAF Chairman Paul McFarland.

On behalf of Vermeer’s employees and their families, Lois Vermeer, Bob Vermeer and Mary Vermeer Andringa received a commemorative plaque from NAF representative Peter Gerstenberger. “Whether it is a project that focuses on the economic importance of shade trees, one that investigates the value and uses of recycled wood waste, or whether it is a scholarship to a deserving student in arboriculture, our focus and yours too, is on the preservation of the environment and our quality of life,” said Gerstenberger.

According to Bob Vermeer, “Vermeer has a great partnership with the tree care industry, and we’re pleased to be involved in its continued growth.”

“Both foundations share the vision of preserving our delicate balance in nature and our precious environment, including our natural resource of trees,” Gerstenberger said.

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Can't Imagine What Life Would be Like Without Shigo

It seems such a coincidence that as Mr. John Hailer writes, "More tree anatomy should be learned by arborists," that an article by Dr. Alex Shigo is in the same issue. Stating the obvious, if one is to learn more tree biology, then Dr. Shigo is the one to see (and listen to and read). He has dedicated an enormous part of his life and risked financial considerations (his books) to teach us the truth (his research) about trees.

Here's a scary thought: Imagine life without Alex Shigo. Imagine not having his lectures, books and tapes. I was fortunate enough to have attended his four-day work shop in Boone, NC, last fall, where all of his teachings came to life under my own microscope before my eyes. His teachings are devoid of esoteric dialogue and script. He is informative and educational but always also entertaining. As he goes off on tangents, philosophizing about virtually anything, you may feel a weekend hack on the court with Andre Agassi. He assures you, however, that he doesn't mind volleying with you and even enjoys it—as long as you both just love the game (trees), and he knows you're going to give it your best go.

David Shaw
Cincinnati, OH

Shigo a Disappointment

I am a fairly learned person with good reading skills. I have read and reread Shigo's articles in TCI and am disappointed. These articles are below average for your publication. I assume that Shigo didn't allow editing, and it shows. I found the articles to be rambling, and at times, pointless. I thought his defining words outside their usual uses as opposed to using more appropriate terminology and his promotion of his books were arrogant.

In short, you don't have to publish Shigo articles just because he wrote them.

PDykema101@aol.com

A Question for Shigo

I acted as your assistant at Clackamas Community College when you put on a session. I've always enjoyed your sessions, and have learned a lot about trees over the years from you and others. I should, by June, have finished my Master of Forest Biology at Oregon State, with Integrated Forest Protection my major, and Plant Pathology my minor.

I am writing to compliment you on the fairly comprehensive and easy-to-read article in the February issue. I do question one statement that you made, too, so I wanted to ask you about it.

You wrote that when trees are injured, they will always be infected. I agree, of course. Then you wrote, "There is no tree process that prevents infection." I have learned about induced resistance in plants, and it seems to me that the hypersensitive reaction that contains fungal colonization—for example, Ophiostoma species
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introduced by bark beetles—might easily qualify as prevention of infection or a constitutive defense, when preformed resin flows into a beetle wound. Perhaps my disagreement is purely with terminology, and you are separating the initial infection court from the extension of the infection into other tissues. In that case, one might say that the bark itself often prevents infection, though. I'd like to get your views on these questions.

Peter Torres
Lake Oswego, OR

**Shigo Responds**

I am always very pleased to know that a person reads my papers to the point of a question or questions. Here are some comments.

Yes, bark does prevent infections, but the bark is a protective feature and not a tree process. First, I should give my definition of infection. Infection is the act of establishing a transfer connect between two organisms of different species. When the transfer benefits both, then we have a synergistic association, as with the non-woody tree roots and fungi, to form an organ called a mycorrhizia. When the transfer benefits one to the disadvantage of the other, then we have pathogenesis. Many plant tissues respond to infections by starting hypersensitive reductions. Such reactions start only because an infection has taken place. Hypersensitive reactions, limit, or resist the spread of the infection. Once an organism begins to spread, then we have invasion. When the organism becomes established after invasion, then we have colonization. Once terms are defined, I believe clarity will follow. I hope to write on this in TCI soon!

Touch trees.

Alex Shigo
Durham, NH

**Certified Butchers**

Why is it that people don't practice what they preach? I am a 19-year-old climber who has been working for three years. For the past year, I have been traveling around the lower half of the United States working for various tree companies. In all my travels, I have only worked for two companies that stick to the book: Boulder Tree Co., and Tree Man, Inc.

I have seen many companies with Certification that advertise tree topping. Not only are they hurting themselves, they are butchering trees. They seem to believe that spiking up trees and then topping them is going to make them more money or save part of the tree. All the trees that I have seen moderately topped are dead. When the customer thinks you killed his tree, he probably won’t call you back to remove the rest. It seems to me that one can have a much better reputation (and conscience) by practicing proper tree work. If someone is sure they don’t want a big tree on their property, then cut it down and plant a tree that doesn’t get that big in its place. There really is no excuse for topping or spiking. Doing tree work is fun but doing good tree work is more fun and not as dangerous! Currently unemployed.

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The Occupational Safety and Health Administration (OSHA) is in the process of collecting injury and illness data from large tree care firms and 13 other industries. But the practice could be halted soon. The American Trucking Association (ATA), United Parcel Service (UPS) and Federal Express Corporation (FedEx) filed a joint lawsuit in U.S. District Court in Washington on March 20 against OSHA. The lawsuit demands OSHA withdraw the mandatory enforcement-targeting survey sent to 80,000 employers, including large tree care firms. The National Arborist Association supports ATA’s efforts.

The survey seeks information on injuries, illnesses and employee work hours. OSHA intends to use the information gained in the survey to target its enforcement activities on certain employer establishments, and for other agency purposes.

ATA argues that the OSHA survey violates both the Occupational Safety and Health Act of 1970 and the ban on “unreasonable searches” in the Fourth Amendment to the Constitution. Beginning in mid-1996, OSHA may target tree firms in its inspections, based on the number and type of injuries and illnesses reported.

Expressing his opposition and displeasure with OSHA’s tactics, ATA president and CEO Thomas J. Donohue stated: “It’s disappointing that we have to go to court to get our government to follow its own rules, but apparently that’s what it’s going to take to get OSHA to play fair. OSHA should stop trying to end-run the legally established process and withdraw this misleading enforcement-targeting survey.”

In early March, ATA requested that OSHA rescind its “Occupational Injury and Illness Report, 1995,” saying that the information demand violates the express requirement that a valid regulation precede its authorization.

On March 18, OSHA’s legal counsel refused ATA’s request and promised to take enforcement action against businesses that failed to respond to the survey. In its response, OSHA said that it believed it did possess adequate regulatory authority to conduct the survey, that it would not withdraw the survey, and that it would take certain follow-up enforcement actions in the event of noncompliance.

This prompted ATA, UPS and FedEx to file the lawsuit. The suit petitions “declaratory, injunctive and other relief” prohibiting OSHA from subjecting tens of thousands of businesses to an unauthorized demand for information that will be used to single out businesses for enforcement actions.”

Last summer, OSHA submitted the data collection proposal to the Office of Management and Budget (OMB) under the Paperwork Reduction Act. This eliminated the ability of the public to view the plan and the conditions of approval in the Federal Register. The Federal Register is the government’s system for making available to the public regulations and legal notices issued by Federal agencies. The Clinton administration approved the plan in October.

All firms with 11 or more employees are required to complete the OSHA 200 form to document injuries and illness in the workplace. Until the OMB approved the plan this fall, OSHA was not able to focus inspections on workplaces it deemed to be hazardous based on these reports.

In February 1996, tree firms with more than 60 employees began receiving the forms. ATA’s appeal argues that the survey is illegal under existing law. "OSHA may seek to compel the production of this information only through issuance of a search warrant or administrative subpoena as to existing documents, or other administrative demand.”

OSHA’s outreach puts employers in a very precarious position. Explained in the lawsuit: “Employers who respond to OSHA’s coercive demand must incur the cost and burdens of responding both to the survey and to any further OSHA investigative or enforcement actions that ensue.”

At the time of this printing, OSHA has yet to respond to the lawsuit. Look for further information in future issues.

Brian Barnard formerly was the government affairs specialist for the National Arborist Association. He now works for a commercial tree care business.
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As access to the Internet expands, we will feature some of the new Web Sites available to readers interested in learning more about the green industry.

This month, we highlight the Outdoor Power Equipment Institute's new home page on the World Wide Web.

The page, called “CyberLawn USA,” allows browsers to access information on mulching, composting and garden tilling. Tapes offer tips on safety and additional ways to operate equipment in a more earth-friendly manner, which you can listen to while riding the Internet's only virtual riding mower.

The Outdoor Power Equipment Institute is the trade association that represents manufacturers of powered lawn and garden maintenance products, components and attachment suppliers, as well as industry-related allied services. The Institute's address is http://opei.mow.org.

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Green Industry Associations

The American Horticultural Society
E-mail: garde@ahs.com
URL: http://email.com

American Society of Landscape Architects
E-mail: landnet@asla.org
URL: http://www.asla.org/asla/

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National Arborist Association
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Consulting Foresters Join CTLA

The Council of Tree & Landscape Appraisers and its sponsoring organizations are pleased to welcome the Association of Consulting Foresters of America, Inc. (ACF) to the Council. ACF was founded in 1948 to advance the professionalism, ethics and interests of professional foresters, whose primary work is consulting to the public. The ACF is the only national association for consulting foresters. Currently, more than 475 are members in 36 states and two Canadian provinces. The association has 22 chapters, which hold regular meetings and pursue regional issues. The ACF office is in the Washington area in order to pursue national issues and interact with other organizations involved in forest management.

Many ACF members appraise the value of forest trees and increasingly are becoming involved in appraising trees in the urban forest. The council, its sponsoring organizations and the ACF believe each have much to gain by working together. Ed and Bill Steigerwaldt of Tomahawk, WI, will represent the ACF on the council. The ACF’s address is: 5400 Grosvenor Lane, Suite 300, Bethesda, MD 20814-2198; phone (301) 530-6795; FAX (301) 530-5128.

New CTLA Administrator

As the new executive director of the American Society of Consulting Arborists (ASCA), Beth Palys also becomes the administrator of CTLA. Palys is a Certified Association Executive with more than 12 years of experience in association management. Prior to starting her own association management firm in 1994, she was the executive director of the Landscape Contractors Association, MD-DC-VA. She has maintained her relationship with the Landscape Contractors Association while expanding her business to include other trade associations and professional societies. Her offices are located in Gaithersburg, MD. CTLA’s new phone number is (301) 947-0487; FAX (301) 990-9771.

R.W. Harris, CTLA Chair

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The Care of Trees is a full-service tree care firm with offices throughout the metropolitan areas of Chicago, New York City and Washington, D.C. We are one of the most progressive, well-equipped companies in this industry and offer excellent benefits. Our ever expansive mode seems to constantly require personnel to fit into new positions that include production, plant health care and sales. We consider safety, quality, productivity and communication to be important attributes of proper tree care. If you believe the same, please send your resume to Kathy Hendricksen, The Care of Trees, 2371 S. Foster Ave., Wheeling, IL 60090. Phone: 708-394-4220.

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TREE CARE FOREMAN Cape Cod tree service and landscape firm seeks ambitious, qualified foreman for tree and ornamental shrub care. Must be skilled climber (2+ years experience) and possess general pest knowledge of the New England species. Horticulture degree preferred but not required. Send resume or call Jeffrey Hamilton Tree and Landscape, P.O. Box 566, Woods Hole, MA 02543. 508-540-5274.


RELOCATE TO FLORIDA and enjoy year-round employment, great weather and a terrific working environment. We are growing fast and need: foremen, climbers, sales people and all-round tree care professionals and helpers. Excellent compensation and benefits with opportunity for advancement. Drug-free workplace. Call 407-968-1045.

Experienced, self-motivated tree climbers wanted by suburban Boston, MA tree & landscape company. Arborist certification, CDL and pesticide license preferred but not required. Company-sponsored training and education programs, health insurance and paid holiday/vacation days available to career-minded, quality-oriented workers. Relocation assistance available. Fax your resume today 617-630-5273 or call Mon-Fri 7-4 p.m. 617-965-8820 for an application.

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NICE DOGGIE

Man's best friend can become a tree worker's worst enemy. The Centers for Disease Control and Prevention reports that Americans care for about 52 million dogs, and registered 4.5 million dog bites in 1994. Out of those millions of nips, 800,000 required medical treatment and 15 were fatal. And when man meets dog, increasingly, lawyer meets insurance company.

The industry paid out more than $1 billion in claims for dog bites in 1994, and one company, State Farm, notes that almost 30% of its bodily injury liability payments for homeowners policies covered dog bites. State Farm's average dog-bite claim tops $12,000.

GESUNDHEIT!

Spring has sprung, and with it billions of microscopic pollen spores. Finally, the emerging biotechnology industry may find a cure for one of the green industry's most annoying health concerns. Executives of Tanox Biosystems Inc. report that patients with hay fever who were treated with the company's new anti-allergy drug suffered reduced symptoms. The company believes the new drug, called CGP-51901, will be effective against most types of allergies, relieving hay fever, itching and asthma. Another biotech company, Genentech, is testing a similar drug. No word yet on when either drug will be available to the general public.

I HAVE IT RIGHT HERE

Does your messy desk signify a cluttered mind or creative productivity? Priority Management Systems, a marketing company for time-management systems, cautions that the state of your desk may reveal more about you than you wish. And it may affect how others, especially managers, regard you. If you often have trouble finding things and office mates won't put files on your desk for fear the files will be swallowed and lost forever, then perhaps you are disorganized.

So, is a clean desk the solution? Not necessarily. According to experts, excessive neatness could reflect rigidity and a need for control. Take you pick.
The new ANSI A300 Pruning Standard is THE tool to help us communicate more clearly with our customers, our employees, and each other. You'll want to incorporate this standard, created by arborists for arborists, into your daily activities.

And now, we can help you do that – quickly and easily – with the new video, Pruning Standards and Techniques for the 21st Century, produced jointly by the NAA and the ISA.

This comprehensive video is the ideal complement to ISA's Tree Pruning Guidelines. It will help you accelerate right through the learning curve with the plain language answers you need to make ANSI A300 work for you!

Call, fax, or mail your order today. The 21st Century of Tree Care is just around the bend.
Each spring and summer, arborists interact with birds and other wildlife more than at any other time of year. For example, tree services may be asked to prune trees in order to get rid of nesting birds causing sanitation problems. Tree removals might displace baby birds unable to fend for themselves. Existing brush piles can become dens for newborn rabbits and other critters.

When confronted with these potentially homeless creatures, the course of action may vary from one arborist to another. The “tree butcher” types may eliminate the nuisance by burial or simply disposing of the evidence through the chipper. In California, it is “unlawful to take, possess or needlessly destroy the nest or eggs of any bird.” Violations may result in serious fines and/or jail time. Contact your local authorities about the laws or ordinances governing wildlife in your area.

The arborist who takes his or her role as caretaker of the urban forest seriously will hopefully take a more environmentally appropriate approach. The client should be informed that no tree work will be performed until the baby birds have left the nest if the arborist is aware of the presence of nests when bidding. This may cause the loss of work, as someone is always willing to do the deed for monetary gain.

On any tree job during nesting season, ideally the climber will take a few moments to inspect for nests before beginning. If any occupied nests with eggs are found, will the company scratch the job until a later date? If there are hatchlings in the nest, will the brood be carefully removed and care provided to the baby birds until they can fend for themselves? The decisions made could affect the profit margin on the job. Where do you stand?

Unfortunately, a pre-work site inspection will not always uncover the presence of well-camouflaged nests or dens. Last spring, during just one week, our company came across three newborn bunnies in an old brush pile at one job and two baby doves in a nest inside a big pine at another. In both cases, the babies were carefully picked up along with their nesting material, put in an available container and promptly transported to a rescue group. We also gave the rescue group a donation to cover the cost of the special foods needed to maintain the baby critters until their release. Our three bunnies and two doves brought the total number of animals that the caretakers were rehabilitating to 41! (A major time and monetary commitment for these dedicated volunteers). We checked in with them later to find that all five were progressing well and then phoned our clients to let them know the rescues were successful. Don’t underestimate the public relations value for your company!

During the next few weeks, similar situations arose with other birds that were dealt with as appropriate to the circumstances. This spring, we have encountered baby Screech owls in a big palm tree and bunnies in a pine needle den that required rescue.

There are a few simple steps you can take to give young wild animals the best chance of making it. First, make sure they are not allowed to get too hot or cold. You can probably create a temporary “nest” from items available on your truck—a chipper helmet with clean mechanic’s rags or the box your lunch or sodas came in filled with soft vegetation will do nicely. Make sure you place them away from scavengers such as mockingbirds! Do not let them become dehydrated, but it is essential that water containers are very shallow or drowning may result. Next, put in a call to one of the wildlife groups to get instructions and arrange pick-up or drop-off.

While it may be tempting to relocate the nest and baby birds to another tree or branch, you should realize that the mother bird will probably abandon her young and you have sentenced them to become victims of predators or starvation. If you need to keep them overnight, it is a good idea to maintain some basic supplies to stabilize them. An old aquarium with a heating pad or lamp will work for most baby animals. Some can eat a mash of cat or dog food—but be sure to follow instructions from wildlife groups on food and water. You will soon find that their care requires a major commitment and specialized training. Rather than attempting to rear them yourself, they usually have a better chance of survival under experienced care. We advise keeping the numbers for your local wildlife groups handy in your trucks.

Please remember to make a donation when you turn over your animals. You can also call the group to find out when certain birds are expected to be done nesting to help schedule your jobs or prepare bids.

Remember, the trees you work in may be someone’s home. 

By Fran Lambert

Arborists & Wildlife
The Decision Is Yours

By Fran Lambert

Reprinted with permission from the March 1996 Professional Tree Care Association of San Diego newsletter. Fran Lambert is a WC-ISA Certified Arborist with Mariposa Tree Service, Solana Beach, CA.
10. **Pretty popular parks.** Cleveland is ringed with a fabulous 19,000-acre park district called the Emerald Necklace. Added bonus: your spouse or guest will visit the Cleveland Zoo's world-famous Rainforest.

9. **Get back to your roots.** In partnership with the city's Bicentennial Commission, Clean-Land, Ohio is planting 10,000 trees to celebrate Cleveland's 200th birthday.

8. **Visit the Forest City.** Cleveland has been named a Tree City U.S.A. 15 times by the National Arbor Day Foundation.

7. **Culture & cultural attractions for everybody.** Take a day trip to Sea World or Cedar Point (included in registration package for youth). Check out our very own Tree Climber's Jamboree on Sunday! Visit the Cleveland Botanical Garden, the Art, Natural History or Crawford Auto museums or Western Reserve Historical Society. And shop at The Avenue, Galleria, Old Arcade, West Side Market and Hale Farm and Village.

6. **Catch fever on our newest lawn.** Indians fever, that is. Our newest green space is growing in Jacobs Field, part of our famous $435 million Gateway sports and entertainment complex.

5. **Entertainment & nightlife together.** Your kids will light up at the Power Play video arcade in the "Flats" along the Cuyahoga River.

4. **Cool Science Center.** Youth spend a morning at our brand new $55 million Great Lakes Science Center, next to the Rock and Roll Hall of Fame.

3. **Great grain—not plain.** Sample some Great Lakes Brewing Company beer. Its porter, pale ale and dorr-munder blends took top honors at the 1994 world beer championships.

2. **Our best woods are woodwinds.** But don't forget the strings, brass and percussion. Time magazine calls the Cleveland Orchestra "The best band in the land."

1. **See Arboriculture and Cleveland rock.** And roll. Don't miss the ISA Cleveland opening reception at the Rock and Roll Hall of Fame and Museum, right on the shores of our revitalized Great Lake.
What is common sense is also the law. OSHA Standard 1910.331 states that employers must provide appropriate, documented training to any tree care employee working within 10 feet of an energized electrical conductor. And that is just the first of several regulations with which you may have to comply. ANSI Z133.1-1994 dictates very specific training and operations regulations. Plus, there’s a new OSHA standard, 1910.269 which takes effect January 31, 1995. It makes sense - both business sense and common sense - to meet these requirements. But how?

NAA Training Makes Sense.

Electrical Hazards Awareness Program offers you a simple, economical and practical way to give your employees the training they need. This program enables you to comply with OSHA 1910.331 and ANSI Z133.1-1994, and starts you on your way to compliance with OSHA 1910.269.

Like all NAA Training Materials, Electrical Hazards Awareness is easy to use and easy to apply. The program is self paced, to put your employees in control of meeting their own goals, and presented by you, to keep you in control of your business.

For more information about EHAP, or any NAA program, or to order, call our toll-free hotline, or send/fax the coupon below.

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- YES I’m ready to provide my personnel with training in Electrical Hazards Awareness.
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<table>
<thead>
<tr>
<th>Reader Service No. *</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ACRT, Inc</td>
<td>9</td>
</tr>
<tr>
<td>2. Albiez Insurance Agency, Inc</td>
<td>47</td>
</tr>
<tr>
<td>3. Altec Industries</td>
<td>37</td>
</tr>
<tr>
<td>4. American Arborist Supplies Inc.</td>
<td>17</td>
</tr>
<tr>
<td>5. American Arborist Supplies Inc.</td>
<td>18</td>
</tr>
<tr>
<td>7. Andy’s Truck Center, Inc.</td>
<td>44</td>
</tr>
<tr>
<td>8. ArborSystems, Inc.</td>
<td>49</td>
</tr>
<tr>
<td>9. Arbortech</td>
<td>31</td>
</tr>
<tr>
<td>10. Bandit Industries Inc.</td>
<td>21</td>
</tr>
<tr>
<td>11. Bartlett Manufacturing Company</td>
<td>34</td>
</tr>
<tr>
<td>12. Bartlett Tree Experts</td>
<td>44</td>
</tr>
<tr>
<td>13. Bishop Company</td>
<td>1</td>
</tr>
<tr>
<td>14. Border City Tool &amp; Manufacturing Co.</td>
<td>24</td>
</tr>
<tr>
<td>15. Brown Manufacturing Corporation</td>
<td>36</td>
</tr>
<tr>
<td>16. J.P. Carlton Company, Div. DAF, Inc.</td>
<td>35</td>
</tr>
<tr>
<td>17. CEI</td>
<td>42</td>
</tr>
<tr>
<td>18. CNA Insurance</td>
<td>11</td>
</tr>
<tr>
<td>19. Corporate Capital Leasing Group, Inc.</td>
<td>Inside Front Cover</td>
</tr>
<tr>
<td>20. Cummins Michigan, Inc.</td>
<td>20</td>
</tr>
<tr>
<td>21. Data Delivery Systems</td>
<td>43</td>
</tr>
<tr>
<td>22. DUECO - Dalum’s Utility Equipment Co.</td>
<td>27</td>
</tr>
<tr>
<td>23. Fanno Saw Works</td>
<td>48</td>
</tr>
<tr>
<td>24. Fred Marvin</td>
<td>23</td>
</tr>
<tr>
<td>25. G &amp; A Equipment, Inc.</td>
<td>42</td>
</tr>
<tr>
<td>26. GFX Corporation</td>
<td>32</td>
</tr>
<tr>
<td>27. Haimbaugh Enterprises Inc - Tree Feeder Co.</td>
<td>7</td>
</tr>
<tr>
<td>29. Husqvarna Forest &amp; Garden Company</td>
<td>19</td>
</tr>
<tr>
<td>30. ImlerMax Equipment Company, Inc.</td>
<td>18</td>
</tr>
<tr>
<td>31. International Society of Arboriculture</td>
<td>53</td>
</tr>
<tr>
<td>32. ITT Hartford</td>
<td>Inside Back Cover</td>
</tr>
<tr>
<td>33. Jameson Corporation</td>
<td>14</td>
</tr>
<tr>
<td>34. Lewis Utility Truck Sales</td>
<td>40</td>
</tr>
<tr>
<td>35. J.J. Maugt Company</td>
<td>41</td>
</tr>
<tr>
<td>36. Navistar International</td>
<td>3</td>
</tr>
<tr>
<td>37. National Arborist Association</td>
<td>25</td>
</tr>
<tr>
<td>38. National Arborist Association-EHAP Program</td>
<td>54</td>
</tr>
<tr>
<td>39. National Arborist Association-Pruning Program</td>
<td>51</td>
</tr>
<tr>
<td>40. Omni Leasing, Inc.</td>
<td>56</td>
</tr>
<tr>
<td>41. Opdyke, Inc.</td>
<td>39</td>
</tr>
<tr>
<td>42. Oral Ivy, Inc.</td>
<td>43</td>
</tr>
<tr>
<td>43. The Peavey Manufacturing Company</td>
<td>55</td>
</tr>
<tr>
<td>44. Poinsettia Software</td>
<td>45</td>
</tr>
<tr>
<td>45. Polecat Industries, Inc.</td>
<td>40</td>
</tr>
<tr>
<td>46. PoulanPro</td>
<td>5</td>
</tr>
<tr>
<td>47. Power Great Lakes Inc.</td>
<td>15</td>
</tr>
<tr>
<td>48. Professional Tree &amp; Turf Equipment</td>
<td>33</td>
</tr>
<tr>
<td>49. Rapco Industries, Inc.</td>
<td>46</td>
</tr>
<tr>
<td>50. Sagon Trucks &amp; Equipment</td>
<td>46</td>
</tr>
<tr>
<td>51. Schodorf Truck Body &amp; Equip. Company</td>
<td>33</td>
</tr>
<tr>
<td>52. Shindaiwa Inc.</td>
<td>10</td>
</tr>
<tr>
<td>53. Southco Industries, Inc.</td>
<td>22</td>
</tr>
<tr>
<td>54. TCI EXPO ’96</td>
<td>12</td>
</tr>
<tr>
<td>55. TimberKing, Inc.</td>
<td>48</td>
</tr>
<tr>
<td>56. Timberwolf Wood Processing Equipment</td>
<td>38</td>
</tr>
<tr>
<td>57. Western Tree &amp; Landscape Supply</td>
<td>34</td>
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**TREE CARE INDUSTRY - MAY 1996**

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As the title suggests, this story from the field is about getting even. Usually, pursuing revenge isn’t right, but in this situation I couldn’t resist.

This story began when my supervisor made an executive decision to spade out a zelkova and move it 50 feet to make room for a mini monoculture of lindens. Ordinarily, I have no strenuous objections to symmetry in landscaping. In most cases I favor enhancing design through balance. What irked me in this case was that the zelkova died as a result of the landscaping process.

If the goal in moving the zelkova was to add more trees, then planting two or three of the same or different species would have sufficed. However, symmetry at the expense of destroying a healthy, vigorously growing specimen is wrong.

Time and circumstances offered a chance for revenge. A year or so after the zelkova met its untimely demise, one of the lindens was vandalized and had to be replaced. As fate would have it, the supervisor who had designed this landscape had moved on to bigger and better opportunities. This left me, the arborist, to decide which tree should replace the vandalized linden. After 30 seconds of careful thought, I chose the replacement species: That neat little line now consists of linden, linden, red oak, and linden. How do you like them acorns?

Marty O’Brien is the chief forester for the Schaumburg Park District in Schaumburg, Illinois.

Revenge of the Landscape Architect
(Or, An Arborist’s Sense of Humor)

Do you have a story for From the Field? TCI will pay $100 for published articles. Submissions become the property of TCI and are subject to editing for grammar, style and length. Entries must include the name of a company and a contact person or they will not be considered for publication. Articles and photos must be received by the first day of the month for the following month’s issue.
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SAMSON CLIMBING LINES

Samson has developed the most complete line of climbing ropes in the industry. Lines designed to make this critical part of the job a little easier and more secure. Braided or 3-strand twisted, Samson climbing ropes excel at the worksite. True Blue is our premium all polyester 12-strand braided climbing rope in the distinctive blue color. E-Z See Orange, with its easily identified color pattern and Braided Tree-Master share their 16-strand braided construction of polyester over polypropylene strands with a control core of preshrunk nylon. Arbor-Plex combines polyester and polyolefin fibers in a 12-strand construction. Tree Master is our 4 stage 3-strand all Dacron twisted climbing line. All are designed for maximum wear life, flexibility, abrasion resistance and knot control.

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Samson cords handle everything from throwing lines to tie downs and pruner pole cord. This all nylon braided cord is available in sizes from 2mm to 8mm and a wide variety of high visibility colors.

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