



# ROUND TABLE

## Large Tree Relocation



I have been involved with large tree and palm relocation since the mid-1970s. I was always awed by the fact that a mature tree could be relocated and not only survive for just a few years but actually thrive for decades. The old timers in my field who had been moving trees for years taught me the basics.

My first experience moving large trees on my own was in 1989 when I planned and supervised the relocation of 15 very large Phoenix palms (*Phoenix reclinata*). It was a very interesting and stressful experience. The area where they were going to be planted had originally been the site of a very large stand of beach oaks (*Casuarina equisetifolia*) that I had cut down to stumps the previous month.

We had been seamlessly moving and replanting the Phoenix palms with a 50-ton crane until we took one of the largest palms off a flatbed trailer next to a prepared planting hole. As the palm was being lifted, one of the crane's outriggers broke through the underlying substrate. This area is mostly solid oolitic limestone that can go down at least 16 feet (5 meters). Usually this rock is very hard and stable—but the exact spot where the outrigger sat apparently was over a small cavity, and the combined weight of the crane and palm caused the rock to give way. It is fortunate that the palm had only been a few feet off the trailer so the weight was released as the palm hit the trailer when the side of the crane dropped. We were able to relocate the crane and re-rig and eventually the palm was planted. The trailer had two broken axles.

This experience taught me early on that there are many factors to consider when relocating trees. An intimate knowledge of the tree species, its root system, the substrate, proper rigging, root pruning and ultimately proper maintenance are some of the things to consider when moving mature trees. Some of the tropical trees that I have worked with always ended up moving with bare roots. The soil falls off before we can wrap the root ball, yet these trees consistently survive the relocation.

Since the first relocation of the Phoenix palms, which are growing well two decades later, I have successfully moved dozens of species of trees and palms. I have learned to be patient and to think the process through. I have also come to the realization that proper pre- and

The Santa Monica, California tree crew transplants a Canary Island date palm (*Phoenix canariensis*) in the 1950s using a "hydrocrane." Photo Courtesy of City of Santa Monica





A 60-ton, all-terrain crane was used to move this live oak (*Quercus virginiana*), in the first of two moves ten years ago in Miami. This tree and another similar sized live oak have doubled in trunk width since relocation. Photo by Jeff Shimonski

post-relocation care is as critical as the physical process of relocating the tree.

The last large-scale tree relocation project I worked on involved moving over 100 mature trees and palms—and many of them twice. This was done for the 18-acre (7.3 ha) site development of Parrot Jungle Island (now Jungle Island), a privately owned zoological theme park in Miami. The challenge was to create a mature canopy as rapidly as possible. Before development, there were 150 extant mature trees and palms.

The original development plan called for demolition of all trees because it was seen as being cost effective. I convinced the owners that mature trees could be relocated successfully and they allowed me to proceed. After selecting out the trees in poor condition (or those considered invasive), we had 80 trees remaining. These were all moved offsite to a holding area and

brought back onsite when construction allowed. This process took almost two years. There were also about 30 other mature trees and palms brought in from other sites or nurseries.

Now, more than 10 years later, all trees have thrived. Many have more than doubled their DBH. This project was done without the use of any commercial soil additives, fungicides, or commercial fertilizers. This sustainable project has been a success both ecologically and financially with no loss of trees due to issues associated with their relocation. Three of the largest trees were struck by lightning and are certain to have a limited life span. Several trees succumbed to windthrow during various hurricanes—but all were replanted and seem to be doing well.

—Jeff Shimonski, Director of Horticulture, Jungle Island, Miami, Florida



An 80-ton crane was needed to move this bo tree (*Ficus religiosa*) in Jungle Island in Miami, Florida. The canopy had to be “topped” because the staff was unable to pass the three cables from the spreader bar through the dense foliage. The compression damage from the tree straps initiated aerial roots which were then guided down telephone poles to aid in supporting the tree in high winds. Photo by Jeff Shimonski



**My first experience** in moving a large tree occurred during the fall of 1983 through the summer of 1985 in Concord, California. Bank of America constructed a large banking campus in downtown Concord, necessitating the leveling of several blocks of old residential homes. Growing in the footprint of a new office tower was one old olive tree (*Olea europaea*), reportedly planted in the 1860s, that the Concord City Council deemed a heritage tree in need of preservation.

Valley Crest Tree Company of Calabasas, California was contracted to move the tree. My job as a field tech for Forest-Ag Corporation of Lafayette was to provide an independent set of eyes during the digging and boxing process, count cut roots, monitor soil moisture conditions and provide supplemental watering, monitor the move and planting process, and to provide monitoring and care during the construction process.

The olive tree trunk was approximately 42 inches (107 cm) DBH. The canopy was approximately 35 feet (10.7 m) high and approximately 40 feet (12.2 m) wide. Prior to boxing, the olive was severely topped, reducing the canopy size by half. A rootball 21 feet (6.4 m) in diameter and 5 feet deep (1.5 m) weighing approximately 121 tons (110 metric tons) was boxed in heavy timber. Two 250-ton (227 metric tons) cranes were used to load and unload the box. The tree was moved approximately 250 feet (76.2 m). The tree is alive and well today.

I provided post-move maintenance until the site was completed in 1985. Typical maintenance included weekly deep watering, periodic fertilization, scouting for insects and diseases, and keeping the sub-contractors away from the tree (a six-foot chain link fence was not enough).

If you Google Earth the location, the tree is located in a large bosque of trees near the intersection of Park and Grant Streets in Concord. Check it out.

How much is a tree worth, and is it worth it? That is in the eye of the person with the check book. In this case, the olive tree was historically significant to the community. And the check book was Bank of America's, of course!

—Chris Boza, Community Forester, Hayden, Idaho

**When something is** in the way, you move it. When it's a large, valuable tree that provides numerous benefits to the community, a "move" is much more than just picking it up and placing it in its new location. To preserve the numerous benefits trees provide to a community and its residents, something the National Tree Benefits Calculator ([www.treebenefits.com/calculator](http://www.treebenefits.com/calculator)) can help determine, one must plan



Winter transplanting in Minneapolis • Photo by Ralph Sievert

carefully—before, during, and after the big move—to ensure survival.

In 2004, The Davey Tree Expert Company conducted one of its largest tree moving operations in Auburndale, Florida. The trees were in the heart of upcoming new construction and needed to be relocated. Davey's crews moved two massive live oaks (*Quercus virginiana*)—one that weighed 353 tons (320 metric tons) and one that weighed 326 tons (295.7 metric tons). The larger tree measured 55 inches (140 cm) in diameter with a 42-foot (12.8 m) rootball, and the smaller tree measured 42 inches (107 cm) in diameter with a 35-foot (10.7 m) rootball. The entire move, including getting to and from

the site, took six weeks and ten semi-trailers for moving equipment and materials.

Planting holes were dug by hand to a depth of 3 feet (.91 m). Then, Davey crews cut the roots with hand-saws, excavated the soil, and prepared the rootballs with burlap and wire. After encapsulating the rootballs, Davey crews excavated boring pits adjacent to the trees and inserted pipes to create wall-to-wall lifting platforms under the rootballs. I-beams were inserted beneath the pipes to aid in the lifting of the trees, and specially designed trailers were built onsite and used to transport the trees to their new locations. The pipes, 7 inches (17.8 cm) thick and inserted under the larger

tree, were 44 feet (13.4 m) long; under the smaller tree, they were 38 feet (11.6 m) long. Each tree was lifted onto the trailer and then transported 300 yards (274 m) to new homes near a wetland. The smaller tree was growing next to utility lines, so Davey crews also had to work with the local power company, which put in insulation around the lines before work began.

While the job itself employed textbook techniques for successful tree moves, proper tree care before and after each transplant made the most difference. When transplanting a tree, its survival rate increases or decreases in proportion with how well it's taken care of. When a tree is moved, it naturally goes into shock and needs intensive care to ensure it emerges from this transplant shock unscathed. The aftercare of a transplanted tree will vary depending on the size and species.

Sufficient advance watering, which could be a few days or as long as a month or more before the move, proper root pruning in advance (sometimes up to one year in advance, depending on tree size and job parameters), and proper rootball sizing will help to ensure a smooth adaptation to the tree's new environment. Paying attention to soil types in both the original location and the new location, and making any changes necessary to replicate the tree's familiar environment, can aid survival as well.

Irrigation after the move is essential once the tree is planted in its final location, and the addition of a drainage system and site tubes to monitor the subsurface water is also recommended. Lastly, moving the tree at the right time of year for the species and location—usually early spring or fall—is also important, particularly in an urban environment. In cities, trees are usually susceptible to more heat and traffic, so extra measures focused on proper care can ensure trees best adapt to their new homes.

—Dan Howse, Landscape Architect, Davey Resource Group, Land Development Solutions

**I was involved** with moving three large trees when I was city forester for McMinnville, Tennessee. The first time was when a maple needed to be moved before a new access road was paved in a City park. It was about 8 inches (20 cm) DBH and 16 feet (4.9 m) tall. There was tons of space in all directions, but the park director wanted the road right where the tree was, so I had to go into action. I had only two days.

The tree was being transplanted from compacted soil to another site with compacted soil. I wanted to break up the compaction (silty clay with a lot of gravel), but I couldn't get the money to rent an air excavation tool. We used a backhoe to dig a large square around the maple about 3 feet (.91 m) down and about 4 feet (1.2 m) to each side of the trunk. The equipment operators



scraped a ramp so the backhoe could drive down to the dug-out depth, then they switched the bucket to pallet forks. They used the pallet forks to undercut the tree and break the rootball free; it ended up being about 2 feet (.61 m) tall. I used large fabric binder straps to attach the rootball to the backhoe, which then backed out of the hole and moved it to the prepared hole.

The receiving hole was about 12 feet (3.7 m) across to allow for the backhoe movement which also helped with breaking up nearby compaction. I used no amendments but mulched the area heavily and used water bags for about three months, watering deeply every one to two weeks. I did no staking or support of any kind. The tree recovered beautifully and grew better than before. Growth rates and diameter increases were obvious to anyone. I gained some respect from the local nursery people and public works people when the tree survived and did well.

The next occasion was to save two Chinese chestnut (*Castanea mollissima*) trees in the Main Street City Park. They were low branched with poor structure and produced so many painfully spiny seeds that we had to visit the trees every morning and rake them up before the kids got there. (The trees had been donated by some famous local nursery guy so they “had” to be saved.)

These were about 12 inches (30.5 cm) caliper, with a canopy 16 foot (4.9 m) wide. We tried the same methods as for the maple, but this soil was almost entirely clay and weighed A LOT. Because the soil was so heavy, and with no other options due to limited funding and timing of the surrounding project, we had to settle for smaller rootballs than we wanted. However, the receiving site was excellent. We staked with 4x4 treated lumber and seatbelt type material.

These Chinese chestnuts did not have such an easy move (lots of rootball shaking) and had dieback on many branches the first year. The last time I looked at them before I moved they had sparse canopies but were alive and hanging on. Overall this was not worth the time and effort. The trees were undesirable in their original spot and unseen in their receiving spot.

—Nick Kuhn, Community Forestry and Communications, Missouri Department of Conservation

**S**urrey, British Columbia, is a rapidly growing City of 475,000. As the City grows, lands are cleared for new homes. A Private Property Tree Protection Bylaw is in place to balance the removal of trees to accommodate development with the need to conserve our urban forest. This is done through protecting trees where appropriate, replanting trees as necessary, and even moving special trees.

A recent case involved moving a willow tree (*Salix baby-*

*lonica*) that has a DBH of 60 cm (23 in); a single branch measured 40 cm (16 in) DBH. Based on the location of the branch, the tree has an effective DBH of 1 meter (39 in). This fifty-year-old tree had many broken branches and looked as if it had never been pruned. The tree was to be relocated from a private development site to a City Off-Leash Dog Park about 300 meters (328 yd) away. It was fortunate that there were no overhead lines involved.

The decision to move the tree was made quite quickly in early April, so there was no time for root pruning, which would have delayed the relocation for a year. Based on the very short timeline for the move, all aspects of the project, such as obtaining permission from the land owners, gaining agreement from the Parks Division, lining up the tree moving company, traffic control, and corrective tree pruning had to be organized rapidly.

Two weeks before the move, the tree was pruned of dead, diseased, and dying branches. Next, the crown was thinned to allow greater light penetration of the canopy; this pruning work also provided the necessary holes for the crane’s hoisting lines. An additional benefit of the pruning was the creation of symmetry and balance within the tree.

Approximately one week before the move, the root ball was dug. This was done by way of a small excavator and hand work. All roots that had to be trimmed were carefully cut through and covered with wetted burlap.

On the day of the move, a tree climber helped to set up the hoisting lines while the ground crew put a wooden pad in place with beams to attach the lines to. While this work was taking place, a 100-ton crane was positioned. A small road built into the pasture where the tree was located allowed the crane to be positioned as close as possible to the tree.

When the lines were attached and made taut, the crane’s scale indicated that the tree weighed 23 tons. The initial lift to break the tree free of the ground was approximately 25 tons. The tree was then placed on a wooden pad and the root ball was secured, providing stability for the trip to its new location aboard a very large flatbed truck.

Once secured, the truck moved the short distance down the road to the tree’s new location. The hole for the tree had been pre-dug and had concrete ballast buried in the soil a few meters out from the tree. The tree was lifted from the flat bed, lowered into the hole, and backfilled with high quality soil. Guy wires were tied between the concrete and the tree and ... voilà! The tree was in its new home. When one of the guy wires snapped, panic set in for a few moments until a new tie could be affixed. This left the tree stable, and the move was considered to be officially complete.



Setting the crane cables (above) and setting up the base for the truck ride (below) for the willow tree (*Salix babylonica*) move in Surrey, British Columbia. Photos by Steve Whitton



The soil around the tree was graded and suitable high quality bark mulch was applied out as far as the tree’s drip-line. The disturbed area beyond the drip-line was hydro-seeded for aesthetic purposes. Following installation, the tree was treated with a foliar spray consisting of a mixture of humic acid, kelp-based fertilizer, a metabolism stabilizer, and a non-ionic sticker to keep the mixture on the leaves. The tree continues to be watered generously a minimum of once per week, receiving more water during hot spells.

I have high hopes for the long-term survival of this specimen, as it has been my experience that willows are a very durable tree that will withstand considerable amounts of disturbance. Given that Surrey is part of the Pacific Northwest rain forest, where pretty much everything will grow in our temperate Zone 8b climate, we fully expect this tree to provide shade for the community’s dogs for years to come.

—Steve Whitton, Manager, Trees and Landscapes, Building Division, Surrey, British Columbia

**I**n 1999 the City of Eagan, Minnesota purchased 120 acres (48.6 ha) of land in the city for the development of a new community center and park. The existing site included a 15-acre (6 ha) mature bur oak (*Quercus macrocarpa*) woodland, natural pond with creek, and open, rolling grassland. There, 36 large bur oak trees, 20 to 36 inches (51 to 94 cm) in diameter, were in the path of a proposed entrance road. One in particular, an open-grown bur oak 27 inch (69 cm) in diameter, was a cherished specimen.

Moving the proposed road to a new location, and thereby avoiding tree removal, was not possible. However, through working cooperatively with staff from Eagan’s Engineering Department, the new road alignment (intersection angle and road curvature) was shifted to preserve many of the trees that had been jeopardized. Unfortunately, the 27 inch specimen bur oak tree was still in the path of the proposed road and was scheduled to be removed.

With that in mind, I began researching the possibility of transplanting. Was the tree healthy enough to withstand a major transplant? Was it physically possible to move such a large tree? Who could perform such a project, how would this project be funded, and what follow-up management would be required to ensure tree survival? As it turned out all these questions had positive answers, leading to the initiation of a highly successful and unique (to our area) Grandfather Tree preservation project.

To determine the health of the Grandfather Tree (GFT), a local private company, Rainbow Treecare, volunteered to conduct starch tests. That test had positive results,





indicating that the tree was healthy and was therefore a potential candidate for transplanting. The project was on.

National Shade LLC from Houston, Texas was contracted to move the tree. Because construction dates for the new community center and entrance road were already set, the tree move needed to take place on specific dates. Fortunately these dates coincided with an early spring that year, allowing the tree to be moved following full leaf-out but before the hot summer weather started.

From the start of this project, we wanted it to be a community-based endeavor, not one that was funded through City budget. Through a chance meeting between Eagan Director of Parks and Recreation Ken Vraa and Kay Brown of the Eagan Foundation, the GFT project found an enthusiastic sponsor who would coordinate fundraising efforts. In a relatively short time, the Eagan Foundation successfully raised the \$55,000 needed to cover the cost of the transplant. Donations were received from a wide variety of sources including local businesses, private citizens, and even the 2001 graduating class of Eagan High school. Additional project savings were realized through creative partnerships with cooperators such as donated housing arrangements for National Shade crews, donated labor and use of equipment from local contractors, and lunches provided by a local civic-minded group.

A 27-inch-DBH (69 cm) bur oak (*Quercus macrocarpa*) in Eagan Minnesota, known as the Grandfather Tree, is balled and moved to its new site. The slow move to its new site 800 yards (732 m) away took about four hours.



The actual tree move began on May 31, 2001 as the five-person National Shade crew hand dug the perimeter of the 30-foot (9.1 m) root ball to a depth of 4 feet (1.2 m). Following the hand digging, an excavator was used to move soil away. The entire root ball was then wrapped with alternating layers of burlap and wire fencing. When the root ball was secure, an entrance ramp was created. Steel pipes, 40 feet (12.2 m) long x 8 inches (20 cm) in diameter, were then set under the root ball with a hammer hoe to create a lifting platform. The platform and tree were lifted with four hydraulic jacks and set onto a specially constructed steel trailer; all the while, the tree remained in an upright position.

Together, the tree and lifting platform weighed 250 tons (227 metric tons). With the gantry system complete, the tree was ready to begin its move. This entire unit, steered with a tracked exactor and pushed with two D7 Caterpillars, moved slowly for 800 yards (732 m) across a paved parking lot to its new home near the front of the proposed community center. Eight days later, on June 8, 2001, the GFT move was completed as the bur oak was set into a prominent location in front of the new community center.

The GFT has just celebrated its 10th anniversary in its new location. The tree did suffer some minor die-



This new site was carefully engineered so the tree would set with the same north-south direction, the same tilt, and the same ground slope in the immediate area. Also, topsoil was trucked over from the original spot.



back but today has good twig and leaf growth over the entire crown. City staff, with assistance from Rainbow Treecare, continues to perform management activities such as irrigation when needed (although we're doing less and less artificial irrigation as the years go by), an application of a tree growth regulator in 2003, a couple of insecticide treatments for jumping oak gall, and an application of prescription compost in 2010.

A memorial bench has been added under the GFT's crown as has an informational sign telling visitors about the history of this unique tree preservation project.

—Gregg Hove, Supervisor of Forestry, City of Eagan, Minnesota

**T**he City of Santa Monica has a long history of relocating trees. Historical photos show City crews of the 1950s relocating Canary Island date palms (*Phoenix canariensis*) and large yucca trees (*Yucca brevifolia*) with the use of "hydrocranes." When I first started working for the City in 1997, tree relocation was not widely practiced. Since my first tree relocation project as community forester in 1997, my staff and I have overseen the relocation of over 330 trees throughout the City. The practice has become so routine that even the most vocal opponents to moving trees would rather take that option over removal.

The City of Santa Monica's design standards now require mandatory tree preservation as part of all public improvement projects. In cases where trees are impacted by the project and cannot or should not remain in existing locations, the City considers relocation as the first option. This policy on tree relocation is intended for the benefit of public projects only and does not allow the relocation of public trees to benefit a private development project. However, there are certain cases in which public trees have been relocated for a private development project because the City benefits as well. Public concerns in Santa Monica are always considered when proposing to relocate a City tree, and the public is kept informed of all tree relocations through an extensive public outreach process.

In cases when trees are impacted by a public improvement project, there are several considerations to be made before a relocation plan can even be proposed. The tree's appraised value is compared to the cost of its relocation and establishment. If the cost to relocate exceeds its appraised value, the tree isn't relocated. Since some species will tolerate relocation better than others, the tree report also addresses the species and health of the tree and its probability of surviving relocation. The tree report discusses what the impact will be on the new site and verifies that the tree will actually fit into its new location and not outgrow the site or cause infrastructure conflicts.

When considering the logistics of the move, a detailed check is made of underground utilities and other elements of the City's infrastructure. This has a major impact on how the tree can be extracted from its current site with the proper sized rootball. Even when the site has been cleared for excavation, crews are required to hand dig potholes around the tree to make sure the area is clear of any underground lines.

Santa Monica is quite urbanized, with multistoried buildings, overhead power lines, bridges, overpasses, street lights, and other street trees. As a result, the route to the tree's new location is sometimes very convoluted. Street use permits must be obtained through the Public Works and Transportation Departments; however the fees are waived for City projects. Once the tree arrives at its new site, positioning of the crane and other equipment is critical because of infrastructure conflicts or impacts on traffic. Often the work has to be done at night because of the impact it will have on traffic.

All tree relocation projects must have a three-year maintenance budget. Regular irrigation and continual monitoring by staff arborists over a three-year period ensures establishment and helps to catch any problems with the tree's health early. Successful tree relocation ensures the continuation of a tree relocation program. After all, the more trees we relocate, the better we get at it; the better we get at it, the more trees will get moved instead of removed.

—Walt Warriner, Community Forest & Public Landscape Superintendent, Santa Monica, California

**D**uring my recent tenure with the University of Texas at Austin, I was involved with relocating 38 large shade trees throughout the main campus grounds. The trees were predominantly southern live oak (*Quercus virginiana*), ranged in size from 15 to 28 inches (38 to 71 cm) DBH, and averaged 80 years old. The weight of these trees on the crane ranged from 115,000 to 148,000 lbs (52 to 67 metric tons).

A little background into the campus: When the tree moving campaign first started seven years ago, the University was in the middle of 1.2-billion-dollar capital improvement process and construction was occurring at an alarming rate. Lawn areas and parking lots were replaced with buildings, and old buildings were being razed in lieu of newer, state-of-the-art facilities. It was estimated that the amount of classroom/laboratory/office space was increased by 20 percent during a five-year span of activity.

UT Austin is very much an urban campus, a veritable city of its own. There are 50,000 students, 22,000 faculty and staff, and 4817 trees tucked neatly inside 435 acres. Fortunately, the trees were considered valuable assets by faculty, staff, and students alike. The campus



Santa Monica Community Forest & Public Landscape Superintendent Walt Warriner makes transplanting look easy. Photo Courtesy of City of Santa Monica

administration had a keen sense of awareness and shared these ideals and ensured every alternative was considered before a tree had to be removed. Ultimately, the best candidates were relocated.

I will admit the cost was considerable. Was this truly tree preservation? Everyone agrees a lot of young trees could have been purchased and planted for those dollars. This is typically the number one argument against tree moves. However, what the administration was doing was making a statement that no matter what the project, regardless of the funding source and regardless of the politics, they would protect the trees at any cost. That kind of support sends a clear message to all parties involved that we take our tree preservation very seriously. I often joked that folks were not willing to stick a shovel in the ground without calling our depart-

ment first; when it comes to the urban forestry industry, we all know you cannot put a dollar value on that kind of compliance.

All of our tree moves were performed by Environmental Design, a company that has performed these services all over the country. My department's involvement included all of the pre- and post-care including identifying construction threats, determining preservation candidates, and getting the trees in the best shape possible in order to provide a baseline for tree condition after the move. To ensure post-move survival in central Texas, we followed the three Ws: water, water, and water. An adequate water supply would ultimately ensure a 100 percent survival rate.

Very often these trees were relocated into or across active construction projects. Continual monitoring was



essential. Although general contractors realize the significance of tree protection during construction, the message gets lost in translation when hundreds of subcontractors arrive on site. Preservation zones have to be constantly defended. Also, on construction sites water is a valuable commodity. It is critical to have a dedicated tamper-resistant, tree-specific water supply and an irrigation regime. This cannot be left up to a contractor's whim.

We got a little creative with our staging timelines. In one situation we pulled the trees from a building and kept them in a temporary holding yard while the building was razed and a new one was built. When the new building was completed, the trees were set back into place. The paint in the building was barely dry, yet it had 80-year-old trees adorning its entrances. In another instance trees slated to be removed from a football stadium expansion project were stored offsite for two years while another project across campus was completed and awaited their arrival.

I will never forget the first tree I ever saw leave the ground. I was immediately overwhelmed with a sense of vertigo and a deep appreciation for what we were accomplishing. Did my education deceive me? Trees are not supposed to fly. Establishing the new GPS coordinates in our tree inventory was also surreal. Ultimately whether you consider these acts preservation or not, relocating these trees over the years validated our efforts as an organization that truly cared for its trees and would go to any means to preserve them.

—Larry Maginnis, Urban Forestry Supervisor, City of Portland, Oregon-Parks and Recreation

**A**s with any task performed while managing urban trees at the municipal level, in Minneapolis, Minnesota, politics plays a role in the transplanting of large trees. Besides our regular planting of 5,500 new trees each year, the Minneapolis Park and Recreation Board's Forestry Division budgets for the transplanting of large trees using a rented tree spade. For us the upper size limit for a large tree is 6 to 8 inches (15 to 20 cm) DBH. We have determined that the cost and success of moving anything larger than this is not worthwhile.

Transplanting trees using a tree spade typically fits one of three categories. The first and most preferred are the planned transplants. Second are the surprise or "command performance" transplants. Lastly, there are the enforced transplants which can be either planned or a surprise.

Minneapolis residents value their trees. When park improvements are made or when development threatens trees in the public rights-of-way,



A 15-inch DBH (38 cm) southern live oak (*Quercus virginiana*) gets relocated to the grounds of the Blanton Museum of Art at the University of Texas at Austin in August 2005. Photo by Larry Maginnis

relocating existing trees is a standard procedure. Removing a living tree that could be transplanted would be a politically unsavory undertaking. Planning ahead for the relocation of large trees means that the project budget, not the Forestry Division budget, will pay for the move. It also provides plenty of time to scout out underground utilities that may be in the area.

Even though planned moves are ideal, there are times that they too can present challenges. We have a neighborhood organization called the Concerned Citizens of Marshall Terrace (CCMT) that has operated a tree nursery for decades. As the trees grow, the CCMT leadership makes them available to us for transplanting. Despite many attempts at developing a plan for the nursery, the CCMT nursery volunteers cannot stop themselves from haphazardly adding new trees to the nursery.

It's not that there is anything wrong with the tree types (primarily buckeyes, walnuts, oaks, and pines). It's their proximity to one another in the nursery that makes them tricky to extract. Rather than rile the local do-gooders, we work hard to accommodate their donations. The good news is that today there are over 1000 trees from the CCMT nursery that have been transplanted into Minneapolis parks.

Surprise transplants are our least favorite because of the disruption they cause to our regularly scheduled work. These transplants almost always have a political connection. For example, during a park improvement project there were seven Kentucky coffeetrees (*Gymnocladus dioica*) that were thought to be beyond the footprint of the work zone. As the work commenced, it was discovered that all seven of the trees needed to either be relocated or removed.

We use these situations to our advantage by rescuing the trees when no one else can. Using a rented tree spade, we quickly moved the trees to another park. After the work is completed, we make sure that our elected Board of Commissioners knows how we went out of our way to make this happen.

Finally, there are the enforced transplants. These are the situations where we flex our municipal muscle to save trees that are worth the effort rather than see them be removed. This usually takes place when an outside agency, such as our Metropolitan Council or County, is overseeing a project that happens to threaten public trees.

Our biggest success with an enforced transplant took place when our local County informed us about a dozen trees that needed to be removed to accommodate the replacement of a sewer line. What they did not know was that the trees in jeopardy were planted during an Arbor Day celebration that



occurred about five years earlier. Because neighborhood volunteers helped plant over 100 trees at that event, it would have been politically damaging for our organization to allow twelve of the trees to be removed.

In order for the County to receive the permit they needed to complete the project, the Forestry Division required that the trees be transplanted at County expense. Our District Forester worked with them to locate a new home for the trees. One challenge was that this transplanting took place in December when the temperature was about 20 degrees F (-6.6 C). Today the trees are doing fine and the neighborhood knows that they were moved, not removed.

It's always our preference to plant new trees as typical nursery stock and watch them grow in their original location. However, transplanting trees, rather than removing them, garners significant public support. Since public support translates into budget support, in Minneapolis we consider transplanting large trees (up to our stated size limit) to be an investment that more than pays for itself.

—Ralph Sievert, Director of Forestry, Minneapolis Park and Recreation Board 🌿



A 24-inch DBH (61 cm) southern live oak gets transplanted to the grounds of the Executive Education and Conference Center at the University of Texas at Austin in April 2008. Photo by Jim Lincoln