CONSTRUCTION RELATED TREE ISSUES

Saving trees is always a good idea….

however, if it is not done correctly, it is often better to clear the lot and re-landscape. **Most every species and size of tree can be successfully transplanted**.

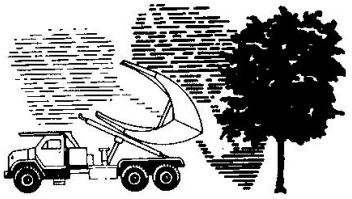
Modern Tree Transplanting machinery and advanced handling techniques make it possible to successfully relocate trees the year-round. Small caliper Native Trees and large woody Shrubs up to 2-3" in diameter or 10-12' tall can be relocated in mass using compact, high flotation carriers. Larger caliper hardwoods, conifers and palms are efficiently relocated with truck and loader-mounted carriers that are configured for the prevailing terrain and soil conditions. Mechanized Tree Transplanting Equipment can successfully relocate 20" diameter hardwood trees in most climatic ranges. Considerably larger trees are frequently transplanted using specialized excavation and hoisting techniques coupled with sound tree care practices.

Tree care consists of: health assessment; site factors such as soil, heat, pollution, usage plus; irrigation, drainage, fertilization, mulching and staking (in some cases); and, insect/disease suppression. If trees cannot be relocated to their final position immediately, a tree bank (staging/holding area) can be cost-effectively created to facilitate intensive interim tree management (ICU). Once construction is complete, trees are removed from the holding to be planted in a manner suiting the design theme of the structure or facility. Partial shade helps reduce wilting due to evapotranspiration.

During tree harvesting, the feeder root system is reduced. For this reason, most conventional nurseries harvest their trees only while they are dormant. Professional Arborists however, utilize modern techniques and specialized equipment to achieve optimum transplanting success. Much more of the tree's original root system is retained utilizing appropriately sized transplanting equipment. Therefore, the inherent risk and stress impact on the plant is significantly lessened during the re-establishment period.

Some plant varieties and species transplant much easier than others. Whenever modern tree moving machinery and sound tree care practices are employed, year-round transplanting can be 99+% successful. Most professional operators are practicing Arborists and recognize the sensitivities of various plant materials. Allowances are made for traditionally difficult to transplant plant material. Most Native trees transplant well. Site factors such as drastic soil changes, radiant heat from parking islands, sunlight changes, compaction and automatic irrigation all must be assessed to achieve maximum survivability. Virtually all shade and ornamental plant material including tropical trees, flowering, fruit and nut bearing – all can be transplanted successfully. Trees are transplanted in mass by:

- Nut and Citrus Farmers
- Mining Companies
- Residential, Commercial and Industrial Land Developers
- Golf and Resort Facility Builders
- Road and Heavy Construction Teams
- Governmental Agency Reforestation Teams



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Individual Tree Protection

…. must be considered during the design phase of any type of construction. One must determine which trees on site are impacted by construction, what can be done to lessen the impacts, and what is practical and affordable. It is a lot easier to move a sidewalk or utility service on a construction drawing than it is after the concrete truck arrives! It also does no good to design a passive solar house with summer shading if you kill the shade while building the house! Siting of buildings, drives, walks and utilities should all be designed to avoid trees that are to be saved. It is not recommended to leave large trees within five to ten feet of a structure, due to the expense of removal later or the potential for storm damage. **An important rule to follow is to protect the root system and the crown will be fine**. It is vital to have some basic knowledge of the structure and function of a root system in order to properly protect it. Roots serve three main functions for trees. These are:

1. Physical support anchoring the tree in the soil
2. Water uptake for the entire organism
3. Nutrient extraction from the soil

Damage to the root system

…. leads to problems that may not be obvious for years. Root systems typically extend well beyond the dripline of the branches. Nearly all of the feeder roots are in the top two feet of soil; over half are in the top one-foot. Therefore, tree protection areas should be as large as possible and barricaded with a sturdy fence or barrier. Every worker on site must be aware of the importance of the trees to the owner. Some astute property owners include penalty and incentive clauses into construction contracts to encourage worker involvement in tree protection. **Ideally, protection barriers should be placed two feet per diameter inch from the trunk**. This means a 10" diameter tree will have a 20' radius protection area around it. If groups of trees are saved, the outer perimeter of the tree protection area should be as large as possible.

There are three main classes of damage to trees during construction: **physical, chemical, and hydrological**. Physical damage to roots is of two main types, amputation and suffocation. Grading, excavation, and trenching are the main causes of root damage on site. Utility trenching near a tree can remove 40% of a tree's root system practically guaranteeing death. Most of this damage can be avoided by re-routing utilities or requiring that utilities be bored, not trenched, through root zones. This alternative can result in added cost, but is oftentimes worth the investment. Roots suffocate due to compaction of the soil by foot and vehicular traffic and by adding soil over the top of the root system, especially in areas laden with clay soils.

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CONSTRUCTION RELATED TREE ISSUES

Generally, tree protection areas should be mulched and watered on a regular basis before, during and after construction. This action will encourage feeder root growth. If one knows ahead of time where unavoidable root damage will occur, one can root prune that area months ahead and encourage compensating root growth to minimize shock. If grade levels must be changed near trees, retaining walls and tree wells can be used, but must be far away from the trunk, preferably adhering to the 2 feet per diameter inch policy. Theoretically, an aeration system consisting of perforated pipe, gravel, and geotextile fabrics underneath added soil can be a mitigation tool, however, this methodology is expensive and oftentimes, ineffective. Chemical damage during construction can be caused by road base stabilization, dumping of paints and thinners, concrete waste, muriatic acid, fuel and fluids from equipment and various other sources. All of these events impart long lasting changes in the soil or, is directly toxic to roots.

If tree protection areas are large enough, these errant effects are minimized. This is the reason it is so hard to landscape the immediate area around the building or home foundations. Hydrological damage to trees is that caused by altering established patterns of drainage or flow. Normal water sources are frequently altered by grade changes and barriers such as drives and walks resulting in drought stress. Just as much tree damage can be imparted by redirecting excessive amounts of water into tree protection areas by sloping or piping all downspouts in one direction. This action can create a saturated soil condition predisposing roots to suffocation from lack of air. If native tree stands are to be under brushed or thinned, sunscald on understory trees such as juvenile red oak, dogwood, redbud and other "thin-skinned" trees can impart devastating damage along the southwestern quadrant of the trunk. Whenever large canopy trees (overstory) are removed, perform this work during dormancy or a less stressful climatic season, rather than burning shade-grown foliage and trunkwood with a magnified dose of sunlight.

Frequently, developers remove such a high percentage of native tree stands that the remaining timber becomes the victim of wind and storm damage. This unwelcome eventuality occurs most often in pine tree stands. It is also much too common for developers and builders to leave massive trees a few feet situated from a building, root pruned by every contractor (invader) on site, with soil piled and compacted several feet thick over the roots and against the trunk. Some unscrupulous develops even charge more for their wooded lots knowing full well that the new owner will loose trees in the future**. Always employ a consulting Arborist to assess construction impact prior to purchasing a wooded lot!** Check your yellow pages and contact a professional consulting Arborist such as members of:

ASCA
American Society of Consulting Arborists

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