Protecting Shade Trees and Shrubs from Construction Damage
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Harold Schick, Park Management; Joseph T. Cox, Landscape Architecture and Urban Planning
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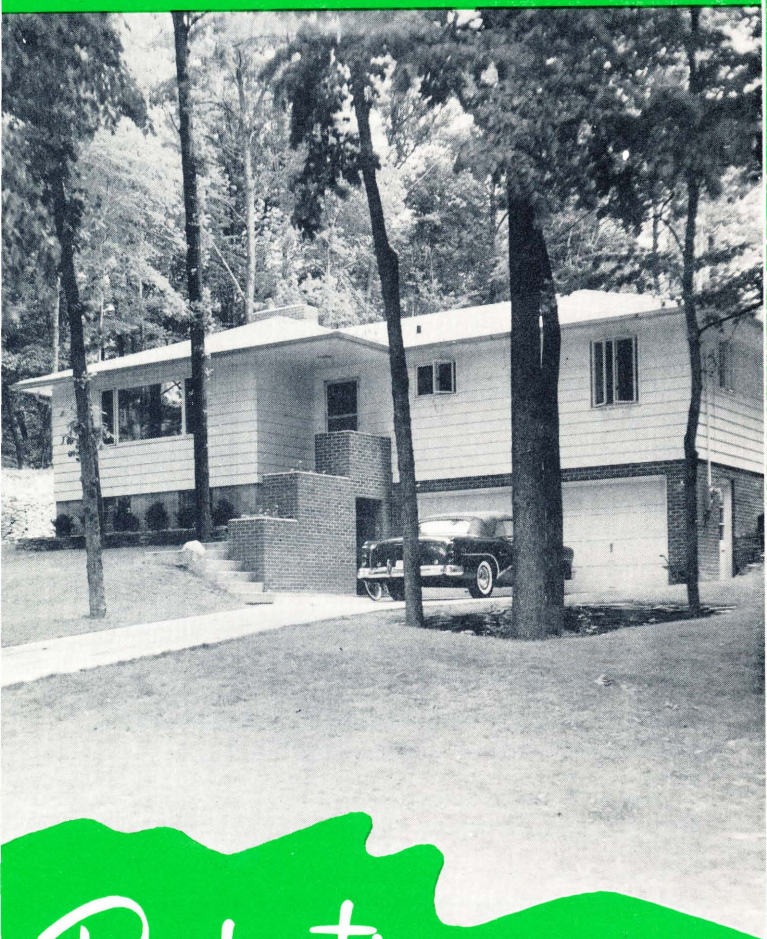


Protecting

SHADE TREES and SHRUBS From Construction Damage

MICHIGAN STATE UNIVERSITY

Cooperative Extension Service

EAST LANSING

Protecting Shade Trees and Shrubs From Construction Damage

by Harold Schick[1] and Joseph T. Cox[2]

Mature shade trees and shrubs add much immediate value to a newly-completed home or building. They give the building a complete landscaped look with better scale and proportion than newly planted trees and shrubs provide. Trees and shrubs that are fully grown offer immediate shade and protection from the wind. Their beauty, form, and flowers add much to the landscape.

Thus, it is very important to protect trees and shrubs before construction begins. Include the protection of trees and shrubs in the specifications before you let the building contract. It costs little to protect plants in the beginning and may save you several hundred dollars in landscaping costs later.

Protection Before and During Construction

Felling Trees in Wooded Areas

Many times it is necessary to remove trees in a wooded area before construction can begin.

Use experienced tree men for the work to avoid breaking and damaging the remaining trees.

[1]Extension Specialist in Park Management.

[2]Extension Specialist in Landscape Architecture and Urban Planning.

Fig. 1. Boxed-crate structure 10 feet square around a tree.

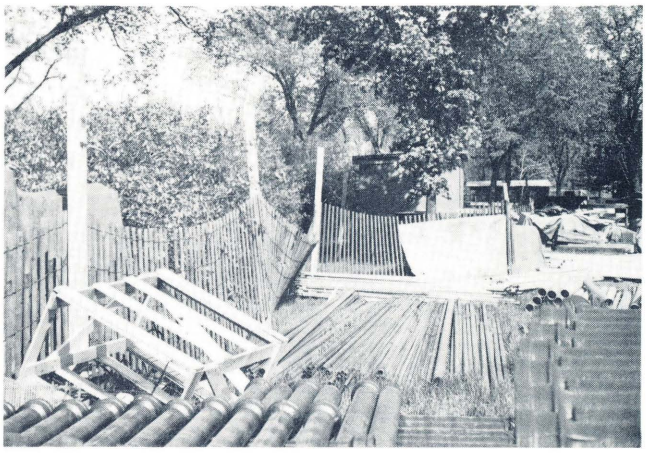
Fig. 2. Slats woven around a tree trunk to prevent scarring of the bark.

Using Boxes and Slats

A boxed-crate structure about 10 feet square around a tree will prevent construction materials from being stored too close to the tree and will also prevent damage from machinery. (See Fig. 1.)

Use 1-inch boards of varying widths, about 6 feet long, for slats. They are woven together by wire (similar to a snow fence) and wrapped around the tree trunk. These slats should not be nailed to the tree. They are tied together by wires with the bottom resting on the ground. (See Fig. 2.) This prevents machinery from damaging the bark.

Fig. 3. Snow fence used to protect shrubbery from construction materials.



Utility Wires

Much trimming and wire interference can be avoided by considering wire location when blueprints are being studied. Often, minor changes can eliminate utility wires going over or through trees. Possible deforming of trees by line interference can be avoided by keeping wires away from the trees.

Snow Fence

Where you want to save groups of smaller trees or shrubs, use snow fence to screen off the whole area. (See Fig. 3.) This will keep equipment and machinery from damaging the shrubs. Use steel posts to support the snow fence.

Fig. 4. Stone, cement blocks, and other material may be used to build a tree well.

Protection From Fill

Tree roots need air, water, and food to survive. A tree takes care of these requirements when growing naturally. However, when the grade level is changed by either removing soil from the roots, or by adding soil, the tree has difficulty in obtaining its normal amount of air, water, and food.

Where soil has been removed near a tree or shrub, usually some roots are taken with it. This prevents the necessary food from reaching the tree top, causing branches to die gradually. When fill is added around a tree, it places a "blanket" over the roots and prevents the needed air and moisture from getting to them.

Minor fills (up to 6 or 8 inches in depth) usually do not harm nearby trees. Smaller shrubs and evergreens, however, may be badly damaged by this change in earth level. Whenever possible, confine grade changes to areas not supporting valuable plants. If minor filling is required near existing plants, there are several ways it can be done with satisfactory results.

1. Fill with a good grade of topsoil, reducing its depth as it approaches the planting area.
2. Insist on a fill soil that is high in organic matter content and that has a loamy texture.
3. If fills are made on sloping land, check any erosion by using mulches, sodding, staking, or temporary retainers until the soil is firmly settled or covered with permanent lawn.

When making major grade changes, air must be supplied to the plant roots being covered with fill. This can be done by installing a series of spokelike tile lines centered at the base of the plant. A circular retaining wall (Fig. 4.) will hold the fill away from the base of the tree trunk. It will also act as the hub of the air system.

Design the air system according to the individual plant and property. Sometimes such a system is needed on only one side of a tree. In more serious cases when the fill consists of 4 or 5 feet of soil, it will take a very carefully built drainage and air system to save a valuable plant. (See Fig. 5.)

Precautions such as providing drainage for excess water and protective coverings for the tile outlets are good investments that will eliminate stagnant water and rodent problems.

Fig. 5. This retainer wall protects several trees from fill.

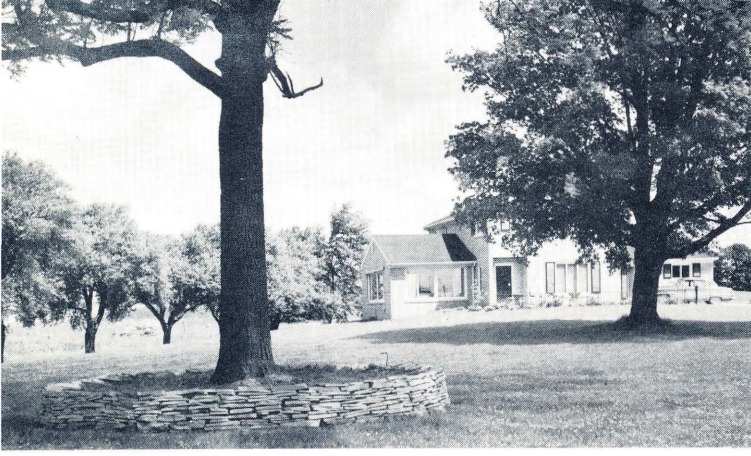


Fig. 6. A retaining sandstone wall protects roots from excavation.

Protection From Excavation

Excavation may leave trees or other plants standing higher than the nearby ground and lower the available ground water supply. Retaining walls will hold soil around plant roots; however, it is not usually wise to try to save a plant this way if it would be elevated more than 2 feet from the finished grade. If space is available, though, the tree may be unharmed if you let it remain on a gently sloping mound. If these mound slopes are so abrupt that grass would be hard to mow on them, ground cover plants may be useful.

If you want a low retaining wall, use harmonious material such as ledge rock, weathered limestone, or appropriate masonry. (See Fig. 6.) The walls can be laid without mortar to save expense and time, but they should slope toward higher ground to resist frost action and the pressure of the backslope. When you use mortar, sufficient footings will be necessary for stability. Drainage will be required to prevent frost expansion damage to the wall itself.

If a high retaining wall is necessary, it can be designed to blend with the building or be made a main feature of the grounds design.

Drainage Around Trees

A tree needs several barrels of water during an average day. If this normal supply is suddenly reduced, the tree gradually dies back at the top and may even be lost. Always investigate number and size of storm sewers to be placed near the trees.

Fig. 7. Sidewalk with arc or curve to save the tree.

Ditches and improperly sealed sewer pipe will lower the water table, making it difficult for trees to survive.

Preserving Trees Near Walks, Drives and Parking Lots

There is no easy way to answer the question, "Should the walk, drive or parking lot give way to this desirable tree, or should the tree come out?" Good judgment and a working knowledge of tree requirements for proper growth are necessary. Often, a designer of these functional areas can make it possible to save a desirable tree. He can make a shift in line or direction, thereby serving both functional and aesthetic values.

It is sometimes best to remove a tree or shrub if there is a question about whether nearby construction will damage or kill it. On the other hand, a portion of a sidewalk can be left out (Fig. 7.) or moved to make room for a nearby tree. On the opposite side of the tree, a temporary surfacing such as coarse gravel, grillwork, slats, or concrete squares can be installed to handle the traffic. This will allow the tree to expand normally. At the same time, it may provide an interesting change from a perfectly straight, monotonous sidewalk.

This also applies to driveways and parking lots. Remember, trees located too close to traffic lines can be a hazard both to people and the tree itself.

Some other factors to consider in the preservation of trees near traffic ways include shade for parking areas, bird nesting and roosting problems, reduction of glare, and snow removal.

If existing trees are used or trees are planted near a proposed underground utility line, the builder should tunnel under their roots rather than cut them off. Power-driven soil augers are often used for this purpose.

The following pointers will help you protect existing plants near parking lots and drives.

1. Tree trunks should be at least 4 or 5 feet away from the bumper lines of cars. (See Fig. 8.)
2. Trees should not take up space needed for actual car parking. Rather, they should help give direction to parking lanes and relieve the glare from large surfaced areas. (See Fig. 9.)
3. Trees in parking areas should not block clear vision.

Fig. 8. Tree trunk 4 feet away from bumper of car. Curbing is used as a bumper for car tires.

Cleanup After Construction

No construction job is finished until all debris and working materials have been removed. Often, this cleanup period is as critical as any time during construction. It is often done in a rush because the construction gang is being hurried to the next job and the owner of the homesite is anxious to move in. Workmen hired to do cleanup work sometimes are not

as careful as the construction gangs themselves. Consequently, forms are ripped out and thrown into piles for dismantling.

This is when the owner should be on guard to see that no damage is done to existing trees or shrubs. It is a good idea to insist that protective devices around plants be removed last.

Any broken branches or exposed roots should be removed according to recommended pruning practices. Any exposed wounds should be treated with an asphalt base paint such as roofing cement. This is more essential from the appearance standpoint than for any other reason. Use special care to prevent trucks with high racks from skinning the upper trunks and branches of trees, especially those which may overhang the construction area.

Insist that debris be hauled to the proper dumping spot, rather than being buried on the site.

When the cleanup job is done, it is time for lawn building and other grounds development.

Legal Aspects

Trees that are to be protected should be clearly marked on the blueprint and in the specifications. This leaves no doubt as to the intention of the proptery owner. It also gives the contractor a chance to plan his preliminary work before construction and excavation begins.

Trees can be insured not only during construction but against future damage.

Fig. 9. These trees, planted when the parking lot was surfaced, don't cut the number of parking spaces.

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