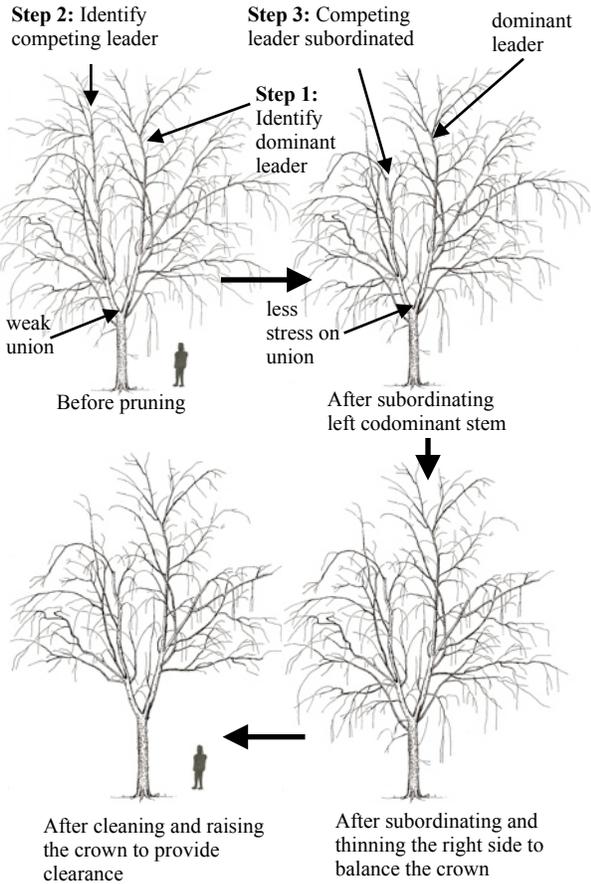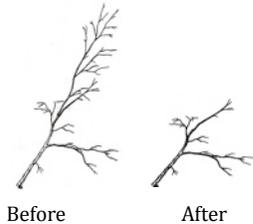# Structural Pruning
Medium-aged Trees

The main objective of pruning is to develop a dominant leader by subordinating branches so they remain smaller than half the trunk diameter. Structural pruning has three steps. The first step is to identify the stem that will make the best dominant leader. The second step is to identify the stems and branches that are competing with this leader (i.e., those that are larger than about half the diameter of the trunk). The third step is to subordinate competing stems using reduction and removal cuts. After the structural pruning steps are completed the crown may then be cleaned, balanced and raised as desired. Trees with this architecture have a high capacity to hold a large crown, thus providing maximum benefits to the landscape. (Figure 1).

Step 2: Identify competing leader

Step 3: Competing leader subordinated

dominant leader

Step 1: Identify dominant leader

weak union

less stress on union

Before pruning

After subordinating left codominant stem

After cleaning and raising the crown to provide clearance

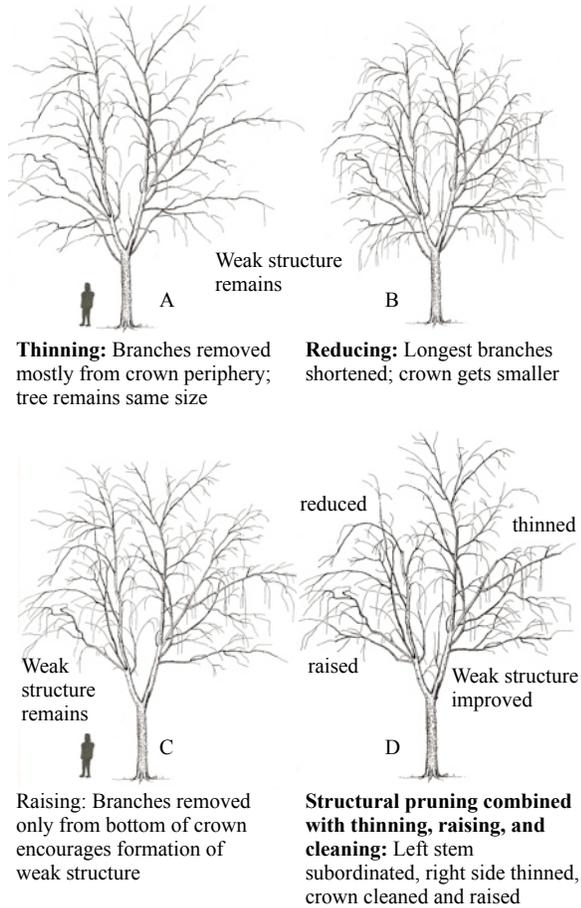After subordinating and thinning the right side to balance the crown

Figure 1. Improving structure combined with raising and cleaning.

Figure 2. A reduction cut back to a live lateral branch subordinates the stem so it grows slower. This allows faster growth in the unpruned leader (leader not shown).

Before   After

When pruning established trees the objectives are (1) to reduce conditions in the tree that contribute to weakness, (2) to ensure strong tree structure by guiding future growth, and (3) to achieve desired clearance. Thinning, reducing, and raising are often applied uniformly to the entire crown to meet objectives (Figure 3A, B, and C). Notice that structural weakness remains after using only a single pruning method. These methods do not have to be applied uniformly. A combination of two or more can be used to meet objectives. For example, one side of the crown can be reduced to relieve a structural weakness, the other side can be thinned for balance, and the crown can be cleaned and raised (Figures 1 and 3D).

One tree pruned with four different methods

Thinning: Branches removed mostly from crown periphery; tree remains same size

Reducing: Longest branches shortened; crown gets smaller

Raising: Branches removed only from bottom of crown encourages formation of weak structure

Structural pruning combined with thinning, raising, and cleaning: Left stem subordinated, right side thinned, crown cleaned and raised

Figure 3. Combine pruning methods to improve structure and to meet other objectives.