

## Small Tree Support Systems

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Small trees and large shrubs with weak branch unions or codominant stems are more likely to fail during wind, snow or ice storms.

Branch unions that consist of nearly equal size branches or bark that is included between the branches are particularly prone to failure (Figure 1). They are known to have half of the strength of similar sized trees without these junctions.

Branch union breakage can be reduced by the installation of a supplemental support system. There are two types of supplemental support systems that are appropriate for small trees – brace rods and support cables. A third support system, a prop, is used to support low growing branches from below, typically on mature trees.

### Brace Rods

Brace rods consist of a threaded steel rod to which a washer and nut are fastened on both ends. Rods are installed low on the branch, just above the branch junction (Figure 2). An additional brace rod should be

**Figure 2: Brace rods are installed low on the branch and below the junction if a crack is present**



**Figure 1: (Left) Small trees with two or more codominant stems are likely to fail in storms. (Right) Junction failures are common when bark is included between two or more branches of similar size**



installed below the junction if there is a crack associated with the junction.

### Support Cables

The second type of supplemental support system is a tree support cable. This type of support is installed high in the tree, about 2/3 the distance from the junction to the top of the tree. It consists of a steel cable and two anchoring devices. For small trees with branches up to 3 inches (75 mm) in diameter at the point of cable attachment, the swage stop-fastened cable system provides strong support that is not easily seen by the casual observer (Figure 3). For trees with branches greater than 3 inches in diameter, systems should be anchored to the branch with a steel eyebolt.

**Figure 3: A swage stop-fastened cable system is used in branches less than 3 inches (75mm) in diameter**



Support cables are usually considered better at reducing branch junction failure than brace rods. Any tree that will have a support system installed should also be pruned prior to installation to reduce branch loads.



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