



CITY OF SHAKOPEE STREET TREE PRUNING OBJECTIVES AND SPECIFICATIONS

These requirements apply to all trees located within the city right-of-way.

Pruning performed by contractors may only be done after obtaining an approved right-of-way permit and must be completed by an ISA Certified Arborist. Pruning standards will adhere to the American National Standards Institute (ANSI) standard for tree pruning (ANSI A300), Safety Requirements (ANSI Z133.1) and the specifications below. All trees within the city right-of-way must be pruned to these standards at minimum once every six years; with formative pruning taking place once every three years (initial 15-20 years after trees planting).

Refer to Appendix A for examples for pruning required.

Pruning Objectives – All Trees

1. Although aesthetics is a concern, the appearance of the tree is secondary to structural and clearance concerns-the two greatest structural concerns are codominant stems and larger branches with bark inclusions/weak attachments low in the canopy.
2. Create a tree which at maturity has no limbs attached to the trunk below 15'-18'.
3. Keep limbs below 15'-18' small (2" in diameter) to reduce wound size when removed.
4. Using reduction cuts, prevent all branches from growing larger than $\frac{1}{2}$ the trunk diameter.
5. Has one dominate leader a minimum $\frac{2}{3}$ up into the canopy at maturity.
6. Space scaffold limbs appropriately to avoid branch clustering.
7. Roughly 80%-90% of cuts performed should be reduction cuts, not removal cuts.
8. Arborist should make the majority of cuts on the 2-3 largest, most defective branches.
9. If reduction cuts are made on a temporary branch to suppress growth-50% or more of the branch tissue should be removed.
10. Some trees will have structural defects which are beyond the point of correction (i.e. codominant leaders which upon removal would result in an unacceptably large pruning wound), in this case the arborist shall focus on the worst defects, attempting to reduce the likelihood of limb/tree failure.

Pruning Specifications – All Trees

1. Unless there is a high risk of branch failure or other strong justification, removal cuts on the main trunk larger than four inches or on branches exceeding $\frac{1}{2}$ the trunk diameter should not be made.
2. Clearance pruning shall be performed to an estimated height which gives 14 feet of clearance over streets and 8 feet of clearance over sidewalks *for the next 6 years*.
3. Maintain a live crown ratio of greater than 50% at all times
4. Remove or subordinate branches with weak attachments (bark inclusions).
5. The presence of any disease condition, decayed trunk or branches, split crotches or branches, or other structural weakness should be reported in writing to the Natural Resources Technician.
6. A thorough clean-up job is expected, i.e., leave the site in as clean of condition as it was before the trimming. The decision of the Natural Resources Technician or Public Works Supervisor is final.
7. Contractors will use correct safety procedures including traffic cones, signs and/or barricades, safety hard hats, and ear and eye protection.

8. If a parked vehicle is within an area in which a branch may fall on it, the contractor is responsible for having the vehicle moved. If a vehicle cannot be moved, the contractor will move on to the next tree on the list leaving a written note asking that the vehicle be moved on the following day.
9. No climbing spurs or spikes are to be used.
10. Any damage to property, including signs, mailboxes, light fixtures, sod, etc., will be the sole responsibility of the contractor to repair and/or replace. The repair shall be equal to the condition prior to the accident.
11. Any power, cable, phone or other utility lines encountered will be the contractor's responsibility to have dropped or otherwise appropriately handled.
12. All trimmings or other forms of debris resulting from this project shall be cleaned up and removed from the site by the Contractor on the day the debris is generated.
13. Work within the street right-of-way is allowed only Monday through Friday from 7:30 a.m. to 5:00 p.m.

Pruning Objectives - Young Trees (in general 4" DBH or less)
Order based on priority.

1. Create or maintain a dominate leader.
2. On a large statured street tree it is the intent that no limbs below 15' remain permanently. Keep all branches small (less than 2" diameter) using reduction cuts, anticipating removal.
3. Begin raising canopy height for clearance of street (14') and sidewalk (8').

Pruning Specifications - Young Trees (in general 4" DBH or less)

1. Establish or maintain a dominant leader by subordinating or removing all but one co-dominant stem (may need to be done in two stages if there are more than three leaders).
2. Do not remove more than 15% of the live canopy on trees planted within the last year-only prune to remove major structural defects. On established trees not more than 30% of live canopy shall be removed with the exception of vigorous elms and hackberry where no more than 40% may be removed.
3. Shorten or remove low vigorous branches to improve clearance.
4. To promote trunk growth-if small live branches (1/2" or smaller) exist lower on trunk reduce if needed, but do not remove.
5. Clean the canopy of all dead, broken, and rubbing branches

Pruning Objectives – Medium Aged Trees

1. Create/maintain a dominate leader and otherwise promote strong tree structure.
2. Remove or reduce limbs with structural defects such as bark inclusions.
3. On a large statured street tree it is the intent that no limbs below 15' remain permanently. Keep branches below 15' small (less than 2" diameter) using reduction cuts, anticipating their removal.
4. Appropriately place scaffold limbs along trunk avoiding clustering.
5. Keep all branches less than ½ the trunk diameter.
6. Reduction cuts should be removing 50%-75% of the live buds on the branch being reduced.

Pruning Specifications – Medium Aged Trees

1. Shorten or remove large branches within 18"-36" of permanent scaffold limbs to avoid clustering.
2. Shorten or remove all branches below permanent canopy while maintaining a minimum 50% live crown ratio.

3. Do not remove more than 30% live canopy with the exception of vigorous elms and hackberry where no more than 40% may be removed.
4. Reduce side branches which are greater than ½ the trunk diameter.
5. Clean the canopy of dead, broken, and rubbing branches (beyond 1" in dia.)
6. Address clearance issues (14 feet over street, 8 feet over sidewalk)

Pruning Objectives - Mature Trees

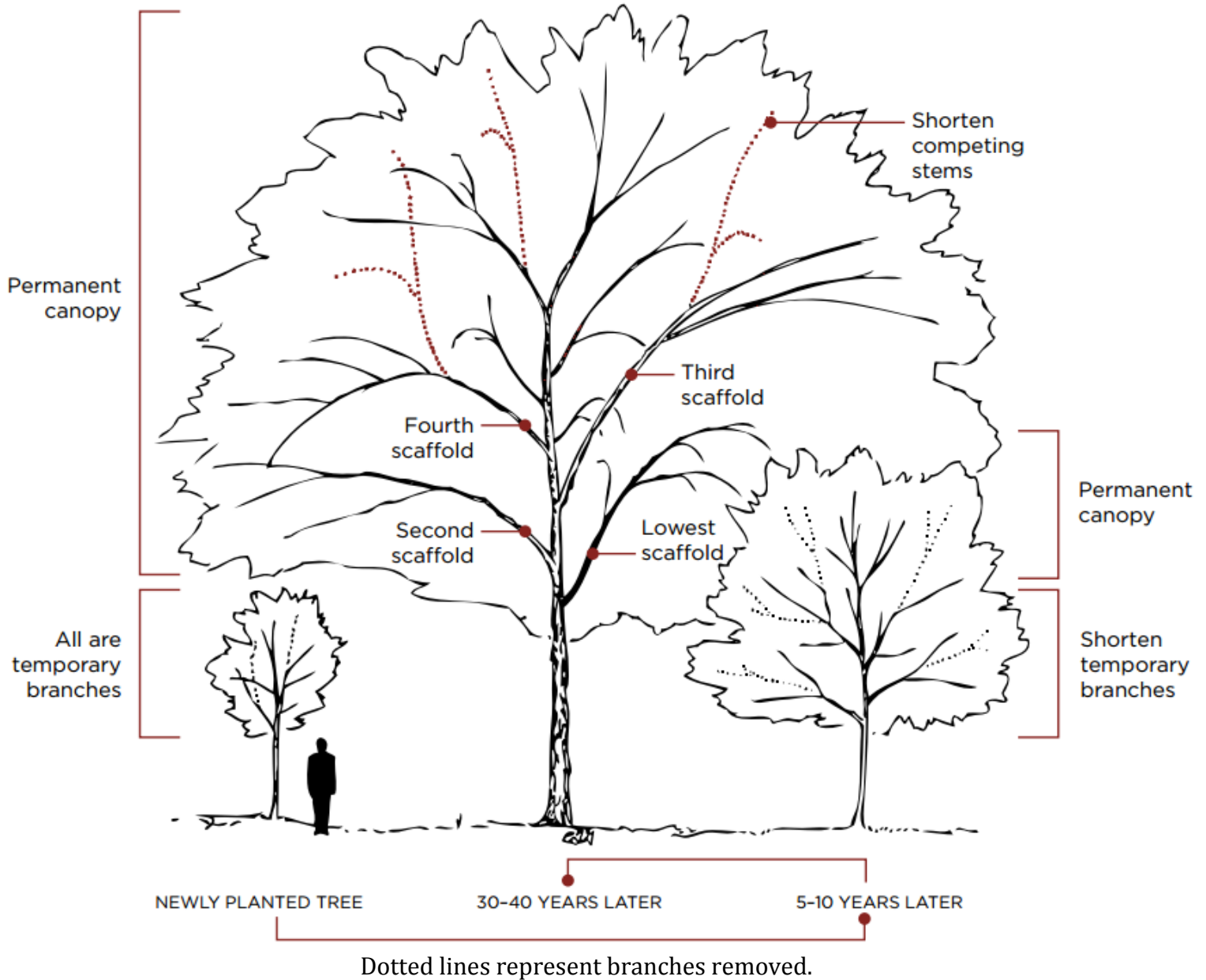
1. Reduce the likelihood of tree failure by targeting structural defects such as lower limbs which are growing into the canopy, limbs with weak branch attachments, etc.
2. Clean canopy by removing dead, diseased, rubbing and broken branches.

Pruning Specifications – Mature Trees

1. Weight on main scaffold limbs with included bark shall be reduced by approximately one-third by removing some secondary branches toward the ends of the limbs and/or by removing the end of the branch using a reduction cut.
2. Clean the canopy of dead, broken, and rubbing branches (beyond 1.5" in dia.)
3. Address clearance issues (14 feet over street, 8 feet over sidewalk)

Appendix A.

Examples of pruning:



Links below provide additional information on pruning.

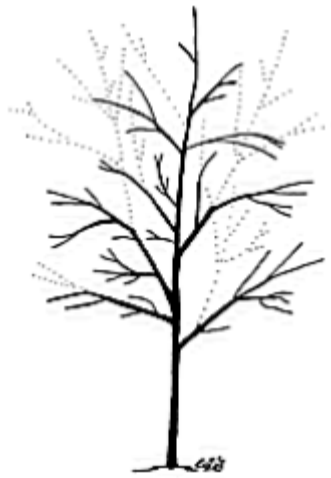
Young trees - http://hort.ifas.ufl.edu/woody/documents/ch_12_mw04.pdf

Mature trees - http://hort.ifas.ufl.edu/woody/documents/ch_13_mw06.pdf

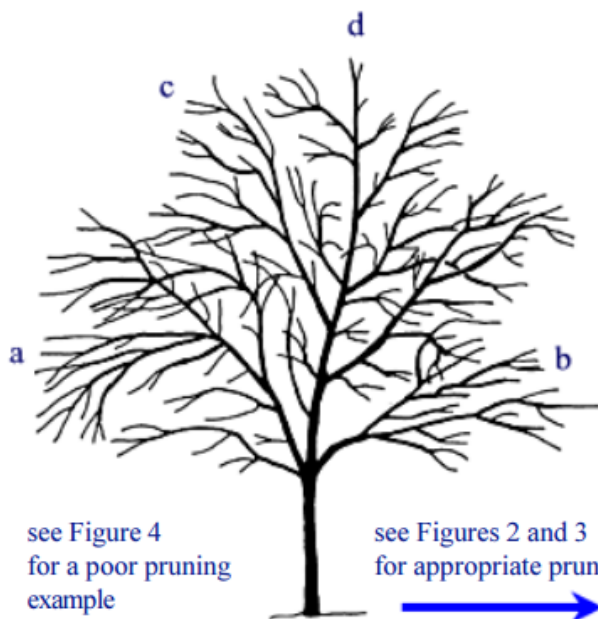
Before pruning



After moderate pruning



before pruning



see Figure 4
for a poor pruning
example

see Figures 2 and 3
for appropriate pruning



remove indicated branches

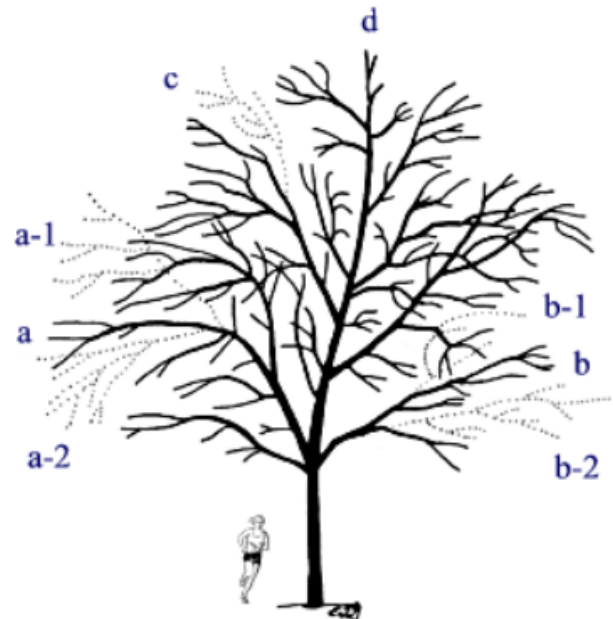


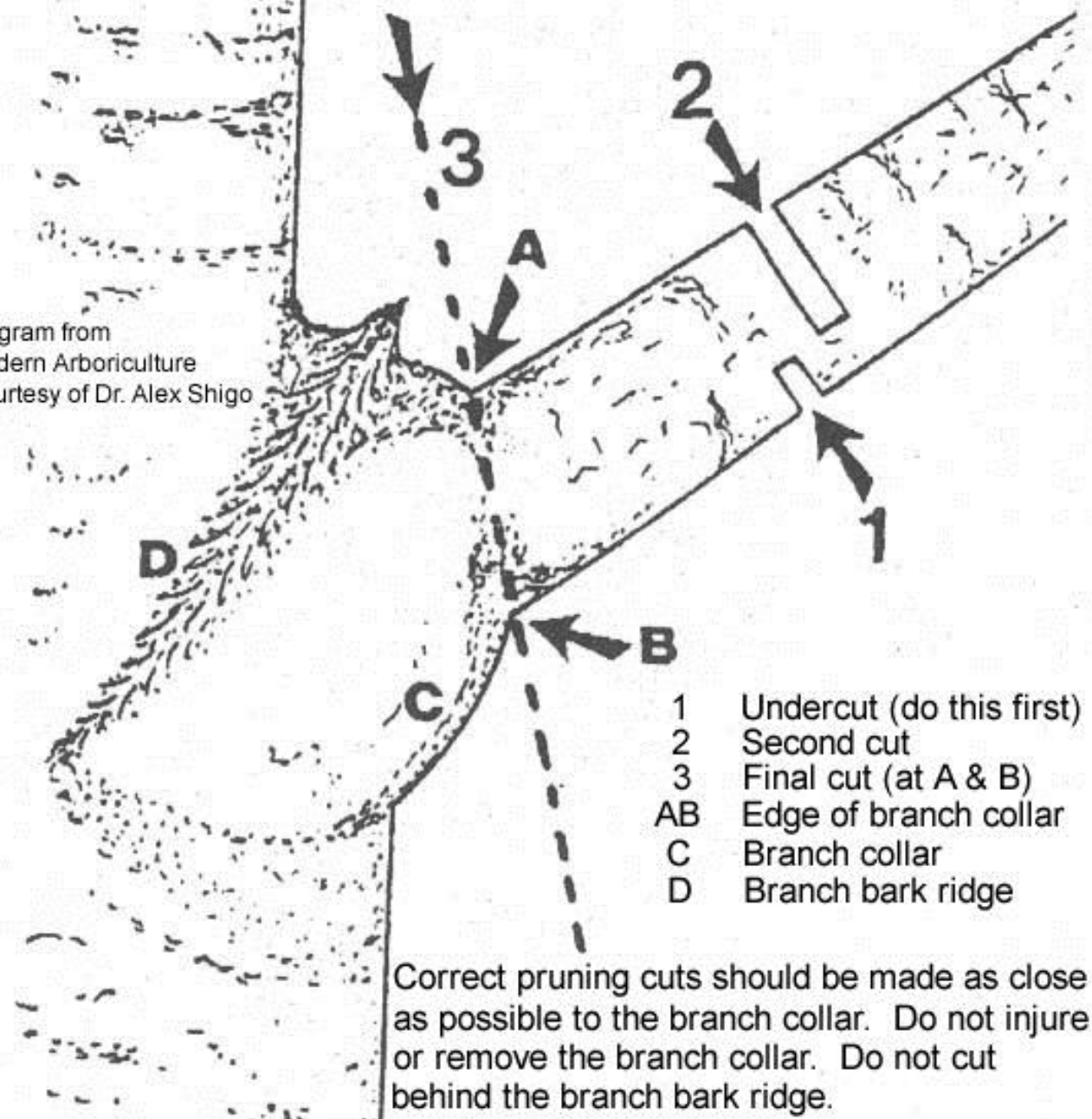
Figure 2: Good solution - Subordinate lower vigorous branches 'a' and 'b' by removing upper and lower lateral branches a-1, a-2, b-1 and b-2. Removing a-1 and b-1 ensures that these branches will not grow up to become part of the permanent canopy. This is important because left unpruned, these branches are likely to remain vigorous, forming weak codominant stems. Removing a-2 and b-2 helps to lift the canopy to provide clearance. Subordinate branch 'c' because it will compete with the leader 'd'.

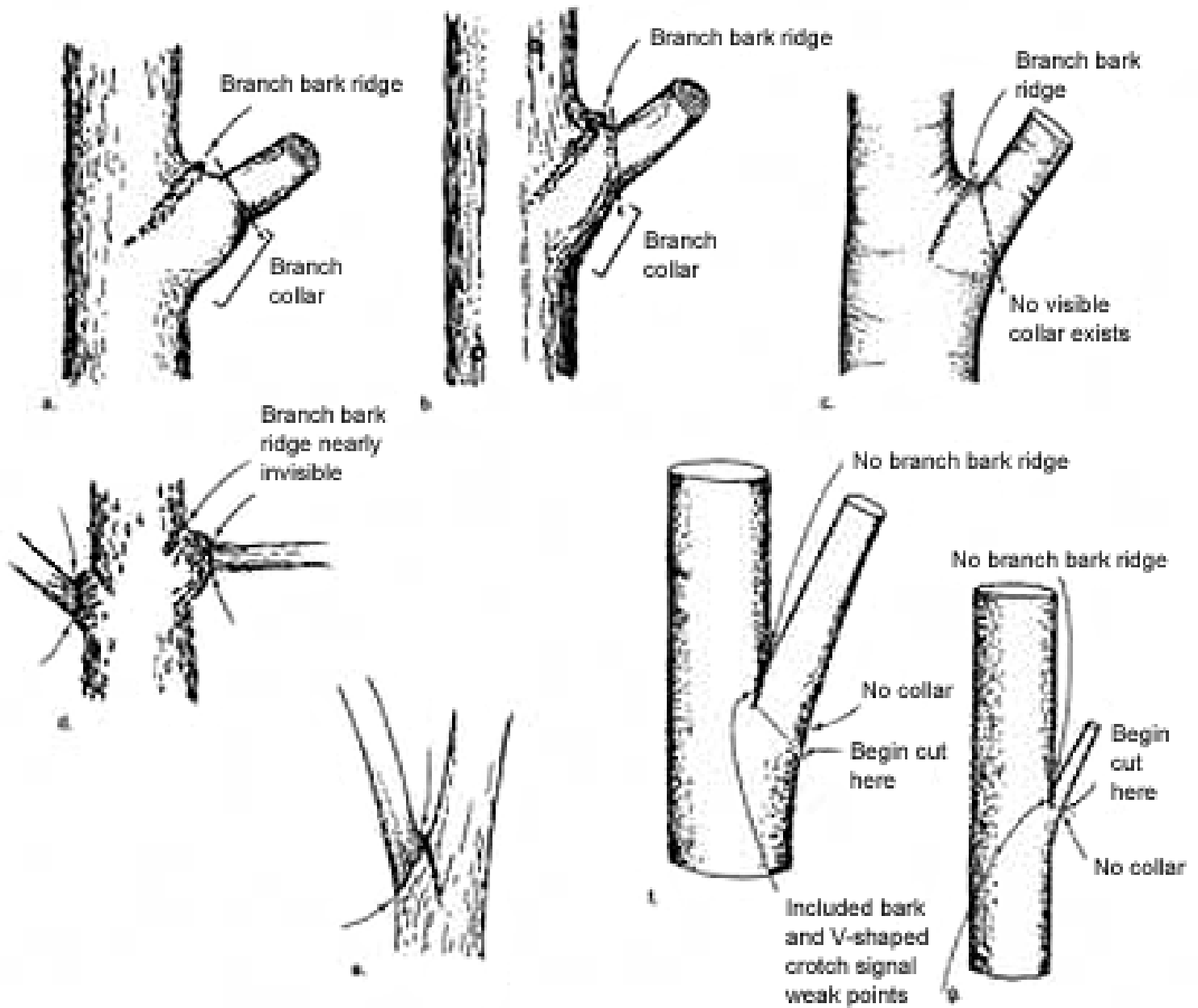
Figure 1: Problem - Branches are drooping low and will be in the way of pedestrians or vehicles. The low branches will eventually have to be removed so shorten them now to prepare for this. Allowing them to grow unchecked could result in them growing to a large diameter. Should these large diameter branches have to be removed later, extensive decay could result.

Examples of pruning cuts required:

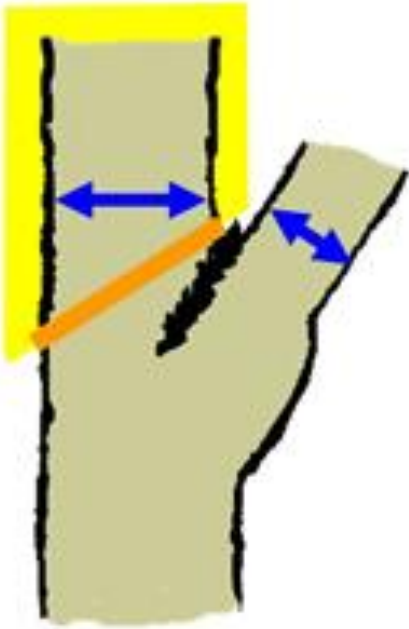
Proper Pruning Techniques

Diagram from
Modern Arboriculture
Courtesy of Dr. Alex Shigo





Reduction Cuts



In reduction cuts (removing a larger trunk/parent branch back to a smaller side branch), the side branch must be at least one-third the diameter of the trunk/parent branch removed. If the side branch is less than one-third the trunk diameter, it is a heading cut. Heading cuts are not acceptable in pruning standards.

