City of Sturgis Street Tree Species

The following list constitutes the official Street Tree species for the City of Sturgis, State of Michigan. *

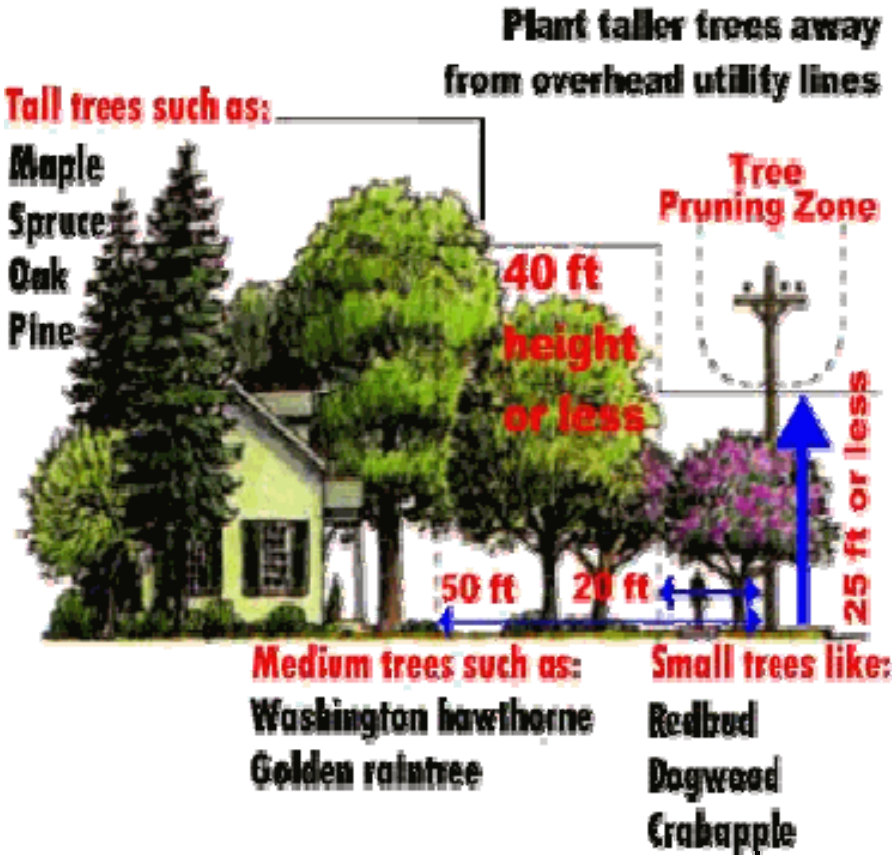
Small Trees:
Serviceberry
Hawthorn
Golden Rain Tree
Crabapple
Fruitless Cherry
Whitebeam
Tree Lilac
Amur Maple

Medium Trees:
Hedge Maple
Crimson King
Amur Cork Tree
Ornamental Pear
Pagoda Tree
American Hornbeam
European Mountain Ash
Linden

Large Trees:
Norway Maple
Red Maple
Ginkgo
Honeylocust
London Plane
White Oak
Pin Oak
Redbud
Pioneer Elm
Columnar English Oak
Red Oak
Sweet Gum

Do Not Plant:
Green Ash
White Ash
Birch
Cottonwood
Poplar
Siberian (Chinese) Elm
Silver Maple
Willow

*Fruitless varieties will be used.



Steps for a successful tree protection plan:

- Mark construction zone boundaries
- Inventory trees on the site
- Train contractors and sub contractor crews
- Design the site to accommodate construction activities:
  - Vehicle movement and parking
  - Material storage
  - Vehicle cleaning
- Select the trees to be saved
- Protect the trees you plan to save
- Prepare the trees for construction disturbance
- Protect and preserve the soil for future tree planting
- Monitor the construction process and hold periodic meetings with contractors
- Enforce penalties for non-compliance
- Make a final inspection of the site
- Commit to long-term maintenance

should be made to save these trees. A tree specialist can inventory and inspect trees and provide a report of potential problems. The specialist should review construction plans to see if the proposed construction or subsequent landscaping activities will create new target areas. Eliminate or correct hazardous situations, or exclude people from hazardous areas.

Protect Trees From Direct Injury

Trees can be damaged or killed by a wide variety of construction activities. Construction practices can result in obvious damage such as torn bark and less obvious damage to roots. Any injury to the wood or bark of a tree is a potential long-term problem. Open wounds deplete a tree's energy resources and provide entry points for insects, diseases, and decay. Decay is the leading indicator of potential tree failure and is always the result of wounds. The worst damage, however, often remains hidden underground. Roots that lie within the path of construction must be protected because they are so important for anchoring the tree.

Approximately 90 to 95 percent of a tree's root system is located in the top 3 feet of soil, and more than half is in the top 1 foot. Avoid construction activities within the CRR to ensure the tree's root zone is adequately protected.

When you remove a large number of trees, you change the site conditions for the remaining trees. Sudden increases in amounts of sunlight and wind may shock trees. It is not uncommon to find scorched leaves, broken branches, and uprooted trees after a site is cleared. Although some of these problems are temporary, they may compromise tree health when coupled with additional construction damage.

Grade changes within the CRR usually kill a tree. This happens either directly, or by changing soil moisture and oxygen availability within the root zone. Except where absolutely necessary, avoid disruptions to the natural contour of the site or shift them well outside the CRR. Mitigate disruption to the CRR with techniques such as use of porous fill, mulch and non-turf groundcover, and constructing retaining walls at or beyond the CRR.

As much as 40 percent of a tree's root system can be cut during the installation of a nearby utility line. This reduces water and nutrient uptake and may compromise the stability of the tree. If it is not possible to relocate the utility line outside the tree's CRR, you can reduce root damage by tunneling under the tree's root system (Figure 4.18).

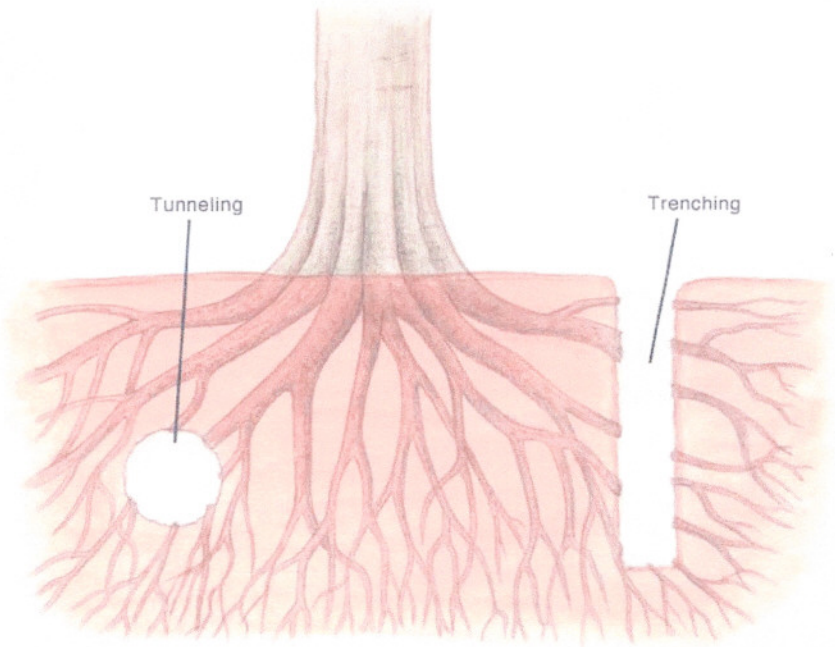


Figure 4.18. *Underground utilities installed via a tunneling system cause less root damage than convention trenching operations.*

Avoid soil tunneling (augering) too close to the tree's stem in order to minimize injury to tree roots. The diameter of the tree can be used as a guide to determine the minimum distance from the tree where tunneling should occur (Table 4.2).

Table 4.2 Minimum distance (feet) from the tree's stem that soil augering/tunneling should occur, based on tree diameter.

Tree diameter (dbh, inches)	Auger distance from tree stem (radius, feet)
0-2	1
3-4	2
5-9	5
10-14	10
15-19	12
> 19	15

Source: Morell 1984

Trenching for building foundations also poses a danger to nearby trees. Posts, pillars, or I-beams sometimes can be substituted for foundation walls and footers on homes. Drilling single holes as opposed to cutting deep trenches saves critical roots.

Street Trees and Construction Damage

Established street trees are subjected to damage from construction activities more frequently than forest trees. The infrastructure of any community (e.g., streets, sidewalks, curbs, and buried utilities) is continually updated, repaired, or expanded, and trees growing in tree lawns (e.g., tree lawns) or close to these public services are vulnerable to construction activities. A community can minimize construction damage to public trees by adopting a tree preservation policy that establishes tree preservation guidelines.

Root loss is the most common type of construction damage that street trees suffer. This is particularly harmful because these trees already are growing in root-limited spaces, and are often less healthy than other landscape trees due to other environmental stresses posed by tree lawns. Stresses include reduced soil volume, poor quality soil, accumulation of de-icing salts, and characteristically drier conditions than other landscape sites.

Minimize root loss to minimize construction damage to street trees. Most healthy trees can tolerate one-sided root cutting and recover from the loss with long-term after care (Johnson 1999). Trees that have roots cut on two sides usually suffer much more damage and are less stable. It is questionable whether to save trees that suffer root loss on three or more sides.

Damage to sidewalks, curbs, and gutters near trees is costly and the damage is frequently listed as a tree problem. In California over $70 million dollars in damage to these grey infrastructure components has been reported (McPherson 2000). Nationally, it is likely then that billions are spent annually repairing damage to curbs, gutters, and sidewalks. But is the tree 100 percent of the problem? Some evidence suggests that defects in sidewalks and natural expansion and contraction of soils account for sidewalk damage. In other cases attempting to grow a tree too close to infrastructure is the problem.