OGDEN CITY POLICY
Office of the Mayor

Policy No: 1900
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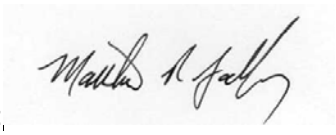
Subject: Ogden City Arboricultural Regulations	Effective Date: June 26, 2006
Department: Public Services Department	Reviewed by:
Division: Parks and Cemetery	Review Date:

Authorized Signature:  6/26/06

Matthew R. Godfrey, Mayor Signature Date

Revisions are indicated by an: *

I. PURPOSE

The purpose of these regulations is to implement the provisions of Section 6-2-5.A of the Ogden Municipal Code authorizing the adoption of arboricultural regulations concerning Park Trees and Street Trees, as defined below. Specifically, these regulations are intended to accomplish the following:

A. Prohibit the planting and growing of the type or kind of trees prone to disease and insects or injurious to sidewalks and curbs and designates such types and kinds of trees and shrubs permitted to be planted hereafter as Park Trees and Street Trees.

B. Provide a plan of proper planting and growth of trees for the beautification of streets in Ogden that allows implementation of any existing or future street tree plan as adopted by the Council as part of the Ogden City General Plan.

C. Protect trees from improper care by establishing the standard methods of tree care for park trees and street trees including guidelines for trimming, spraying, removal, planting and pruning.

D. Prevent trees on city or private property from becoming a public nuisance.

II. POLICY

Any and all work performed on Street Trees or Park Trees shall comply with Ogden City's Urban Forestry Ordinances (Chapter 2, Title 6 of the Ogden Municipal Code) and these Ogden City Arboricultural Regulations.

A. These Arboricultural Regulations may be modified, amended, or extended in accordance with Section 6-2-5 of the Ogden Municipal Code, at any time that experience, new research, technology or laws indicate improved methods or circumstances make it advisable.

B. The Urban Forester, in conjunction with the Ogden City Urban Forestry Advisory Committee, should review these Arboricultural Regulations once every two (2) years in order to update the methods, procedures, species, cultivars and varieties included in this document. Upon review, circumstances indicating a need for change should determine addition of methods, procedures, species, cultivars and varieties of proven dependability and value, or removal of obsolete, improper and unsatisfactory information.

C. In the event that the Ogden City Urban Forest Management Plan dictates that individual street blocks are assigned one or more particular species or varieties of trees, only those trees shall be planted subject to revision of said plan.

D. Public Nuisance - The owner or occupant will correct trees located on private property declared a public nuisance, under the criteria defined in Section 6-2-10, Ogden Municipal Code.

E. General - All work herein described shall be conducted in such a manner as to cause the least possible interference with or annoyance to others.

1. Inadequately or improperly trained personnel shall not be utilized for work on or with City Trees beyond their known capacity or ability to perform properly or safely.

2. Pedestrian and vehicular traffic shall be allowed to pass through the work areas only under conditions of safety and with as little inconvenience and delay as possible.

3. Adequate barricades and warning devices shall be placed and flagmen shall be stationed as necessary for the safety of persons and vehicles in accordance with the Manual on Uniform Traffic Control Devices.

4. It shall be unlawful for any person to engage in the private business of planting, cutting, trimming, pruning, removing, spraying or otherwise treating city trees, shrubs or plants within the City without first procuring a business license and a tree permit from the City.

F. Cabling and Bracing - Cabling and bracing will only be done when no other Arboricultural practice is a viable solution to the individual tree’s situation. In the case where cabling is an effective method of treatment, it will only be done on trees of high community value. If the Urban Forester recommends cabling, the cabling/bracing

operation will only be conducted by Ogden City forestry personnel or qualified certified arborist.

III. DEFINITIONS

The following definitions shall apply to these Arboricultural Regulations:

MAINTENANCE: Those practices and procedures for the normal care of trees and shrubs as set forth in the arboricultural regulations of the City.

OGDEN URBAN FORESTRY ADVISORY COMMITTEE: The Ogden Urban Forestry Advisory Committee as established in Title 3, Chapter 23 of the Ogden Municipal Code.

PARK TREES: Trees, shrubs, bushes and any other woody vegetation located on City parks or other property belonging to the City, other than streets.

PARKING OR PARKING STRIP: That part of the public street right of way set aside as a planting strip or open space and located between the sidewalk and curb or edge of the roadway, or where no sidewalk exists, located within the ten feet (10') adjacent to the edge of the roadway.

PARKS DIVISION: The Division responsible for City parks, which is currently the Parks and Cemetery Division of the Public Services Department.

PERSON: Individuals, firms, corporations, partnerships and every type of association.

STREET: Includes any street, avenue, highway, alley or other public thoroughfare, including the entire width from property line to property line.

STREET TREES: Trees, shrubs, bushes and any other woody vegetation located in any parking or parking strip.

URBAN FORESTER: The official designated by the Community Services Director to enforce the provisions of Chapter 2. Title 6 of the Ogden Municipal Code and these Arboricultural Regulations.

IV. TREE AND SHRUB SPECIFICATIONS

Unless otherwise specified or approved by the Urban Forester, all tree species, cultivars and varieties will conform to American Association of Nurserymen Standards in size and quality.

A. Size - Tree diameter (caliper) shall be measured as it stands in a natural position, six (6) inches above the appropriate soil line for that species. Stock used on city property shall meet the minimum and maximum sizes specified. Larger sizes may be required to ensure survival, provide a designed landscape effect or produce a desired aesthetic quality in accordance with certain city ordinances, regulations, or planning pertaining to property development and/or zoning. However, large trees and plants that have been cut back in order to achieve specified sizes will not be accepted.

The following are the approved minimum sizes of tree stock to be planted on city property.

Shade Tree (Residential)	1 ½" - 2 ½"
Shade Tree (Commercial)	2" - 2 ½"
Ornamental Trees	15-20 gallon containers
Evergreen Trees (Commercial)	5' -6' in height
Shrubs	5-gallon container

B. Quality

1. All trees and shrubs shall be of standard quality as set forth by the American Association of Nurserymen Standards and shall be true to their names, types and typical of their species, cultivars or varieties. All publications are available at the Ogden City Public Ways and Parks office located at 1875 Monroe Boulevard upon request.

2. All trees and shrubs shall have normal, well-developed branches that exhibit vigorous shoot and bud development. They shall be sound, healthy, vigorous plants free from defects, disfigurements, knots, cankers, mechanical or biological abrasions of the bark, sunscald, disease, insects, and all other forms of infections or objectionable disfigurements. Roots shall be established but not root bound, they shall be normal, healthy, vigorous systems free from extensive damage, drying or abnormalities. All plants will be nursery-grown stock unless otherwise specified or approved by the Urban Forester and shall have been lifted the fall or winter prior to the planting season.

3. All balled and burlapped plants shall have a solid ball of earth of adequate specified size held in place securely. Ball will be confined securely with wrapped burlap and tightly bound with twine or rope. The burlap ball shall be encompassed by a firm wire basket designed for the size and shape of the ball. Broken, loose, damaged or manufactured balls will be rejected.

4. Containerized plants should not be root-bound in their containers. Roots that circle the container can become strangulated roots and hinder future growth of the plant. Extensive roots that have grown out through the drain ports of the container may be dried or damaged and become a source for infection and additional stress for the plant. Any or all abnormalities listed above shall be reason for rejection.

5. Bare-root plants shall have abundant root growth, fibrous and numerous small roots with good color and moisture. Kinked, circling roots or mechanical/biological abrasions of the roots shall be reason for rejection.

V. PROHIBITED AND PERMITTED TREE SPECIES

A. Non Acceptable Planting Stock Species - The following species are considered to be inappropriate and unsuitable for planting on parking strips and street tree sites.

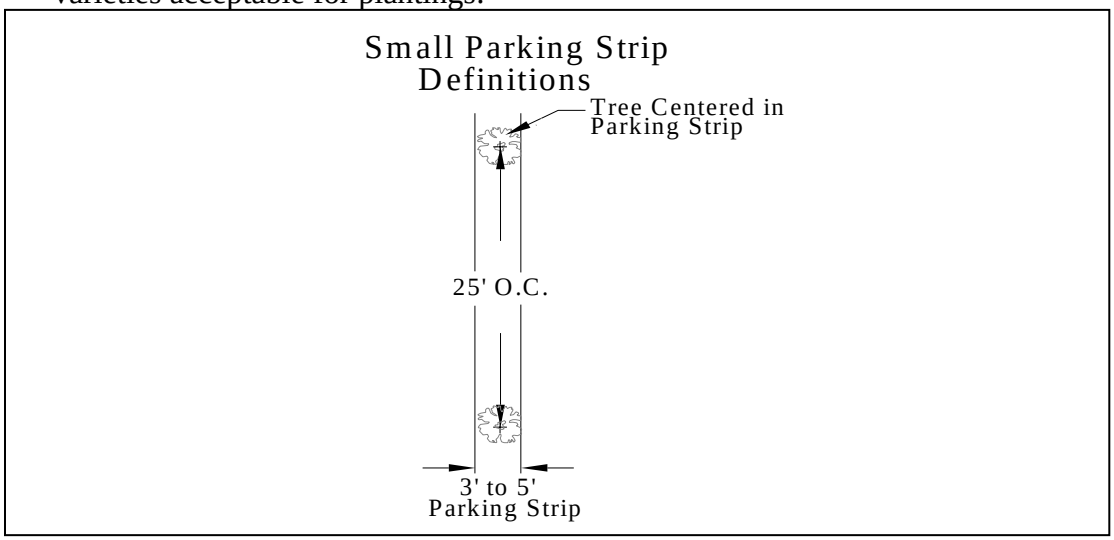
- All varieties of standard fruit bearing trees (including Apple, Pear, Plum, Peach and Cherry). This does not include ornamental tree varieties.
- All varieties of conifers (including Spruce, Fir, Pine, Juniper, Arborvitae and Yew)
- All species of Poplars (including Fremont, Lombardy, Bolleanna, Silver Leaf, Aspen, Carolina Balm-of-Gilead and any other variety of Cottonwood)
- All varieties of Willows (Salix species)
- Russian Olive - Eleagnus angustifolia
- Black Locust - Robina nigra
- Box Elder - Acer negundo
- Umbrella Catalpa - Catalpa speciosa
- Silver Maple - Acer saccharinum
- Siberian Elm - Ulmus pumila
- Tree of Heaven - Ailanthus altissima
- Moraine Ash - Fraxinus 'Moraine'

B. Acceptable, But Not Recommended Planting Stock Species - The following species are acceptable, but due to insect and disease problems or litter mess associated with the tree they are not recommended for use as park/street trees. In addition, some of the trees listed already compose over 10% of the Ogden City urban forest species composition and provide an unnecessary risk to the urban forest. Trees that represent over 10% will remain in this category until their populations are more evenly balanced with other species in the urban forest. Cultivars and species of these trees are annotated in the approved Street Tree list with a (*) to signify they belong in this category.

- All species and varieties of Elms (including America, Chinese, Pioneer and Liberty)
- All varieties of nut bearing trees (including Walnut, Pecan, Hickory and Almond)
- Most varieties of Ash (Fraxinus species); does not include bore resistant varieties
- All varieties of Locust (Robinia and Gleditsia species)
- All varieties of Maples (Acer species)
- All varieties of Lindens (Tilia species)
- Sycamore - Platanus occidentalis
- Horse Chestnut - Aesculus hippocastanum
- Ohio Buckeye - Aesculus glabra

- Western Catalpa - Catalpa speciosa

C. Approved Street Tree Species - Only desirable, long-lived tree species of good appearance, beauty, adaptability, and generally free from injury, insect, or disease shall be acceptable for tree plantings. Undesirable trees shall not be recommended for general planting and their use, if any, shall be restricted to special locations where, because of certain characteristics of adaptability or landscape effect, they can be used to an advantage. The asterisk (*) indicates trees that are approved but not recommended for Street Tree planting. Below are the approved lists of tree species, cultivars, and/or varieties acceptable for plantings:



1. Parking/Planting Strip Width 3 Feet or Less (Acceptable Species). All shrubs and trees in these areas are approved on a case-by-case basis as recommended by the Urban Forester depending upon individual site characteristics and circumstances.

2. Parking/Planting Strip Width 3 Feet - 5 Feet (Acceptable Species). As recommended by the Urban Forester, parking strips of this size will be classified by the appropriate rating of Small Tree Species. These tree species will be the species class used in all small parking strips and also where medium and large parking strips have overhead utilities that inhibit the use of larger tree species. Acceptable Trees in the Small Tree Category are listed below:

   - *Amur Maple - Acer ginnala
   - Aristocrat Pear - Pyrus calleryana ‘Aristocrat’
   - Autumn Blaze Pear - Pyrus calleryana ‘Autumn Blaze’
   - Autumn Brilliance Serviceberry - Amelanchier x grandiflora
   - *Big Tooth Maple - Acer grandidentatum
   - Crabapples:
     *American Beauty Crabapple - *Malus ‘American Beauty’*
     *Bechtel Crabapple - *Malus 'ioensis'*

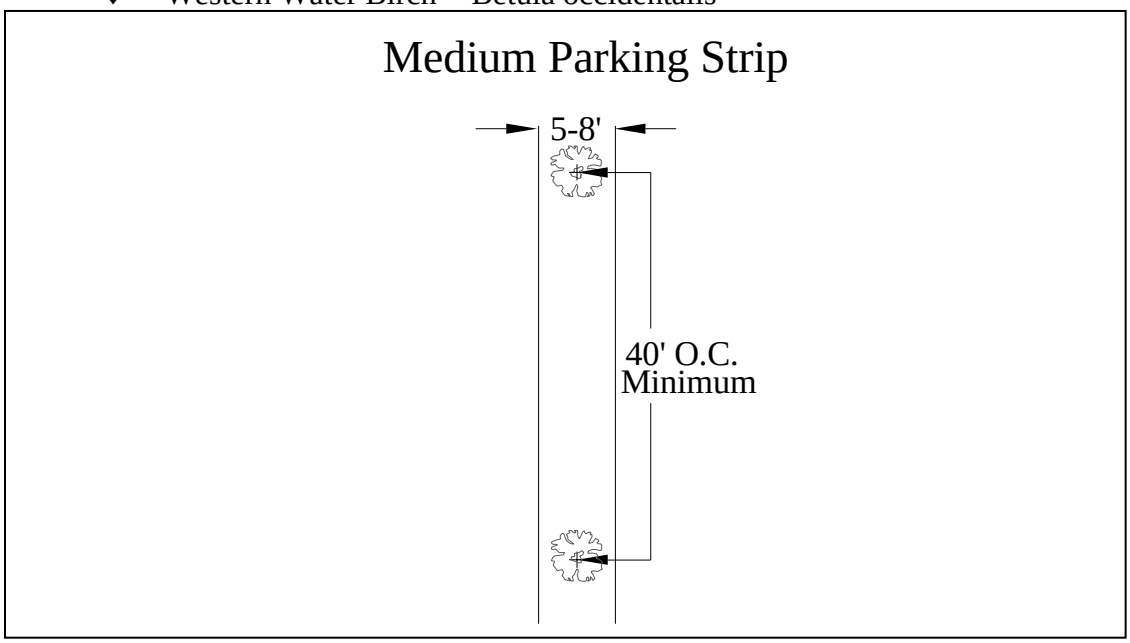
Brandy Wine Crabapple - *Malus 'Brandy Wine'*
*Candied Apple Crabapple - *Malus 'Candied Apple'*
*Centurion Crabapple - *Malus 'Centurion'*

- *Dolgo Crabapple - Malus x 'Dolgo'
  - *Dorothea Crabapple - *Malus x 'Dorothea'*
  - Eley Crabapple - Malus *purpurea 'Eley'*
  - *Hopa Crabapple - Malus *x 'Hopa'*
  - Japanese Flowering Crabapple - Malus *floribunda*
  - *Klehm's Improved Bechtel Crab - *Malus ioensus 'Klehm's Improved Bechtel'*
  - *Radiant Crabapple - Malus *x Radiant*
  - *Redbud Crabapple - Malus *x Zumi 'Calocarpa'*
  - Sargent Crabapple - *Malus 'Sargent Crabapple'*
  - Snow Cloud Crabapple - *Malus 'Snow Cloud'*
  - *Snowdrift Crabapple - Malus *x 'Snowdrift'*
  - Spring Snow Crabapple - Malus *'Spring Snow'*
  - *White Cascade Crabapple - *Malus 'White Cascade'*
- *Capital Pear - Pyrus calleryana 'Capital'
- *Chanticleer Pear - Pyrus calleryana 'Chanticleer'
- Chinese Dogwood - Cornus kousa 'Chineusis
- Chokecherry - Prunus virginiana
- Columnar Sargent Cherry - Prunus sargentii 'Columnaris'
- *Crape Myrtle - Lagerstroemia indica
- Cumulus Serviceberry - Amelanchier laevis 'Cumulus', tree form
- Eastern Redbud - Cercis canadensis
- *English Hawthorn - Crataegus laevigata
- Gambel Oak - Quercus gambellii
- *Globe Norway Maple - Acer platanoides 'Globosum'
- Golden Rain Tree - Koelreuteria paniculata
- Glossy Privet - Ligustrum lucidum
- *Imperial Honeylocust - Gleditsia triacanthos 'Imperial'
- Krauter Vesuvius Plum - Prunus cerasifera 'Krauter Vecurvius'
- Kwanzan Japanese Flowering Cherry - Prunus serrulata 'Kwanzan'
- Lavalle Hawthorn - Crataegus x lavallei
- *Loquat - Eriobotrya japonica
- Majestic Serviceberry - Amelanchier laevis 'Majestic', tree form
- May Day Tree - Prunus padus var commutata
- Mt. Saint Helens Flowering Plum - Prunus cerasifera 'Mt. Saint Hellens'
- Mt. Fuji Flowering Cherry - Prunus serrulata 'Shirotae'

- New Mexico Locust - Robinia neomexicana
- Newport Flowering Plum - Prunus cerasifera
- Pagoda Dogwood - Cornus alternifolia
- *Paper Bark Maple - Acer griseum
- Princess Diana Serviceberry - Amelanchier x grandiflora 'Princess Diana',

tree form

- Red Leaf Chokecherry - Prunus virginiana ‘Shubert’
- Redspire Pear - Pyrus calleryana ‘Redspire’
- Robin Hill Serviceberry - Amelanchier x grandiflora ‘Robin Hill’, tree form
- *Rocky Mountain Maple - Acer glabrum
- Silk Tree - Albizia julibrissin
- Sargent Cherry - Prunus sargentii
- Star Magnolia - Magnolia stellata, tree form
- *Thundercloud Flowering Plum - Prunus cerasifera 'Thundercloud'
- Toba Hawthorn - Crataegus x mordenensis
- Tradition Serviceberry - Amelanchier x grandiflora ‘Trazam’, tree form
- *Trident Maple - Acer buergeranum, tree form
- Washington Hawthorn - Crataegus phaenopyrum
- *Western Water Birch - Betula occidentalis

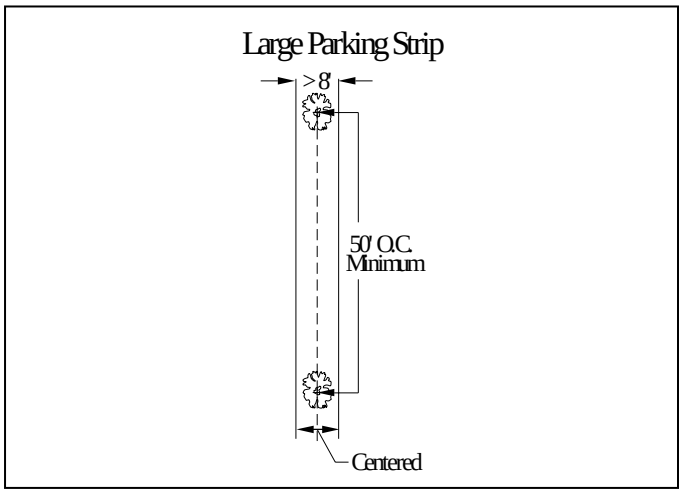


3. Parking/Planting Strip Width 5 Feet - 8 Feet (Acceptable Species). As recommended by the Urban Forester, parking strips of this size will be classified by the appropriate rating of Medium Tree Species. These tree species will not be planted where overhead electrical lines or other overhead utilities are present within the parking strip. These trees may be planted in the larger width areas but not in the smaller areas listed above.

- American Yellow Wood - *Cladrastis lutea*
- *Armstrong Maple - *Acer rubrum ‘Armstrong’*
- *Autumn Flame Maple - *Acer rubrum ‘Autumn Flame’*
- Bradford Callery Pear - *Pyrus calleryana 'Bradford'*
- *Chancellor Linden - *Tilia cordata ‘Chancellor’*
- Chinese White Birch - *Betula platyphlla ‘Szechuanica’*
- *Columnar Norway Maple - *Acer platanoides 'Columnar'*

- *Cleveland Norway Maple - *Acer platanoides 'Cleveland'*
- *Crimson King Norway Maple - *Acer platanoides 'Crimson King'*
- Deborah Maple - *Acer platanoides ‘Deborah’*
- *Emerald Queen Norway Maple - *Acer platanoides 'Emerald Queen'*
- *Emerald Lustre Maple - *Acer platanoides ‘Pond’*
- *European Ash - *Fraxinus excelsior*
- *European Mountain Ash- *Sorbus aucuparia*
- *European White Birch - *Betula pendula*
- Fairview Locust - *Gleditsia triacanthos inermis ‘Fairview’*
- Fan-San Fruitless *Mulberry - Morus alba ‘Fan-San’*
- Fruitless Mulberry - *Morus albm 'Fruitless'*
- *Glenleven Linden - *Tilia cordata ‘Glenleven’*
- Golden Rain Tree - *Koelreuteria paniculata*
- *Green Mountain Sugar Maple - *Acer saccharum 'Green Mountain'*
- *Greenspire Linden - *Tilia cordata 'Greenspire'*
- *Halka Honeylocust - *Gleditsia tricanthos inermis 'Halka'*
- *Hedge Maple - *Acer capestre*
- Idaho Flowering Locust - *Robina idahoensis*
- *Imperial Honeylocust - *Gleditsia tricanthos inermis 'imperial'*
- Japanese Tree Lilac - *Syringa amurensis japonisa*
- *Japanese Pagoda Tree - *Sophora japonica*
- Japanese White Birch - *Betula platyphylla ‘Japanica’*
- Kingan Fruitless Mulberry - *Morus alba ‘Kingan’*
- *Littleleaf Linden - *Tilia cordata*
- Modesto Ash - *Fraxinus velutina x glabra ‘Modesto’*
- *Olympic Linden - *Tilia cordata ‘Olympic’*
- Paper Birch - *Betula papyrifera*
- Patmore Ash - *Fraxinus pennsylvanica ‘Patmore’*
- Pin Oak - *Quercus palustris*
- Pyramidal European Hornbean - *Carpinus betulus 'Fastigiata'*
- *Queen Elizabeth Maple - *Acer compestre 'Queen Elizabeth'*
- *Red Horse Chestnut - *Aesculus x carnea*
- Redspire Pear - *Pyrus calleryana 'Redspire'*
- *Red Sunset Maple - *Acer rubrum ‘Red Sunset’*
- Regent Japanese Pagoda Tree - *Sophora japonics 'Regent'*
- Rivers Purple Beech - *Fagus sylvatica ‘River Purple Beech*
- *Royal Red Maple - *Acer platanoides ‘Royal Red’*
- Saratoga Ginkgo Tree - *Ginkgo biloba ‘Saratoga’*
- *Schwedler Norway Maple - *Acer platanoides 'Schwedleri'*
- *Shademaster Honeylocust - *Gleditsia triacanthos inermis 'Shademaster'*
- Skyline Locust - *Gleditsia triacanthos inermis ‘Skyline’*
- *Summershade Norway Maple - *Acer platanoides 'Summershade'*

- *Sycamore Maple - Acer pseudoplatanus
- White alder - *Alnus incana*
- Whitespire Birch - Betula platyphylla 'Whitespire'
- Village Green Zelkova - *Zelkova serrata 'Village Green'*



4. Parking/Planting Strip Width 8 Feet and up (Acceptable Species) - As recommended by the Urban Forester, parking strips of this size will be classified by the appropriate rating of Large Tree Species. These tree species will not be planted where overhead electrical lines or other overhead utilities are present within the parking strip area. These trees are not to be planted in smaller areas listed above under the small or medium parking strip categories.

- American Sweetgum - *Liquidambar styraciflua*
- Autumn Gold Ginkgo Tree - *Ginkgo biloba 'Autumn Gold'*
- Burr Oak - *Quercus macrocarpa*
- Columnar English Oak - *Quercus robur 'Fastigiata'*
- Crimean Linden - *Tilia x euchlora*
- English Oak - *Quercus robur*
- European Beech - *Fagus sylvatica*
- European Hornbeam - *Carpinus betulus*
- Fairmount Ginkgo - *Ginkgo biloba 'Fairmount'*
- Ginkgo Tree - *Ginkgo biloba 'Saratoga'*
- Hackberry - *Celtis occidentalis*
- Horse Chestnut - *Aesoulus hippocastanum*
- Japanese Zelkova - *Zelkova serrata*
- Kentucky Coffee Tree - *Gymnocladus dioicus*
- Lace Bark Elm - *Ulmus parvifolia*
- *Legacy Sugar Maple - *Acer saccharum 'Legacy'*
- London Plane Tree - *Platanus x acerifolia*
- London Planetree, Blood Strain - *Platanus x acerifola 'Bloodgood'*
- *Marshall's Seedless Green Ash - *Fraxinus pennsylvanica*
- Patmore Ash - *Fraxinus pennsylvanica 'Patmore'*
- *Red Maple - *Acer rubrum*
- *Redmond Linden - *Tilia euchora 'Redmond'*
- Red Oak - *Quercus rubra*
- Silver Dollar Tree - *Eucalyptus polanthemos*
- *Sugar Maple - *Acer saccharum*

- Sycamore - *Plantanus occidentalis*
- Tulip Tree - *Liriodendron tulipifera*
- *Western or Northern Catalpa - *Catalpa speciosa*
- *White Ash - *Fraxinus americana*
- *White Horsechestnut - *Aesculus hippocastanum*
- White Oak - *Quercus alba*

VI. PROPER PLANTING SPECIFICATIONS

A. Location and Spacing

1. No planting holes, pits or excavation for street trees shall be prepared on city parking/planting strips until the planting site has been identified and approved by the Urban Forester. In addition to the Urban Forester's approval, Blue Stake Location Services must clear all planting sites of utilities in accordance with Utah State law. Trees shall be centered between the sidewalk and the curb. Only trees listed in section IV meeting applicable individual parking/planting strip dimensions shall be planted. In the event that there is no sidewalk or curb, the Urban Forester will designate the planting location of the tree.

2. No tree species which will attain a mature trunk diameter greater than 12 inches, a base swell greater than 16 inches, or extensive surface rooting characteristics upon maturity shall be planted in a parking/planting strip less than six (6) feet in width. On parking/planting strips less than three (3) feet in width, or where there are overhead utilities the Urban Forester shall determine lines or where structural conflicts exist, species and location selection.

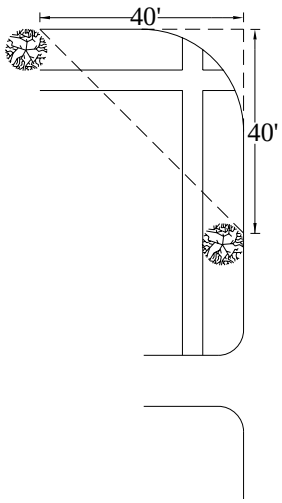
3. No Street Tree shall be planted within ten (10) feet of any building, structure or fence, unless otherwise specified by the Urban Forester.

4. No Street Tree shall be planted within fifteen (15) feet of a streetlight, utility pole, driveway or alley.

5. No Street Tree shall be planted within eight (8) feet of any water meter.

6. At street Intersections, no Street Tree shall be planted within forty (40) feet of the vertex (the corner point if the two curbs intersect in straight lines rather than having a radius) of any corner within an intersection.

Sight Triangle
and all Dimensions



7. Street Trees planted in parking strip must have a minimum of sixteen (16) square feet exposed area (4' x 4' opening) at the base of the tree. The tree must be set back a minimum of two (2) feet from the curb and gutter.

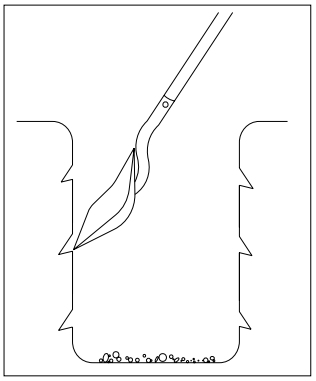
8. In general, minimum spacing between trees to achieve optimum individual growth rates when canopies mature shall be: small trees twenty-five (25) feet, medium trees thirty-five (35) feet and larger trees should be forty-five (45) feet. The Urban Forester may make specific spacing requirements for street tree plantings based upon individual site condition/characteristics and species or varieties characteristics and requirements.

B. Planting Techniques

1. Public planting on city property may be done by using trees grown in containers, tree supplied in burlap and balled baskets or trees dug and moved with a tree spade. The three different types of trees (containerized, balled and burlapped or tree spade) supplied by nurseries or landscape companies require three different planting techniques. The different techniques are described in greater detail, further in this section. Bare-root planting will not be used unless special circumstances require its use as recommended by the Urban Forester.

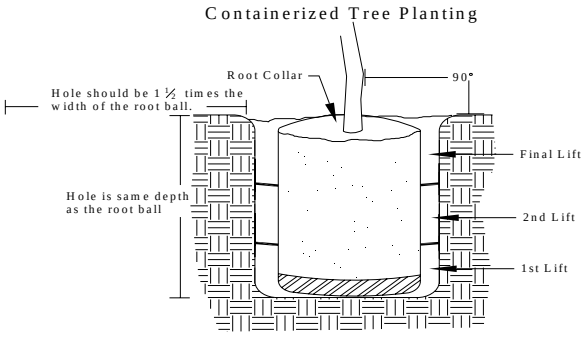
2. All planting holes shall be constructed in a circular fashion with outward tapering walls (vase shaped). Planting holes should be dug when the soil is moderately moist, not

Planting Hole and Deglazing



saturated. When the hole is constructed in moist conditions the walls of the hole may become "glazed". Although glazing conditions are more severe when using a soil auger or tree spade to dig the hole, glazing can be a problem with shovel-constructed holes when soil moisture conditions are high. Glazing should be alleviated prior to planting the tree by reversing the shovel angle and scuffing the glazed walls of the hole with the tip of the shovel. This will allow an interface for newly developed roots to easily penetrate and adapt to the new soil conditions. Generally, holes should be dug one and a half (1 ½) times the diameter and the same depth as that of the root ball and soil mass.

3. Trees should be centered in the planting hole and set at the depth where each trees' original soil line is equal or slightly higher than the top of the planting hole's soil line. (This will compensate for the settling of the soil backfill). The tree should be completely perpendicular to the ground when viewed from two locations at right angles to one another.



C. Planting Containerized Stock

1. Containerized planting stock should be placed in the prepared hole no deeper than the existing soil line that is in the container; not to the container top itself. Careful inspection should be made to locate the root collar of the tree. The root collar is the region of the tree where the trunk of the tree meets the roots. The root collar can usually be identified by green tissue just above the brown or white tissue of the roots when lightly scrapped with a fingernail. Oftentimes, trees are planted too deep in the containers from the nursery. If the root collar is too deep in the container then plant the tree so that the root collar is just at or slightly above the existing soil line of the planting hole. If the root collar is at the right height with the soil in the container then the tree can be placed in the hole and the top soil level of the container be made equal to or slightly higher than the planting hole's soil line. The tree can be straightened and be made perpendicular to the ground by tipping the tree and packing soil under the appropriate side. A tree growing crookedly in its container can be straightened in the same manner. Always lift the tree by the container, not by the trunk. Once the planting hole has been

completely prepared, the container must be removed.

2. Containers must be carefully removed from these types of trees, even if the containers are of decomposable material. Container can be removed in two different ways: a) With the tree lying on its side, carefully cut a slit down the container wall with tin snips or shears, then continue the cut across the bottom of the container. Peel back the container and place root mass into planting hole. b) With the tree lying on its side, sharply slap container's walls with an open hand, rotate container and repeat. Gently slide root mass out of container and place in planting hole. During either procedure caution should be exercised to ensure that soil is not separated from root mass and that no damage is sustained to the tree's roots.

3. If roots have grown in a spiral fashion inside the container, the tree maybe "root bound". To encourage straight roots to form, make four (4) vertical incisions down the sides of the rootball one-fourth (1/4) inch in depth 90 degrees to each other, and a crisscross incision on the bottom. Note: once roots are removed from container, time is essential. Roots must not be exposed to direct sunlight or air for any amount of time. Immediately plant the tree to minimize exposure time.

4. Place enough topsoil in the planting hole to fill one-third (1/3) of the hole. Lightly tamp soil around the lower portion of the root mass using hands or feet, then add one-third more topsoil and repeat tamping. Add water to hole; let water completely drain, then fill hole completely full with topsoil to surrounding soil level. Put a soil dike around perimeter of planting hole if the tree is located in an area that is not under an irrigation system and water thoroughly. If the planting site is in extremely rocky soil or soil that is high in clay, soil additives can be added to the soil that is returned to the planting hole. Additives should be high in organic matter and material designed to keep soil loose and aerated. Most compounds designed to do this are marketed, as a soil amendment not a soil additive. Such compounds include sphagnum moss, wood produces, perlite or vermiculite in their compositions. Introducing these compounds into existing soil should be done at a one to four or one to three ratio of additive to soil. In other words, for every shovel of introduced soil additives you should combine two to three shovels of existing soil.

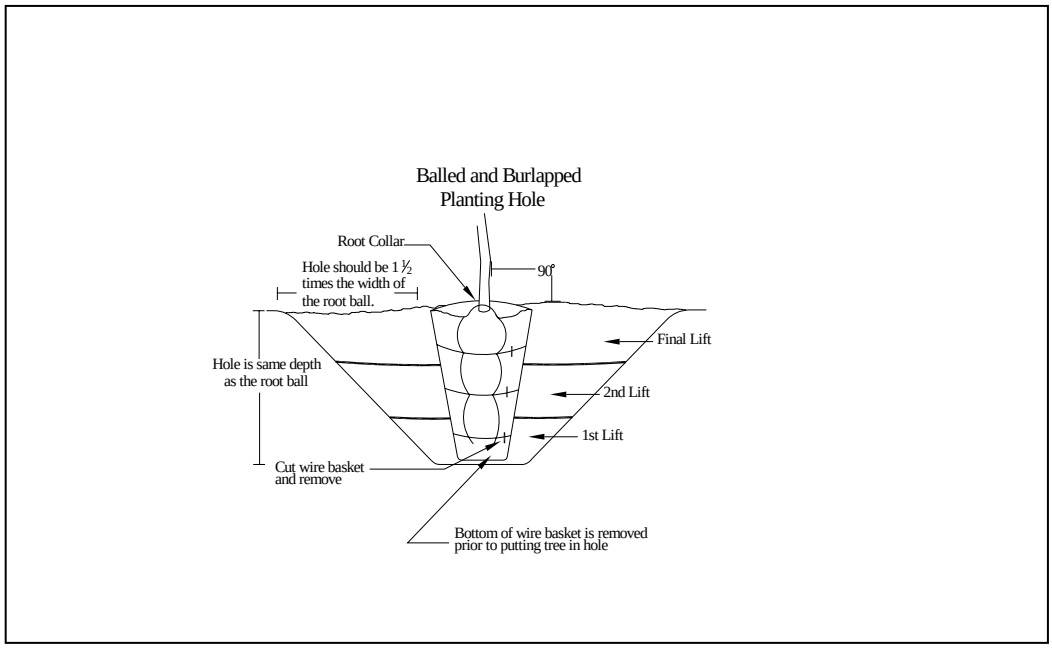
D. Planting Balled and Burlapped Stock

1. Set the tree in the planting hole on a layer of tamped soil at the bottom of the hole and at the same depth or slightly higher than it was at the nursery. The tree can be straightened by tipping it and packing soil under the appropriate side. Always lift balled and burlapped plants from beneath the soil ball, never by the trunk.

2. Follow planting procedure as used in containerized stock with the following exceptions:

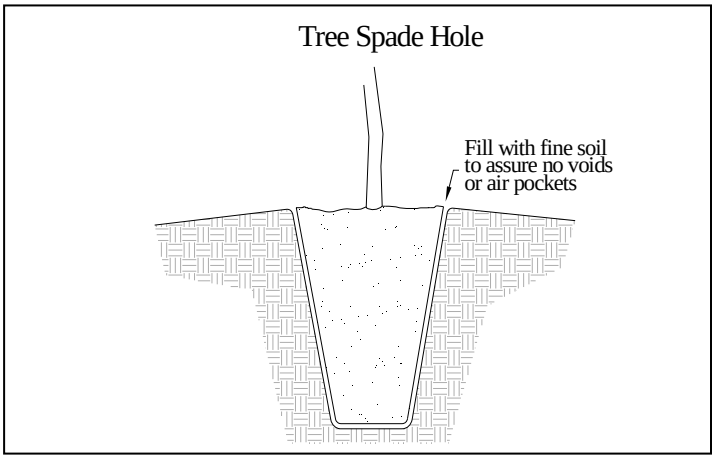
   a) Once planting hole has been prepared, carefully place tree (burlap and all) at the side of the planting hole. Cut the lower portion of the wire basket completely off the bottom of the root ball. Place the root ball into the planting hole and align the tree

vertically to the surrounding ground level and center it in planting hole. Fill the hole with enough soil to "set" the ball to keep it from moving while you complete the tree planting. Now that the tree is secure, cut the remaining portion of the cross braces in the wire basket in a vertical manner and remove wire basket. If the root ball is solid and does not start to break, finish the planting by cutting all of the burlap that is accessible and removing it from the planting hole.



b) If the root ball is dry or very sandy and starts to break apart during the removal of the burlap, then maintain the burlap around the ball. Cut the burlap completely around the bottom of the ball and leave in place. Fill the planting hole 1/3 full and lightly compact the soil. Next gently pull the burlap up to the new soil level. Fill the planting hole 1/3 more with soil and lightly compact. Gently pull burlap to that level. Complete filling the hole and compact lightly, removing the burlap completely. The ball is still intact and almost all of the burlap has been removed. Water immediately.

c) Make sure all twine, wire, and any other debris are separated from the tree. With burlap and balled trees, compaction at the time of planting is critical. If the compaction is too great, the tree will be stressed while trying to adapt to the new location. If the compact is too little, the tree will tip over from simply being watered, let alone by wind.



E. Planting Tree Spade Stock

Planting trees with a Tree Spade is one of the most expensive methods of planting. The average homeowner will probably never choose to use this method because of the cost. However, it is one of the few ways that large trees can be planted in a new landscape. A Tree Spade is a machine that digs a soil plug from a location where a tree is desired. The machine is then used in another location to dig another plug with a tree in it and then takes that tree plug to the first location and plants it in the original soil plug site. If a Tree Spade is to be the method used, then the following guidelines will be followed.

1. As stated earlier, mechanical tree spades and augers create the most severe cases of glazing. Roughing the sides of the planting hole with a shovel can alleviate glazing. However, when using a tree spade, one should be careful while roughening the sides of the hole with a shovel, so that deep depressions can be avoided. Deep depressions or holes in the spaded hole walls will be hard to fill with soil and will cause "air pockets" which could seriously stress the tree, if not kill it.

2. First, a soil plug is dug with the tree spade and the planting hole is created. Alleviate the glazing effect on the sidewalls by scuffing with a shovel.

3. Place the tree plug in the hole the same way that the initial soil plug was taken out.

4. Backfill with topsoil between the sides of the hole and the tree plug.

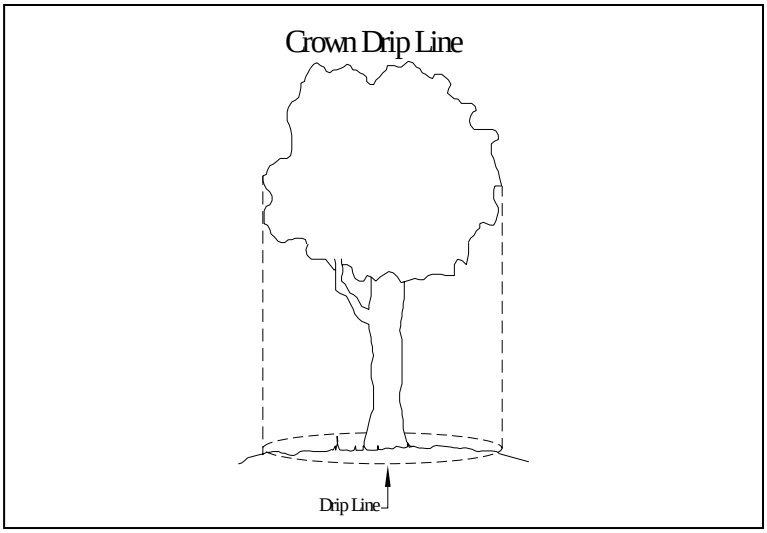
5. Water thoroughly to settle backfill and eliminate air pockets, allowing standing water to be absorbed prior to adding more soil.

6. Add enough soil to fill the space between the side of the hole and the tree plug level with the adjacent grade and tamp it. Water again to settle backfill. Repeat backfilling and watering until no additional soil will go into the hole between the tree plug and adjacent ground.

7. Water as defined in Section V, F.

F. Maintenance After Planting

1. Watering - Newly planted trees and other woody plants require water once every other day. After two weeks, watering can be reduced to every three to six days during the growing season, for the first year after they have been planted. Watering is mainly dependent upon seasonal temperatures:



the warmer the temperatures the more water is needed. Mature trees should also be watered prior to and during severely dry periods. To properly water an established tree, let a garden hose run slowly for several hours at and around the drip line of the tree. Watering too frequently can harm a tree, so guard against over-watering. Check several inches below the soil surface for moisture. Water only when the soil feels dry or just slightly damp. As a general rule, keep trees moist but not wet. The difference between the two is when you put the soil in your hand and squeeze it and water trickles out, that's wet. If you squeeze it and the water just discolors your hand that is moist. If the tree is getting too much water from a sprinkler system, the soil dike installed at the time of planting must be removed.

2. Root Stimulants - There are several organic and inorganic root-promoting hormones available on the market today. Use of root stimulant aides the plants natural abilities to develop root biomass, and they are very effective in reducing prolonged stress due to root pruning effects on new transplants. Most of these chemicals have a vitamin B-1 compound in them. Vitamin B-1 also aides in reducing stress in new transplants. The best compounds contain vitamin B-1, Chelated micronutrients (zinc, manganese, *etc*.) and two root- promoting growth hormones.

3. Mulching - A three to four inch layer of mulch, spread to form a three-foot diameter circle around the trunk, should be applied after planting. Keep the mulching material from direct contact with the tree trunk. Mulching prevents weed growth, slows moisture loss, stabilizes soil temperature, prevents soil heaving from frost, and provides a barrier between the trunk and your lawn mower/weed trimmer. Wood and bark chips are good mulching materials.

4. Fertilizing
   a) Newly planted trees and other woody plants usually do not need to be fertilized during their first growing season. If fertilizing is done during planting, only a slow-release fertilizer should be used, and placed deep into the planting hole and backfilled with soil to minimize fertilizer absorption by weeds and turf. Three to four years after planting, young trees and other plants can benefit from fertilizers applied in the spring as soon as the frost has left the ground, or in late fall after the current growing season has ended. Use a complete slow release fertilizer, such as 16-10-8 or 10-8-6, containing nitrogen, phosphate, and potash. Trees and other plants showing loss of vigor, indicated by light green or off-color foliage, smaller than normal leaves, dead twigs and slower than normal growth may need to be fertilized.

   b) The fertilization of street trees shall be the responsibility of the abutting property owner. Recommendations on the type and the application method to be used to fertilize street trees shall be given by the Urban Forester or a licensed commercial applicator that is hired by the property owner to do such work.

5. Staking
   a) The staking of newly planted trees shall depend on tree strength and conformation,

expected wind conditions, the amount of vehicular or foot traffic, the type of landscape planting and the level of follow-up maintenance. Most newly planted trees will do better without staking. Young trees standing alone with their tops free to move will develop stronger trunks and root systems than those that are staked.

b) Should staking be necessary, such as when a tree is loose in the root ball or ground, and then it is important that proper methods be used to prevent injury or death. Do not tie young trees so tightly that they do not move; movement is necessary for proper development of structural support roots. Remove stakes and support off the tree after one year or after establishment of the tree has taken place. Use a soft material to go around the trees to cushion the tree from the support. If a garden hose is used put the garden hose around the tree and tie the wire support to the hose. Do not put the wire through the hose; this will still girdle the tree. Stake individual trees so three (3) stakes guide them; place each stake one third (1/3) of the circumference of the area around the tree. Put the stake firmly in the ground, while assuring that it is not penetrating or damaging the root ball.

6. Pruning
   a) Pruning transplanted trees immediately before or after planting should be avoided. The only pruning that should be carried out upon planting is: 1) broken branches as a result of transporting or planting operation; 2) dead or diseased branches; 3) stubs and basal sprouts.

   b) Pruning to correct branching orders, and for shape and aesthetics should be delayed for one (1) to two (2) years after planting.

   c) All pruning shall be done with proper and sharp pruning tools in accordance with all pruning standards. All plant labels secured around the trunk or branches of plants shall be removed after planting is complete.

7. Wrapping - the wrapping of tree trunks of newly planted trees is needed only when dealing with thin and smooth barked species. These trees can be wrapped with a protective covering of burlap or asphalt-lined crepe paper to protect against sunscald injury. Thin barked species, such as young Maples, Lindens, Honeylocusts and Crabapples should be wrapped for at least one (1) year. Begin the wrapping at the base of the trunk and continue upward in a spiral pattern to the first major lateral branches. Overlap each turn one-half the width of the tree wrap material and fasten the free end of the wrap with itself or electrical tape. Wrapping should be done early in the fall and removed each year in the spring.

VII. STANDARD METHODS OF TREE CARE

A. Trimming

Refer to the current edition or revision of “Pruning Standards for Shade Trees”, “Natural Target Pruning”, or the “American Association of Nurseryman Standards.” These

publications are available at the Public Ways and Parks Office Building, 1875 Monroe Boulevard.

B. Spraying
See publications referenced above.

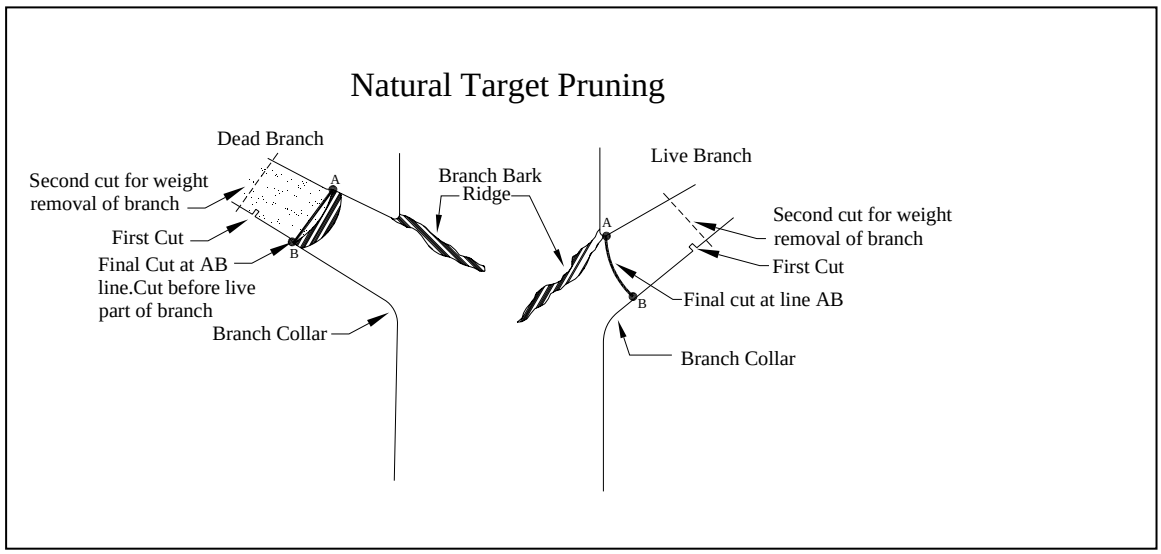
C. Removal
Trees will be removed in accordance with accepted industry standards and procedures and by following three minimum requirements: (1) limbs and branches larger than four (4) inches in diameter shall be lowered to the ground through the use of ropes or other mechanical devices if the fall cannot be controlled; (2) extreme care shall be taken so as to prevent any and all damage turf, hard surfaces and structures; and (3) stumps shall not be left higher than six (6) inches above ground level.

1. Removal Criteria for Trees on City Property. Street Trees and Park Trees shall be removed only when authorized by the Urban Forester and a removal permit has been issued. Authorization may be for any of the following reasons
    - ♦ The tree is infected with a pathogen, insect, or disease
    - ♦ Public work requirements dictate work be done around the tree will kill or render it a hazard
    - ♦ It poses a severe hazard that is beyond the point of correction
    - ♦ It severely interferes with the growth and development of a more desirable public tree
    - ♦ The aesthetic values are so poor that the site is visually enhanced by the tree's removal
    - ♦ It is dead, dying, and /or deteriorating and is a hazard to property and/or people
    - ♦ It is no longer economically feasible to maintain, e.g., maintenance costs exceed environmental benefits derived from declining health conditions
    - ♦ It is causing damage to infrastructure, e.g., sewer line, water, etc., which is not correctable using other tree maintenance methods.

2. Removal Criteria for Stumps on City Property - Stumps shall be removed to a depth of no less than twelve (12) inches below the finished grade. Portions of the stump or surface roots that cannot be removed with the use of a stump grinder shall be treated immediately upon completion of grinding with a stump-killing compound. Application of such treatments will be in full compliance with the chemical label and Utah State chemical application laws.

D. Planting
See Section V paragraphs "A" through "E".

E. Pruning Specifications



1. Pruning is a horticultural practice based on science and aesthetics and is a preventive and corrective maintenance practice. All pruning of street trees, park trees, or public trees shall be done in accordance with the current editions of the National Arborist Association's "Pruning Standards for Shade Trees", and the "Natural Target Pruning", the National Tree Care Industry Association Standards and the American National Standards for pruning, ANSI A300, unless otherwise specified. All pruning performed by individuals including Ogden City Forestry personnel will be in accordance with the Ogden City Urban Forestry Ordinance and these regulations. Copies of these specifications shall be available through the Urban Forester for public distribution. Additional copies are available at the Ogden Public Ways and Parks office located at 1875 Monroe Boulevard and the Ogden City Recorders Office located at 2484 Washington Boulevard, Third Floor upon request.

2. All final pruning cuts shall be made sufficiently close to the trunks or parent limb, without cutting into the "branch collar" or leaving a protruding stub, so as to favor the earliest possible covering of the wound by natural wound wood growth. Excessively deep flesh cuts that produce large wounds or weaken the tree at the cut shall not be made.

3. Whenever pruning cuts are to be made while removing limbs too large to hold securely in one hand during the cutting operation, the limbs shall be cut off first one to two feet beyond the intended final cut. Then the final cut shall be made in a manner to prevent unnecessary tearing back of the bark and/or wood.

4. Whenever necessary, to prevent tree or property damage, large branches shall be secured by ropes or other equipment and lowered safely to the ground in a controlled manner.

5. The best time to prune living branches is in the dormant growth period of a tree or very early in the spring before leaves form. Some tree species have a free flow sap and will

"bleed" if pruned in late winter or early spring. Maples, Birch, Honeylocust, Elms and Walnut trees should be pruned when they are actively growing to prevent "bleeding". Late summer or early fall is ideal. Dead and dying branches can and should be pruned and removed at any time.

6. Treatment of pruning cuts with a sealer is not recommended. Wound dressings do not stop decay or inhibit rot and they can be detrimental to the natural healing of pruning cuts. If a pruning sealer is used, materials non-toxic to the wood must be used, and care taken to treat only the exposed wood with a thin coat of aerosol spray.

7. All cutting tools and saws used in making tree pruning cuts shall be kept sharpened to result in final cuts with smooth, clean wood surfaces and secure, healthy bark remaining adjacent thereto.

8. On trees known to be diseased, pruning tools are to be disinfected after each cut and between trees. Sterilize pruning tools with methyl alcohol at two cups of alcohol per gallon of water or bleach at one cup of bleach per gallon of water.

9. In removing the lower bottom branches of trees for sidewalk clearance, care should be given to an aesthetic appearance. Over the street clearance shall be kept to a minimum of twelve (12) feet above the paved surface of the street and seven (7) feet above the surface of the public sidewalk or pedestrian way.

10. Topping, which is removal of all branches in the upper portion of the trees crown for the purpose of reducing the trees over-all height, is not an acceptable pruning practice and will not be allowed on Street Trees, Park Trees and/or public trees, unless authorized by the Urban Forester. These methods of pruning will be used only as a last resort if no other acceptable tree pruning methods can be used and only in a manner specified by the Urban Forester.

11. No person shall be allowed to use prohibited equipment to include shoes with spikes, spurs, climbing irons, or any other footwear that may cause injury to the trees being trimmed under the terms of these regulations. Climbing gear of this nature can only be used during tree removal operations.

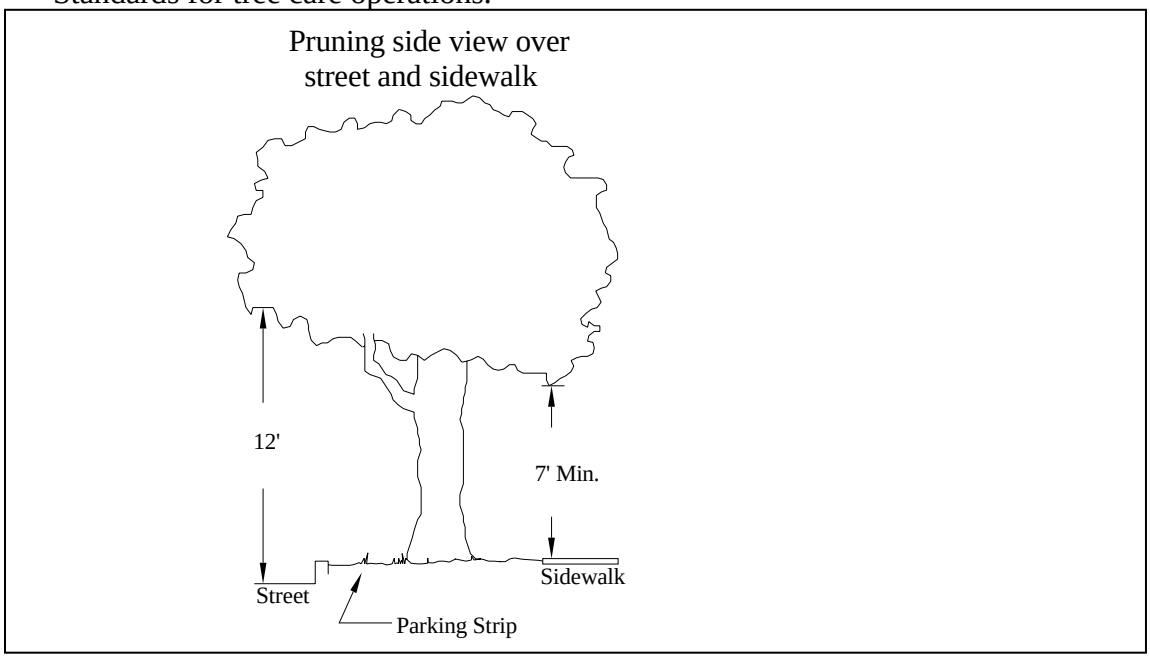
12. At least one responsible tree worker will serve to coordinate safe operating ground conditions. All work shall be done in accordance to and in conjunction with the Ogden City Police Department and the Manual on Uniform Traffic Control Devices. The tree workers will install proper barricades, signs and warning devices, as necessary for sidewalk and traffic closure and control, during any and all street tree pruning work.

13. The authority to prune Street Trees, Park Trees and/or Public Trees does not authorize tree workers to cut back sound, healthy tree limbs in such a manner that the health and/or appearance of the tree(s) is impaired. When pruning trees, one should have in mind to make them shapely, symmetrical and typical of their species. It is recommended that public trees be pruned either by the city forestry personnel or by an ISA-certified

Arborist.

14. Pruning Classes and Standards for Shade Trees.

a) Pruning will be done according to the latest revision of standards of the National Arborist Association for shade tree class I, II, III, or IV pruning as described herein. The Urban Forester will decide pruning class requirements and will indicate them in the pruning permit obtained prior to conducting the work. In addition, pruning will follow Utah Shade Tree Pruning Standards as well as the American National Standards for tree care operations.



b) Generally, pruning shall consist of conforming to Class II, medium pruning, and lifting the lower bottom branches of trees for under clearance as directed by the Urban Forester. The Urban Forester will require additional pruning for street intersection and house clearing.

c) The Urban Forester will direct under clearance pruning to provide for pedestrian and vehicular clearance. Clearance heights shall be determined at a point over the sidewalk and at the lowest point of branch overhang over the street. Clearance heights shall be maintained at a minimum of seven feet over sidewalks and twelve feet over the streets surface on less traveled residential streets. Clearance heights on higher traffic collector and arterial streets shall be maintained at a minimum of seven feet over sidewalks and sixteen feet over the street surface.

15. Classifications Of Pruning

a) Class I Fine Pruning. Fine pruning shall consist of the removal of dead, dying, diseased, interfering, objectionable, obstructing, and weak branches, as well as selective thinning to lessen wind resistance. The removal of such described branches is to include those on the main trunks, as well as those inside the leaf area. An

occasional branch, up to ½" diameter, as described above, may remain within the main leaf area to its full length when it is not practical to remove it. The following specification shall apply:

1) All cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. Clean cuts shall be made at all times.

2) It is necessary to precut branches too heavy to handle to prevent splitting or peeling the bark. Where necessary to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.

3) Remove the weaker or least desirable of crossed or rubbing branches. Such removal should not leave large holes in the general outline of the tree.

4) Treatment of cuts and wounds, with tree wound dressing, is not recommended but is optional except where open wounds in certain trees may attract insects that carry disease or allow fungal invasion. If such treatment is made, materials non-toxic to the cambium layer must be used, and care taken to treat only the exposed wood with a thin coat of dressing.

5) On trees known to be diseased, tools are to be disinfected with methyl alcohol at two cups per gallon of water or bleach at one cup of bleach per gallon of water after each cut and between trees where there is known to be a danger of transmitting the disease on tools.

6) Old injuries are to be inspected. Those not closing properly, and where the callus growth is not already completely established, should be reported to the Urban Forester for the purpose of inspection. Once inspected, the Urban Forester will decide the best method or practice available to remedy the situation.

7) Where practical, all visible girdling roots shall be treated as follows: a) cut root at either end, b) Notch root in center with chisel, and c) Remove entire root without injuring the back or parent stem.

8) The presence of any structural weakness, disease conditions, decayed trunk/branches, split crotches/branches, should be reported to the City for recommended corrective measures.

b) Class II medium pruning shall consist of the removal of dead, dying, diseased, interfering, objectionable and weak branches on the main trunks as well as those within the leaf area. An occasional branch up to one inch in diameter may remain within the main leaf area where it is not practical to remove it. The following specifications shall apply:

1) All cuts shall be made sufficiently close to the trunk or parent limb, without cutting

into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. Clean cuts shall be made at all times.

2) It is necessary to precut branches too heavy to handle to prevent splitting or peeling the bark. Where necessary, to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.

3) Treatment of cuts and wounds, with tree wound dressing, is optional except where open wounds in certain trees may attract insects that carry disease or allow fungal invasion. If such treatment is made, materials non-toxic to the cambium layer must be used, and care taken to treat only the exposed wood with a thin coat of dressing.

4) On trees known to be diseased, tools are to be disinfected with methyl alcohol at two cups per gallon of water or bleach at one cup of bleach per gallon of water after each cut and between trees where there is known to be a danger of transmitting the disease on tools.

5) Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be reported to the Urban Forester for the purpose of inspection. Once inspected, the Urban Forester will decide the best method or practice available to remedy the situation.

6) All girdling roots visible to the eye are to be reported to the Urban Forester or are to be severed as described in Class I Fine Pruning.

7) The presence of any structural weakness, disease conditions, decayed trunk or branches, split crotches or branches should be reported to the Urban Forester for the purpose of inspection. Once inspected the Urban Forester will decide the best time and the best solution to alleviate hazardous situations.

c) Class III coarse pruning shall consist of the removal of dead, diseased or obviously weak branches, two inches in diameter or greater. The following specifications shall apply:

1) All cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. Clean cuts shall be made at all times.

2) It is necessary to precut branches too heavy to handle to prevent splitting or peeling the bark. Where necessary, to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.

3) Treatment of cuts and wounds with tree wound dressing is optional except where open wounds in certain trees may attract insects that carry disease or allow fungal invasion. If such treatment is made, materials non-toxic to the cambium layer must be used, and care taken to treat only the exposed wood with a thin coat of dressing.

4) On trees known to be diseased, tools are to be disinfected with methyl alcohol at two cups per gallon of water or bleach at one cup of bleach per gallon of water after each cut and between trees where there is known to be a danger of transmitting the disease on tools.

5) The presence of any structural weakness, disease conditions, decayed trunk or branches, split crotches or branches, should be reported to the Urban Forester for the purpose of inspection. Once inspected the Urban Forester will decide the best time and the best solution to alleviate hazardous situation.

d) Class IV cutting back or drop crotch pruning shall consist of the reduction of tops, sides, under branches or individual limbs. This practice is to be undertaken only in cases of utility line interference, where certain portions of the roots or root systems have been severed or severely damaged, when there is unusual and rapid tree growth, where it is necessary to reduce the topsides or under branches, or for specific topiary training or dwarfing. The following specifications shall apply:

1) All cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. Clean cuts shall be made at all times.

2) It is necessary to precut branches too heavy to handle to prevent splitting or peeling the bark. Where necessary, to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.

3) Remove crossed or rubbing branches and branches that exhibit weak unions or are less desirable due to their location within the crown. Such removal should not leave large holes in the general outline of the tree.

4) Treatment of cuts and wounds with tree wound dressing is optional except where open wounds in certain trees may attract insects that carry disease or allow fungal invasion. If such treatment is made, materials non-toxic to the cambium layer must be used, and care taken to treat only the exposed wood with a thin coat of dressing.

5) Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be reported to the Urban Forester for the purpose of inspection. Once inspected, the Urban Forester will decide the best method or practice available to remedy the situation.

6) Generally, in reducing size (cutting back), not more than one third of the total area should be reduced at a single operation. When cutting back trees, only drop crotch as much as necessary. Where practical, natural trimming shall be accomplished without cutting back to small suckers. The smaller limbs and twigs are to be removed in such a manner as to leave the foliage pattern evenly distributed. When making a drop crotch cut, all effort should be made to cut back to a lateral that is at least one-third of the diameter of the cut being made on the main branch.

7) In reducing overall size, attention is to be given to the symmetrical appearance of the crown. Trees should be shaped to remain in an appearance, which is true to crown characteristics and typical of their species. Sides shall be reduced in order to maintain a tree-like form.

8) When cutting back trees, one should have in mind to make them true to crown characteristics and typical of their species.

9) On thin barked trees, just enough limbs shall be removed to get the effect wanted without admitting too much sunlight to the trunk of the tree or the top of large branches. Care should be taken with the following species: Lindens, Maples, Beeches, Apples, Oaks, and other trees susceptible to sun scald growing in different geographical areas. Doing work on susceptible species during late winter or early spring may minimize the above damage.

10) In lifting the lower bottom branches of trees for under clearance, care should be given to symmetrical appearance, weight distribution and crown balance. Cuts should not be made so large that they will prevent normal sap flow.

11) Periodical drop crotching or cutting back of silver maples, poplars, and other trees with brittle and soft wood that have already been topped or cut back previously may be done again as a means of safety, if determined by the Urban Forester. However, this method will only be used when there is no other viable Arborcultural method that can be used, or in the event of storm damage correction. Damaged trees that require extreme severe drop crotching might have to be removed if the Urban Forester decides they cannot be salvaged. In addition, trees that have been unlawfully topped severely may be grounds for removal.

12) An alternate method in some situations for maintaining the safety of these trees would be cabling and bracing as described under that standard.

e) Pruning Objectives other than specific pruning classes may be done when there is a specific need for a tree and a full class pruning is unnecessary. In cases where there are specific needs, those needs will be satisfied in the following categories:

1) Structural – Pruning that influences the orientation, spacing, growth rate, strength of attachment, and ultimate size of branches and stems, resulting in a stronger tree. A solid structure of primary scaffold branches should be established while the tree is young. The scaffold branches provide the framework of the mature tree. Properly trained young trees will develop a strong structure that requires less corrective pruning as they mature. Good pruning techniques remove structurally weak branches while maintaining the natural form of the tree.

2) Cleaning – Cleaning is the selective removal of dead, diseased, detached, and broken branches. This type of pruning is done to reduce the risk of branches falling from the

tree and to reduce the movement of decay, insects, and diseases from dead or dying branches into the reset of the tree. It can be performed on trees of any age but is most common on medium-aged and mature trees. Cleaning is the preferred pruning type for mature trees because it does not remove live branches unnecessarily. Cleaning removes branches with cracks that may fail when the interior wood dries.

a. The location of branches to remove should be specified if the entire crown is not going to be cleaned. The diameter of the branches to be removed also should be specified. This usually is done by specifying the smallest branch to remove (for example, "clean branches 1 inch in diameter and larger").

3) Thinning – Thinning is the selective removal of small, live branches to reduce crown density. Because the majority of small branches are at the outside edge of the crown, thinning is focused in that area. Proper thinning retains crown shape and should provide an even distribution of foliage throughout the crown.

a. Thinning increases sunlight penetration and air movement through the crown. Increased light and air stimulate and maintain interior foliage, which can encourage taper on scaffold branches. Thinning a limb should be considered if cabling is to be performed. Thinning also can remove suckers from the base of the tree and some watersprouts on the interior. Excessive removal of watersprouts often produces more watersprouts, so it is not recommended. Vigorous production of watersprouts on interior limbs often is a sign of overthinning or lion tailing.

b. Excessive branch removal on the lower two-thirds of a branch or stem (lion tailing) can have adverse effects on the tree and therefore is not an acceptable pruning practice. Lion tailing transfers weight to the ends of branches and may result in sunburned bark tissue, waterspouts, cracks in branches, reduced branch taper, increased load on branch unions, and weakened branch structure. Lion tailing also changes the dynamics of the limb and often results in excessive branch breakage.

c. If the entire crown will not be thinned, the areas to be thinned must be specified. The size range and percentage of foliage to be removed also must be specified. Usually in the 10 to 15 percent range – but should not exceed 25 percent of the crown, especially on mature trees. Most thinning removes branches ¼ to 1 inch in diameter. If larger branches are removed, large gaps may be created in the crown or watersprouts can result.

4) Raising – Raising is the selective removal of branches to provide vertical clearance. Crown raising shortens or removes lower branches of a tree to provide clearance for buildings, signs, vehicles, pedestrians, and vistas. Excessive removal of lower limbs can slow development of trunk taper, can cause cracks or decay in the trunk, and transfers too much weight to the top of the tree. Mature trees could become stressed if large-diameter lower branches are removed. Clearance sometimes can be achieved

by shortening some of the low branches rather than removing them to prevent these problems. Live crown ratio should be no less than 66 percent when raising is completed. Structural pruning should be considered along with raising.

a. When raising, the desired clearance should be specified. To differentiate between complete branch removal and shortening, specify the size range of the limbs to remove and their location (for example, "raise 12 feet about the road by removing downward-growing branches 2 inches in diameter and smaller").

5) Reducing – Reduction is the selective removal of branches and stems to decrease the height and/or spread of a tree or shrub. This type of pruning is done to minimize risk of failure, to reduce height or spread, for utility line clearance, to clear vegetation from buildings or other structures, or to improve the appearance of the plant. Portions of the crown, such as individual limbs, can be reduced to balance the canopy, provide clearance, or reduce likelihood of breakage on limbs with defects. Occasionally, the entire crown is reduced. Reducing or thinning should be considered if cabling is to be performed. Crown reduction should be accomplished with reduction or removal cuts, not heading cuts.

a. Biologically, reduction cuts are considered less desirable than cuts that remove branches at their points or origin because there is no branch collar or branch protection zone in place when the cut is made to a lateral. Although this concern appears to be minor on small cuts, large cuts on more mature trees may not compartmentalize. Nevertheless, there are circumstances in which reduction is necessary or the best option.

b. Not all tree and shrub species can be reduced. Therefore, the species and plant health should be considered before starting work. Old, stressed, or mature trees could decline or become more stressed as a result of this treatment. When a limb on a mature tree is cut back to a lateral, no more than one-fourth of its foliage should be removed. More can be removed on a young tree to accomplish particular objectives. More decay can enter the tree following reduction than following other pruning types.

c. The clearance distance or percentage size reduction should be specified. Because making many small cuts or just a few large-diameter cuts can reduce a tree, it is important also to specify the size range of cuts. Reduction usually

should be done on smaller-diameter branches (for example, 1 to inches for trees and ½ to 1 inch for shrubs).

6) Restoring –Restoration is the selective removal of branches, sprouts, and stubs from trees and shrubs that have been topped. Severely headed, vandalized, lion tailed, broken in a storm, or otherwise damaged. The goal of restoration is to improve a tree or shrub's structure, form, or appearance.

   a. On trees with many sprouts originating at the tips of branches, one of three sprouts on main branch stubs are selected to become permanent branches and to re-form a more natural-appearing crown. To accomplish this objective, consider shortening some sprouts, removing others, and leaving some untouched. Some vigorous sprouts that will remain as branches may need to be shortened to control growth and ensure adequate attachment for the size of the sprout. Lion-tailed trees can be restored by allowing sprouts to develop along the interior portion of limbs for one to three years depending on size, age, and condition of the tree. Then remove and shorten some of the sprouts along the entire length of the limbs so that they are evenly distributed and spaced apart. Restoration usually requires several years of pruning.

   b. Specify the location in the tree (for example, top or interior) and the percentage of sprouts to be removed or reduced. Typically, one-third of the sprouts are removed and one-third are reduced each pruning until adequate branches have developed.

7) Pollarding – is the practice of removing all new growth from a tree annually. Although pollarding is associated with topping it is not the same. Pollarding is the cutting back of a limb to a single point on an annual basis. Pruning is done every year and the limbs form a nodule at the point where all new growth is continually removed. However, pollarding even though it is an acceptable practice on some species of trees will not be allowed within Ogden City on publicly owned trees.

8) Pruning Conifers – Some pruning types are not appropriate for all conifers. For example, branch spacing and scaffold limb development in conifers usually are not necessary. Thinning on spruces and firs rarely is needed. Few conifers respond well to pollarding or reduction.