

# City of Wichita Tree Policy

April 1, 2022

Initiated By: Wichita Park & Recreation Department

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## Background

The City of Wichita currently has a significant gap between tree removal and tree planting. Most recent estimates by the Park & Recreation Forestry Division state that the City removes between 3000 and 5000 trees per year, while only planting between 1300 and 1600 per year. Factors for removal and planting vary and the trajectory of canopy loss versus canopy replacement remains in a deficit. Additionally, recent experiences with tree maintenance and removal practices brought about questions from the Wichita Park's Board. The Board requested background information on how tree ordinances in Wichita compare to tree ordinances in other Cities. Nine other cities were compared, and language based on those cities was analyzed to establish what possible updates in policy could look like for

improved tree protection, planting, maintenance, and removal along with possible exemptions, penalties, and preferred tree species for the region.

## Application

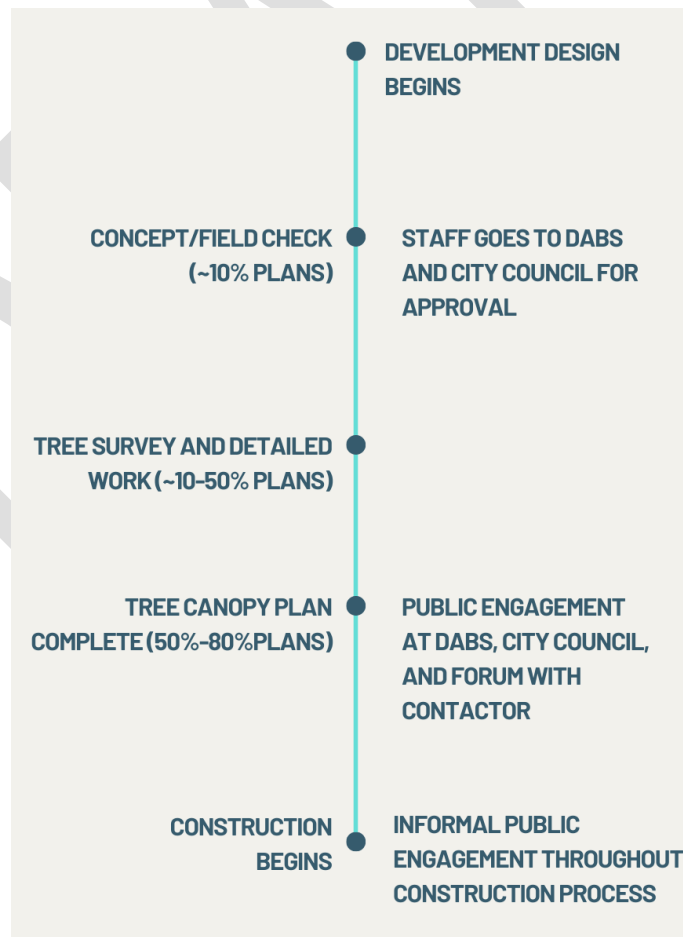
This policy will apply to City development on City property and City right of ways.

## Notification and Development

It is crucial that the public hears and gives input about City development and improvements that the city is making. It is also important to know what landscape will be altered in these development projects.

Current projects follow the following process:

- Staff review throughout design of the project. Public engagement occurs, at a minimum:
  - District Advisory Boards and City Council at Concept stage (~10% Plans)
  - Tree Survey and Detailed Work starts (~10%-50%)
  - Tree Canopy Plan Complete. Return to District Advisory Boards and City Council at 50-80% plan stage
  - Public Information Meeting, with the contractor, prior to beginning construction.
  - Informal public engagement happens throughout the process, both during design and construction.



This policy proposes the creation of a tree survey after the concept phase is complete as well as the implementation of a tree canopy plan at the 50 to 80% plan phase. At this point, notification of any tree removal will be presented to District Advisory Board and City Council with normal project packets and can also be found on the Park & Recreation or PW&U/Engineering Website. As with any formal changes to a project that requires returning to the public or City Council, any updates to tree canopy plan will be submitted to the public and Council for review. If no changes occur throughout the project, then no added notification will be necessary.

The City will produce the tree retention plan, accessible where engineering projects are typically found and be able to answer any questions during all phases of the outreach of the project.

## Proposed Tree Canopy Plan

Upon the decision of the City, or a City department, to begin development, a tree survey will first be completed, paid for by the City as a part of regular project cost. All trees within the scope of the project will be assessed by the City Arborist or designee to determine the health, risk, and applicable details (i.e., height, species, d.b.h) of current trees in place. Following these findings, the site design plan will be determined based on those findings, allowing for decisions to be made on what trees should be kept or removed. Upon completion, a tree survey will be developed. Trees will be drawn to scale by a City landscape architect licensed or consultant engineer in the state of Kansas, identifying the exact location and conditions of existing trees as defined in the following sections.

Tree Retention plan and tree removal plans will be compiled in a comprehensive plan that outlines duties, steps, and process to address the issue. This plan will be presented to District Advisory Boards, at the 50-80% plan stage, posted on Forum, and presented to other relevant board and commissions to allow for public awareness and input and posted on the official website of the City of Wichita.

## Tree Survey

- Created alongside the landscape architect or consultant engineer, either contracted or internal, and the City Arborist, will include the following
  1. Common and/or botanical name of each tree.
  2. Trees proposed to remain and to be removed.
  3. Condition rating of current trees (see Appendix B)
  4. Groves with indication of predominant species, number of trees and size of diameter at breast height (d.b.h).
    - a. A grove is defined as a group of trees that grow close together in such a way as to make the space between unsuitable for maintenance activity such as mowing.
  5. Any off-site tree with a root protection zone which could be adversely affected by the proposed activity.
    - a. A tree's critical root zone is defined as the trunk diameter at 4.5' above grade (DBH-diameter at breast height) in inches equals the size of its critical root zone in feet.
  6. The location and dimensions of established and proposed perimeter landscaping, natural vegetation easements, and open space areas for public, private, or community use.
  7. Net buildable areas.
    - a. Means the "site area" less the following areas:

- i. Areas within or on the perimeter of a project site which are required to be dedicated for public rights-of-way;
- ii. Critical areas and their buffers to the extent they are required by the City to remain undeveloped;
- iii. Areas required for stormwater control facilities including facilities which are completely underground, including, but not limited to, retention/detention ponds, biofiltration swales and setbacks from such ponds and swales;
- iv. Areas required by the City to be dedicated or reserved as on-site recreation areas;
- v. Regional utility corridors;
- vi. Other areas, excluding setbacks, required by the City to remain undeveloped

**Table A Net Buildable Area Calculation.**

	<b>Total Site Area</b>		Acres
Areas within or on perimeter of site to be dedicated for public rights-of-way	-		Acres
Critical areas & buffers to remain undeveloped	-		Acres
Stormwater facilities	-		Acres
Dedicated recreation areas/tracts	-		Acres
Regional utility corridors	-		Acres
Other areas to remain undeveloped	-		Acres
	<b>Net Buildable Area</b>		<b>Acres</b>
Net Buildable Area	X 30 =		<b>Required Tree Units</b>
	-		<b>Tree Units Retained</b>
	=		<b>Replacement Tree Units Required</b>

*If the number of existing trees is not at least 30 tree units per acre, a sufficient number of replacement trees shall be planted to equal at least 30 tree units per acre.*

- 8. Critical areas and their buffers.
  - 9. Stormwater tracts.
  - 10. Limits of construction line.
  - 11. North arrow, scale, and date of survey.
- A statement describing how trees intended to remain will be identified, marked, and specific actions how trees will be protected before the start of and during development
  - The City shall have prepared recommendations for the tree protection plan. The tree protection plan shall be drawn to scale using the tree survey as a base and containing the following information:

1. The exact location and conditions, as determined by the City arborist, of protected trees, drawn to accurate canopy spread and with an indication of d.b.h.
  2. The exact location, common name and/or botanical name, and caliper of each tree species to be planted.
  3. The site minimum tree density calculation indicating the total number, size, and species of existing trees to be preserved and the replacement trees to be planted
  4. The site replacement tree calculation with an explanation including the number, caliper, and species.
  5. The location, materials, dimensions, and layout of the protective barriers.
  6. Visual documentation
- Additional Information. Any additional or more detailed information required by the city to ensure compliance with the provisions of this chapter (i.e., aerial photograph). The city may waive the requirements for the scaled drawing and other submission data if it finds that the information presented is sufficient to determine the project's compliance with the provisions.

## Tree Planting

- When trees being removed by the City as a part of a specific project, the City will have a plan, agreed upon by the relevant departments, that outlines duties, steps, and process to either replace the tree in a location reasonably near the removed tree(s) or notification/information of where replacement trees will be placed. The purpose is to establish tree canopy throughout the city. If the area is unable to achieve the desired density, they will be substituted in the applicable locations as determined by the City Arborist.
- **Tree Density Requirement. Minimum Tree Density Requirement Established.**
  1. A minimum tree density is required on each site. The tree density may consist of existing trees, replacement trees, or a combination of existing and replacement trees. The site density of trees to be protected on each site shall be determined prior to approval of a tree protection plan or clearing permit, by the city.
- **Tree Density Calculation. The minimum tree density required for each site is 30 tree units per acre of net buildable area.**
  1. To calculate the density of trees to be protected:
    - a. Obtain the d.b.h. measurement in inches for each protected tree within the net buildable area.
    - b. Go to Table B and select the tree unit value that corresponds to the d.b.h. for each protected tree.
    - c. Add up the tree unit values for all protected trees and divide by the total acreage of the net buildable area. This value must equal or exceed 30 tree units per acre of net buildable area. If the total is less than 30 tree units per acre, more trees must be protected, or replacement trees will be required.
    - d. If replacement trees are planted as groves within designated tracts, then applicant may reduce total tree units required by 10 percent per grove.
      - a. Replacement trees are measured differently than protected trees. Instead of measuring d.b.h., replacement trees are measured by caliper inches according to industry standards (ANSI). The caliper on replacement trees is measured 6" above the ground for 4" and smaller trees, and 12" above ground for larger replacement trees.
      - b. Replacement tree calipers may only be planted within a range of 1.5" to 8" due to increased cost, decreased survivability, longer time required to grow, and decreased long-term growth than smaller caliper trees planted.

**Table B  
Existing Trees to Remain.**

**(Conversion from diameter (d.b.h.) in inches  
to tree units for  
trees protected on-site.)**

<b>d.b.h.</b>	<b>Tree Units</b>	<b>d.b.h.</b>	<b>Tree Units</b>
1 – 5	1.0	30	8.2
6 – 10	1.2	31	8.6
11	1.4	32	9.0

**Table B  
Existing Trees to Remain.**

**(Conversion from diameter (d.b.h.) in inches  
to tree units for  
trees protected on-site.)**

<b>d.b.h.</b>	<b>Tree Units</b>	<b>d.b.h.</b>	<b>Tree Units</b>
12	1.8	33	9.5
13	2.0	34	10.0
14	2.3	35	10.5
15	2.6	36	11.0
16	2.9	37	11.5
17	3.2	38	12.0
18	3.5	39	12.5
19	3.8	40	13.0
20	4.2	41	13.5
21	4.6	42	14.0
22	5.0	43	14.5
23	5.4	44	15.0
24	5.8	45	15.5
25	6.2	46	16.0
26	6.6	47	17.0
27	7.0	48	18.0
28	7.4	49	19.0
29	7.8	50	20.0
For every one inch greater than 50 d.b.h., add an additional 2 tree units (i.e., 62 d.b.h. = 44 tree units).			

- **Replacement Tree Requirement.** If the number of existing trees is not enough to meet the minimum of 30 tree units per acre, a sufficient number of replacement trees shall be planted to meet the minimum requirement. To determine the total number of replacement trees required:
  1. Obtain the caliper measurement for each replacement tree. Replacement trees are measured differently than protected trees. Instead of measuring d.b.h. as in protected trees, replacement trees are measured by caliper in inches according to industry standards (ANSI). Caliper on replacement trees is measured six inches above the ground line for four-inch and smaller trees, and 12 inches above ground for larger replacement trees.
  2. Choose trees from trees listed on the Sedgwick County/Kansas State Extension Preferred Trees for South Central Kansas List (Appendix A).

3. Go to Table C and select the tree unit value that corresponds to the caliper for each replacement tree.
4. Add the replacement tree unit values together to determine how many of that size tree will be required to achieve the minimum site density
5. To ensure diversity and prevent decimation of one type of tree species should a disaster occur, replacement units cannot contain more than 50% of one species of tree.
6. Tree Replacement may also be moved to the following:
  - a. A public park or right-of-way at the discretion of the city Park & Recreation department

**Table C Replacement Trees.**

(Conversion from caliper inches to tree units for replacement trees.)

Deciduous Tree Caliper in Inches	Tree Units for Deciduous Trees	Coniferous Tree Height in Feet	Tree Units for Conifers
1.5"	0.4	4' – 6'	0.3
2"	0.5	6' – 8'	0.5
3"	0.6	8' – 10'	0.8
4"	0.7	11' – 12'	0.5
5"	0.8		
6"	1.0		
7"	0.8		
8"	0.6		

**Table D Sample Tree Density Calculation.**

The required density factor is calculated below as follows for five acres: five acres x 30 units = 150 tree units required.

Existing density (ED):

Size	Quantity	Total Units	Size	Quantity	Total Units
24"	3	17.4	12"	5	9.0
18"	3	10.5	8"	6	7.2
10"	4	4.8	15"	8	20.8
30"	7	57.4	4"	10	10.0
				Total ED	137.1

Replacement density (RD):

Size	Units	Quantity	Total Units
2" <i>Deciduous</i>	0.5	12	6.0
4" <i>Deciduous</i>	0.7	10	7.0



Size	Units	Quantity	Total Units
4' – 6' Conifer	0.3	5	1.5
		Total RD	14.5
<b>ED + RD =</b>	<b>Site Total Tree Density</b>	<b>&gt; or =</b>	<b>Minimum Density Required</b>
137.1 + 14.5 =	151.6	>	150 Density Satisfied

## Penalties

1. Penalties assessed will be for trees in the jurisdiction of the City of Wichita. These trees are defined as trees located in the street right-of-way, city owned property, and other city-maintained areas including floodways, river corridors and greenways. Permits for specified alterations of such trees issued by the City Arborist or designee will mitigate penalties. Penalties will be assessed based on documented unauthorized alteration and/or mutilation of trees in the designated areas. A minimum value will be set at two-hundred dollars, or the maximum penalty, which is the maximum fine for damaging a tree that does not need to be removed, as determined by the City Arborist. Minimum value will be assessed if in no way is the city able to calculate an alternate amount. Calculations will be based on quality of the tree prior to destruction based on the following:

- Base value
- Cross-sectional area
- Species classification
- Condition rating
- Location rating

See Appendix B on valuations for each variable. These will then be multiplied to determine the worth of the tree. See Table E for example calculation.

**Table E Sample Tree Calculation.**

A deciduous, 23-inch DBH, in fair condition with good form, located in a city park in Wichita. Cost estimate for replacement and installation of a 2-inch caliper tree, the largest available from a local nursery, is \$150

Tree Type	Base Value	Cross-Sectional Area (DBH)	Species Classification	Condition Rating	Location Rating	Value
<i>Deciduous</i>	\$50	415 sq. in	0.6	0.6	0.7	\$5,235.04
<b>Computation</b>	\$50	x 415	x 0.6	x 0.6	x 0.7	

2. If a tree is damaged and does not require removal, assessment of a fine of not more than two hundred dollars. The court may also order the defendant to perform the necessary labor to repair, remove or replace trees damaged by that person, or to pay any costs incurred by the City related to the repair or replacement of trees damaged by that person.
3. It shall be the duty of the Director, or other officer, to serve written notice, by personal service or registered or certified mail, of the existence of any violation as provided for in this section,

to whom the violation is committed. The notice shall require that all such fine be paid within a designated time period, not exceeding fourteen (14) days from the date of the notice, provided that an extension of one ten (10) day period shall be granted if the individual demonstrates that due diligence is being exercised.

4. Any person affected by a notice, which has been issued pursuant to the policy who is aggrieved thereby, and who believes the same to be contrary to the policies or regulations of the City, may request and shall be granted an informal hearing on the matter before the Director or his or her designated representative. Such person shall file, in the Department of Parks and Recreation, a written request for such informal hearing and set forth a brief statement of the grounds therefor, within ten days after the day notice was served. Upon receipt of such request, the Director shall set a time and place for the informal hearing and shall give written notice thereof. At such informal hearing, the individual shall be given an opportunity to be heard and to show why such notice should be modified or withdrawn. The informal hearing shall be commenced not later than ten days after the day on which the request was filed; provided that upon application of the individual, the Director may postpone the date of the informal hearing for a reasonable time beyond such ten-day period, if in his or her judgment the individual has submitted a good and sufficient reason for such postponement.
5. After an informal hearing as provided for in Section 9.08.095, the Director or his or her designated representative may sustain, modify or withdraw the notice, depending upon his findings as to whether the provisions of this chapter and of the rules and regulations adopted pursuant thereto have been complied with. If the Director or his or her designated representative sustains or modifies such notice, it shall be deemed to be an order.

## Maintenance, Planting, and Removal Best Practices

The City of Wichita will promote the following standards on how it removes trees and plants trees. The City will also recommend tree maintenance and removal standards that it recommends the public be aware of as they have trees removed and maintained on their private property. The City is not mandating that these private standards occur, rather, a recommendation of best practices that the public maintain awareness of.

### City Tree Protection Standards:

#### *Tree Planting:*

##### Planting

**Standard:** To ensure the survival and establishment of trees and shrubs by utilizing sound planting practices and providing post planting care

**Equipment:** Will depend on the scope of the project

**Procedure:** The procedure for planting shrubs and trees are identical. Refer to Best Management Practices *Tree Planting* 2<sup>nd</sup> Edition published by the International Society of Arboriculture as a special companion publication to the ANSI A300 Part 6 industry standard.

In summary, the procedures contain the following major elements:

1. Perform pre-check on all equipment, whether manual or motorized to ensure all equipment is in good operating condition and has been serviced according to the prescribed schedule. All manual tools shall be sharp, handles solid without splinters, and in good condition.
2. Dig a shallow, broad planting hole.
  - Make the hole up to 3 times diameter of root ball, but no deeper than the distance from the bottom of the root ball to the root flare.
3. Identify the trunk flare.
  - The trunk flare is where the primary roots spread at base of tree.
4. Place the tree at the proper height
  - Before planting, check to make sure hole has been dug to proper depth. It is better to plant the tree a little high rather than too low (1-2"), allowing for some settling.
  - To avoid damage when setting tree in hold, always lift tree by root ball, and never by the trunk.
5. Straighten the tree in the hole.
  - Before beginning backfilling have someone view the tree from several directions to confirm tree is straight. Once you begin backfilling it is difficult to reposition.
6. Fill the hole, gently but firmly.
  - Fill the hole about 1/3 full and gently but firmly pack the soil around the base of the root ball.
  - If tree is balled and burlapped, cut and remove the string and wire from around trunk and top 1/3 of the root ball. Be careful not to damage the trunk or roots.
  - Fill remainder of hole, taking care to eliminate air pockets using water to flood the planting hole and settle the soil adding a few inches of soil at a time until hole completely filled.
7. Stake the tree, if necessary
8. Mulch the base of the tree
  - Follow mulching instructions as found in the Best Management Practices on Tree Planting.
  - Ensure trunk of tree is free of mulch for a distance of 3"
9. Follow-up care
  - Keep soil moist but not soaked, deep watering is best, once a week for the first year, follow a 10-day rotation the second year and a 14-day rotation the third year. Any watering after 3 years of establishment will be directed by the City Arborist and based in weather pattern data.

**Other Considerations:** When working on right of ways:

1. 3 ½ feet back from the face of the curb
2. 5 feet from all underground utility lines

3. 10 feet from power poles
4. 7 ½ feet from driveways (10 feet recommended)
5. 20 feet from streetlights and other existing tree
6. 30 feet from street intersections (avoid driver sightline issues)

### Staking

**Standard:** Maintain stability of the newly planted trees in order to insure timely establishment period.

**Equipment:** Tree stakes, stake driver, flexible rubber tubing, non-rusting wire, wire cutters or nylon twine, fencing tool.

### Procedure:

1. Stake only trees that require support to stand upright or will be exposed to high wind condition.
2. Install two stakes opposite each other, equal distance from the trunk, outside root ball. Stakes will be driven in to undisturbed soil. Large trees may require three stakes for adequate support.
3. Use a wide flexible tie material at a point (usually just above the first branch whorl) that will hold the tree upright, provide flexibility, and limit damage to the trunk.
4. Cut stakes that interfere with the crown and may cause damage.
5. Stakes and trees will be examined and adjusted on a monthly basis to insure support as well as flexibility.
6. Stakes are to be removed when it has been determined that the tree can support itself. All tree stakes will be removed within the first year of establishment.

### Tree Maintenance:

#### Pruning

**Standard:** Prune trees and shrubs that are damaged, diseased, or posing a hazard to the public or property.

**Equipment:** Equipment will vary with the size and scope of the project.

### Procedure:

1. Secure sites and prevent public access to hazardous conditions

2. Safety of staff and the public is of the utmost concern at all times
3. A Certified Arborist will evaluate damaged trees
4. Evaluate and prioritize all hazards with the highest hazard being repaired or removed first
5. When possible, plan work for low traffic times to limit hazard exposure to the public
6. Follow operating procedure in the operator's manual for all equipment utilized for tree pruning.
7. All trees and shrubs will be pruned as defined in the Best Management Practices *Pruning* 3<sup>rd</sup> Edition published by the International Society of Arboriculture as a companion publication to the ANSI A300 Part 1 industry standard.

#### Tree Removal

##### Removal

**Standard:** Eliminate trees that are dead, damaged beyond recovery, diseased past recovery, or posing a hazard to the public or property

**Equipment:** Equipment will vary with size and scope of project.

##### Procedure:

1. Secure sites and prevent public access to hazardous conditions
2. Safety of staff and the public is of the utmost concern at all times
3. A Certified Arborist will evaluate damaged trees
4. Evaluate and prioritize all hazards with the highest hazard being repaired or removed first
5. When possible, plan work for low traffic times to limit hazard exposure to the public
6. Follow operating procedure in the operator's manual for all equipment utilized for tree pruning.

#### Storm Damage Clean Up

**Standard:** To remove post-storm (weather event) tree related debris from public streets and street right-of-way, parks, paths maintained by the City, and other municipal building grounds as needed.

**Equipment:** Chainsaws of various sizes, chip truck and chipper, flatbed truck, knuckle boom, aerial lift truck as needed, phones, two-way radios, Personal Protective Equipment (PPE).

##### Procedure:

1. Determine the scope of damage using all forms of data available.

2. Identify the proper level of response based on the available information.
3. Initiate and maintain a proper level of response until, at minimum, the streets are cleared to the point of being passable by First Responders and until all tree related debris is cleared from streets and street right- of-way and known tree related hazards have been mitigated.

## City Promotion of Best Practices for Private Property

### *Tree Planting:*

**Standard:** To ensure the survival and establishment of trees and shrubs by utilizing sound planting practices and providing post planting care

**Equipment:** Will depend on the scope of the project

**Procedure:** The procedure for planting shrubs and trees are identical. Refer to Best Management Practices *Tree Planting* 2<sup>nd</sup> Edition published by the International Society of Arboriculture as a special companion publication to the ANSI A300 Part 6 industry standard.

In summary, the procedures contain the following major elements:

1. Perform pre-check on all equipment, whether manual or motorized to ensure all equipment is in good operating condition and has been serviced according to the prescribed schedule. All manual tools shall be sharp, handles solid without splinters, and in good condition.
2. Dig a shallow, broad planting hole.
  - Make the hole up to 3 times diameter of root ball, but no deeper than the distance from the bottom of the root ball to the root flare.
3. Identify the trunk flare.
  - The trunk flare is where the primary roots spread at base of tree.
4. Place the tree at the proper height
  - Before planting, check to make sure hole has been dug to proper depth. It is better to plant the tree a little high rather than too low (1-2"), allowing for some settling.
  - To avoid damage when setting tree in hold, always lift tree by root ball, and never by the trunk.
5. Straighten the tree in the hole.
  - Before beginning backfilling have someone view the tree from several directions to confirm tree is straight. Once you begin backfilling it is difficult to reposition.
6. Fill the hole, gently but firmly.
  - Fill the hole about 1/3 full and gently but firmly pack the soil around the base of the root ball.

- If tree is balled and burlapped, cut and remove the string and wire from around trunk and top 1/3 of the root ball. Be careful not to damage the trunk or roots.
  - Fill remainder of hole, taking care to eliminate air pockets using water to flood the planting hole and settle the soil adding a few inches of soil at a time until hole completely filled.
7. Stake the tree, if necessary
  8. Mulch the base of the tree
    - Follow mulching instructions as found in the Best Management Practices on Tree Planting.
    - Ensure trunk of tree is free of mulch for a distance of 3"
  9. Follow-up care
    - Keep soil moist but not soaked, deep watering is best, once a week for the first year, follow a 10-day rotation the second year and a 14 day rotation the third year. Any watering after 3 years of establishment will be directed by the City Arborist and based in weather pattern data.

#### *Tree Maintenance:*

##### *Pruning*

**Standard:** Prune trees and shrubs that are damaged, diseased, or posing a hazard to the public or property.

**Equipment:** Equipment will vary with the size and scope of the project.

##### **Procedure:**

1. Secure sites and prevent public access to hazardous conditions
2. Safety of staff and the public is of the utmost concern at all times
3. A Certified Arborist will evaluate damaged trees
4. Evaluate and prioritize all hazards with the highest hazard being repaired or removed first
5. When possible, plan work for low traffic times to limit hazard expose to the public
6. Follow operating procedure in the operator's manual for all equipment utilized for tree pruning
7. All trees and shrubs will be pruned as defined in the Best Management Practices *Pruning* 3<sup>rd</sup> Edition published by the International Society of Arboriculture as a companion publication to the ANSI A300 Part 1 industry standard.

#### *Tree Removal*

##### *Removal*

**Standard:** Eliminate trees that are dead, damaged beyond recovery, diseased past recovery, or posing a hazard to the public or property

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**Procedure:**

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2. Safety of staff and the public is of the utmost concern at all times
3. A Certified Arborist will evaluate damaged trees
4. Evaluate and prioritize all hazards with the highest hazard being repaired or removed first
5. When possible, plan work for low traffic times to limit hazard expose to the public
6. Follow operating procedure in the operator's manual for all equipment utilized for tree pruning.

**Tree Nuisance Mitigation**

Per current City Ordinance (9.08), it is unlawful for any property to permit to stand upon his property any dead tree, any dead part of a tree, any fatally diseased or structurally weak tree, or any structurally weak part of a tree, which is a menace to public safety or which endangers any building or other property.

**Heritage Tree Program**

The City of Wichita recognizes the importance of trees in the community and wishes to promote the preservation of those trees with exceptional size, form, or rarity. The urban forest has social, ecological, cultural, economic, historical, and aesthetic benefits for the citizens of Wichita. A healthy urban forest enhances the health and welfare of its citizens. Urban forests are an asset and important part of the City's infrastructure that the city policy seeks to protect.

The City will institute a program whereas the City as well as the public may apply for City trees to be designated as Heritage Trees.

To receive a Heritage tree status the tree must fall into the following categories:

- Size: Must exceed what is commonly found in the area for the species in diameter, canopy spread etc.

Once the tree is listed as a Heritage Tree it requires an administrative variance from the Director of Park & Recreation prior to removal. Reasons for removal may include: the tree is in very poor health or poses a safety hazard as determined by the City Arborist or their designee. Trees larger than 40 ~~30~~ inches diameter at breast height (DBH) measured at 4.5' above natural grade per industry standard require a land use commission public hearing before a variance can be granted.



Applications will be sent to the Park & Recreation Director who will review and bring acceptable applications to the Park Board of Commissioners. The Board will then have the discretion to determine if a specified tree can be deemed a Heritage Tree.

Each Heritage Tree will be added to the city website so the public can access the list of Heritage Trees and where to visit them.

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## Appendix A: Sedgwick County/Kansas State Extension Preferred Trees for South Central Kansas List

- ENVIRONMENTAL TOLERANCES: The left side of each chart indicates the recommended environmental conditions of each tree; including full sun (**S**), light shade (**L**), soil pH adaptability, and soil moisture tolerances (**Dry** or **Wet**). Each chart also shows how resistant each tree is to insect and disease pests. A “**G**” (for good) under the appropriate column indicates the tree is strongly tolerant of the characteristic indicated. An “**F**” (for fair) signifies that the tree shows some tolerance. A blank space in a column indicates the tree is not tolerant and should not be subjected to that environmental condition. Specific information on the “pH adaptable”, “soil moisture”, and “pests” categories follows:
  - pH ADAPTABLE: (**G**) = tree may tolerate soils with a pH up to 8.0 or more; (**F**) = tree generally will tolerate an alkaline soil up to a pH of 7.5; (blank) = tree may not tolerate alkaline soils; do not plant in alkaline soils to avoid the problem of iron or manganese chlorosis.
  - SOIL MOISTURE: while most trees prefer a moist and well-drained soil, some of these species will tolerate moderate drought (**D**) or occasional wet (**W**) periods. Some trees will tolerate both to some extent and they are indicated with DW. See Drought-Tolerant Tree for South-Central Kansas (MF-3246) for a list of drought tolerant trees.
  - PESTS: (**G**) = tree is usually free of insect and disease problems; (**F**) = tree encounters insect or disease pests on an infrequent basis and often is not permanently damaged; (blank) = tree may suffer from pests which may permanently damage or kill the tree and/or the tree may exhibit minor insect and disease problems on a frequent basis which may affect the aesthetics of the tree or insects may commonly be a nuisance.
- LANDSCAPE ATTRIBUTES: The right side of each chart includes average mature height and spread of each tree, which can be variable depending on growing conditions and other factors. Landscape attributes of flowers, fruit, and fall color are also listed.
  - FLOWERS: (**G**) = the flowers are showy; (**F**) = the flowers are not particularly showy but may possess other desirable characteristics such as fragrance; (blank) = the flowers are generally considered insignificant.
  - FRUIT: (**G**) = fruits are generally aesthetically pleasing; (**F**) = fruits are not considered showy but may provide other interest or benefits such as attracting wildlife; (blank) = no showy or useful fruit.
  - FALL COLOR: (**G**) = the autumn leaf color is typically quite good; (**F**) = the fall color may provide interest in some years; (blank) = autumn foliage color is generally not considered an asset of this particular tree.
- SPECIES CLASSIFICATION (RELATIVE VALUE %): This number represents the value of an ornamental landscape tree in *Kansas* relative to other species. Values are based on climate adaptability, growth characteristics, soil adaptability, tolerance of insects and diseases, and general maintenance requirements, which vary across the state. This percentage is converted to a decimal for use in the formula so, for example, 70% becomes 0.70.

Environment				Small Deciduous Trees (usually under 20 feet at maturity)	Landscape Attributes					Relative Value (%)
Sun/Light Shade	pH Adaptable	Soil Moisture	Pest Resistance		Height	Spread	Flowers	Fruit	Fall Color	
SL	F	DW	F	<b>Amur Maple</b> ( <i>Acer tataricum</i> subsp. <i>ginnala</i> )	15-20	15-25	F		G	80
SL	G	D	F	<b>Tatarian Maple</b> ( <i>Acer tataricum</i> )	20-25	15-25	F	F	F	70
SL	G	D	F	<b>Eastern Redbud</b> ( <i>Cercis canadensis</i> )	20-25	20-25	G		F	80
SL	G	D	G	<b>Oklahoma Redbud</b> ( <i>Cercis canadensis</i> var. <i>texensis</i> 'Oklahoma')	15-20	15-20	G		F	80
SL	G	D		<b>Winterberry Euonymus</b> ( <i>Euonymus bungeanus</i> )	15-20	10		G	F	70
S	F	D	F	<b>Flowering Crabapple</b> ( <i>Malus</i> spp.)	varies	varies	G	G	F	90
SL	G	D	G	<b>Smoketree</b> ( <i>Cotinus</i> spp.)	20	15	F		G	80

Environment				Medium Deciduous Trees (usually 20 to 40 feet at maturity)	Landscape Attributes					Relative Value (%)
Sun/Light Shade	pH Adaptable	Soil Moisture	Pest Resistance		Height	Spread	Flowers	Fruit	Fall Color	
SL	F	D	G	<b>Trident Maple</b> ( <i>Acer buerferianum</i> )	20-35	20-30			G	80
SL	G	D	G	<b>Hedge Maple</b> ( <i>Acer campestre</i> )	25-35	25-35			G	80
SL	F	D	G	<b>Shantung Maple</b> ( <i>Acer truncatum</i> )	25-30	25-30			G	90
SL	F	DW	G	<b>European Hornbeam</b> ( <i>Carpinus betulus</i> )	30-40	20-30			F	70
S	G	D		<b>Goldenrain Tree</b> ( <i>Koeleruteria paniculata</i> )	30-40	30-40	G	G	F	90
S	G	DW	G	<b>Osage Orange</b> ( <i>Maclura pomifera</i> )	30-40	20-40			G	50
S	F	D		<b>Flowering Crabapple</b> ( <i>Malus</i> spp.)	varies	varies	G	G	F	90
S	G	D	G	<b>Chinese Pistache</b> ( <i>Pistacia chinensis</i> )	30-35	30-40		F	G	90
S	G	D	G	<b>Chinkapin Oak</b> ( <i>Quercus muehlenbergii</i> )	35-40	40-45		F	F	100
SL	F	D	F	<b>Japanese Tree Lilac</b> ( <i>Syringa reticulata</i> )	25	20	F			80

Environment				Large & Very Large Deciduous Trees (usually 40 feet and larger at maturity)	Landscape Attributes					Relative Value (%)
Sun/Light Shade	pH Adaptable	Soil Moisture	Pest Resistance		Height	Spread	Flowers	Fruit	Fall Color	
SL	F	DW		Freeman Maple ( <i>Acer x freemanii</i> )	50-60	40-50			G	60
SL	F	D	F	Sugar Maple ( <i>Acer saccharum</i> )	40-60	30-50			G	90
S		W	F	River Birch ( <i>Betula nigra</i> )	40-60	40-50			F	70
SL	G	DW		Common Hackberry ( <i>Celtis occidentalis</i> )	40-60	40-50		F	F	60
S	G	D	G	Ginko ( <i>Ginko biloba</i> )	50-60	25-40			G	60
S	G	DW		Thornless Honeylocust ( <i>Gleditsia triacanthos var. inermis</i> )	40-60	30-50			F	80
SL	G	DW	G	Kentucky Coffee Tree ( <i>Gymnocladus dioicus</i> )	50-60	30-45		F	F	90
S		W	F	Sweetgum ( <i>Liquidambar styraciflua</i> )	50-75	35-50		F	G	80
SL	G	DW	G	London Planetree ( <i>Platanus x acerifolia</i> )	60-80	50-65		F		90
S	F	DW	G	Sawtooth Oak ( <i>Quercus acutissima</i> )	40-50	30-45		F	F	80
S	F	DW	G	White Oak ( <i>Quercus alba</i> )	50-60	40-60		F	F	70
S	F	DW	F	Swamp White Oak ( <i>Quercus bicolor</i> )	50-60	40-60		F	F	90
S	G	D	G	Texas Red Oak ( <i>Quercus buckleyi</i> )	50-60	40-60		F	G	80
S	F	DW	F	Shingle Oak ( <i>Quercus imbricaria</i> )	50-60	40-60			F	90
S	G	DW	G	Bur Oak ( <i>Quercus macrocarpa</i> )	60-80	50-70		F		100
S	G	D	F	English Oak ( <i>Quercus robur</i> )	40-60	45-65		F		100
S	F	D	F	Red Oak ( <i>Quercus rubra</i> )	60-75	40-60		F	G	90
S	G	DW	F	Shumard Oak ( <i>Quercus shumardii</i> )	60-80	40-60		F	G	90
SL		DW	F	Willow Oak ( <i>Quercus phellos</i> )	50-60					80
S		DW	G	Baldcypress ( <i>Taxodium distichum</i> )	50-70	20-50		F	G	80
SL	F	W	F	American Linden ( <i>Tilia americana</i> )	50-60	35-40	F		F	70
SL	G	W	F	Littleleaf Linden ( <i>Tilia cordata</i> )	35-45	25-40	F		F	70
S	G	DW	G	Silver Linden ( <i>Tilia tomentosa</i> )	40-45	25-35	F			70
S	G	DW	F	American Elm ( <i>Ulmus americana</i> )	60-80	40-60			F	50
S	G	DW	G	Elm hybrids ( <i>Ulmus</i> )	>45	>40			F	75
SL	G	DW	F	Lacebark Elm ( <i>Ulmus parvifolia</i> )	40-60	35-50			F	80
SL	F	D	F	Japanese Zelkova ( <i>Zelkova serrata</i> )	40-45	25-30			G	70

Environment				Evergreen Trees	Landscape Attributes					Relative Value (%)
Sun/Light Shade	pH Adaptable	Soil Moisture	Pest Resistance		Height	Spread	Flowers	Fruit	Fall Color	
SL	F	D	G	Incense Cedar ( <i>Calocedrus decurrens</i> )	30-40	20-30				80
SL	G	D	G	Arizona Cypress ( <i>Cupressus arizonica</i> )	20-30	15-20				80
SL	F	D	G	Upright Chinese Juniper ( <i>Juniperus chinensis</i> )	varies	varies		G		80
SL	F	DW	G	Eastern Red Cedar ( <i>Juniperus virginiana</i> )	30-40	25		G		80
S	G	D		Southern Magnolia ( <i>Magnolia grandiflora</i> )	30-40	30-40	G	G		70
S	G	DW	G	Black Hills Spruce ( <i>Picea glauca var. densata</i> )	30-40	15-20		F		80
S	F	D		Pinyon Pine ( <i>Pinus edulis</i> )	10-20	10-15		F		50
S	G	D	G	Vanderwolf's Pyramid Limber Pine ( <i>Pinus flexilis 'Vanderwolf's Pyramid'</i> )	30-40	15-30		F		70
S	F	D	F	Austrian Pine ( <i>Pinus nigra</i> ) Limited use - subject to tip and needle blights as well as pine wilt disease	40-60	25-40		F		75
S	G	D	G	Southwestern White Pine ( <i>Pinus strobiformis</i> )	40-60	25-40		F		70
SL	F	D	F	Oriental Arborvitae ( <i>Platycladus orientalis</i> or <i>Thuja orientalis</i> )	20-30	20-25				80

## Appendix B: Kansas State University Replacement Tree Cost Evaluation

### Cross Sectional Area

Tree size is expressed as cross-sectional area, which can be determined by measuring the trunk's circumference ( $c$ ) 4½ feet (DBH) from the ground at the base of the tree. Trees with branches below 4½ feet should be measured at the point that best represents trunk size, recording this height location.

Trunk diameter converted to cross-sectional area is shown in Table 1. You can determine cross-sectional area without the table by measuring trunk circumference ( $c$ ) at DBH, then calculating diameter. Next, square the diameter ( $d$ ), and then multiply by 0.7854 ( $\pi \div 4$ ) to determine cross-sectional area.

Table 1. Trunk diameter to cross-sectional area

Trunk Diameter	Cross-sectional Area (sq in)*	Trunk Diameter	Cross-sectional Area (sq in)
2	3	17	227
3	7	18	254
4	13	19	283
5	20	20	314
6	28	21	346
7	38	22	380
8	50	23	415
9	64	24	452
10	79	25	491
11	95	26	531
12	113	27	572
13	133	28	615
14	154	29	660
15	177	30	707
16	201	*Cross-sectional area = $0.7854 \times d^2$	

### Condition Rating

A tree is assessed as being in excellent, good, fair, or poor condition based on structural integrity and health, vigor and life expectancy, as well as form quality relative to a "perfect specimen" of that species (Table 2). This rating is based on existing condition, with deductions for wounds, decay, storm damage, insect or disease damage, and poor form. Few trees are perfect specimens.

Proper assessment of tree condition requires specialized knowledge and experience. Trunk damage, for example, can significantly reduce life expectancy, or it may be superficial with little effect on condition or lifespan. Photographs taken before damage can be helpful. When in doubt, consult a Certified Professional Arborist or a member of the American Society of Consulting Arborists. Condition can be

rated anywhere between 1% and 100%, but standard percentages are 100, 80, 60 to 40, 20, and 0. Expressed as a decimal, 60% becomes 0.60.

Table 2. Condition Rating

Condition Class	Condition Description	Value %	Formula Value
<b>Excellent</b>	Ideal specimen. Excellent form and vigor for species. No pest problems or mechanical injuries. No corrective work required. Minimum life expectancy 30 years.*	91-100	0.9-1.0
<b>Good</b>	Healthy and vigorous. No apparent signs of insect, disease, or mechanical injury. Little or no corrective work required. Form representative of species. Minimum life expectancy 20 years.*	70-90	0.7-0.9
<b>Fair</b>	Average condition and vigor. May be in need of some corrective pruning or repair. May lack desirable form characteristics of species. May show minor insect, disease, or physiological problems. Minimum life expectancy 10 years.*	40-60	0.4-0.6
<b>Poor</b>	General state of decline. May show severe mechanical, insect or disease injury, but death not imminent. May require major repair or renovation. Minimum life expectancy 5 years.*	20 or less	0.0-0.2
<i>*Life expectancy values represent years beyond time of inspection</i>			

### Location Rating

A plant's location influences value. This rating is an average of the site, plant function or contribution, and placement in the landscape (Table 3).

*Site* is a primary factor in determining location class. Identical trees located on different sites may have different aesthetic values. A tree growing in an arboretum or park, for example, is of greater value than a street tree in a poorly maintained location.

Rating: 10%–100%

*Functional or contribution value* describes benefits such as shade, screening, noise abatement, climate control, and aesthetic qualities for a particular situation.

Rating: 10%–100%

*Placement* considerations include design symmetry, distance from other trees, interference with utilities, public safety, and potential damage to buildings, sidewalks, and other property with possible deductions for poor placement.

Rating: 10%–100%

Calculation location rating occurs as follows:

$(\text{Site} + \text{Contribution} + \text{Placement}) \div 3 = \text{Location Rating}$

Example:  $(0.70 + 0.90 + 0.7) \div 3 = 77\%$

Table 3. Location Rating

Site Location	Value %	Formula Value
Arboretum, specimen, or historical tree	100	1.00
Street Right of Way trees (Including downtown street trees)	80-90	0.80-0.90
Maintained area park trees	70-95	0.70-0.95
Golf course trees	60-80	0.60-0.80
Forested area park trees	60-80	0.60-0.80
Greenway/River corridor trees	50-70	0.50-0.70
Drainage corridor trees	10-30	0.10-0.30
Undesirable location	0-20	0.0-0.20

## Species Classification

See Appendix A, "SPECIES CLASSIFICATION (RELATIVE VALUE %)" and corresponding Tables.