



Landscape Ordinance Guidebook

Table of Contents

	Introduction.....	3
SECTION 1	Definitions.....	4
SECTION 2	Required Landscaped Street Yard.....	8
SECTION 3	Required Buffers.....	11
SECTION 4	Parking Lot Screening and Landscaping	13
SECTION 5	Other Landscape Regulations	16
SECTION 6	Xeriscape Principles.....	18
SECTION 7	Checklist and Sample Landscape Plan	20
SECTION 8	Preferred Tree Species for South Central Kansas.....	22

Introduction

Wichita passed a landscape ordinance (Title 28-Zoning: Chapter 28.06 of the Wichita City Code) in order to enhance the attractiveness of the city and improve the quality of life for its citizens and visitors. The ordinance seeks to protect residential developments from surrounding uses, soften harsh expanses of pavement, and screen undesirable views. The ordinance does not apply to existing developments which are not being expanded or remodeled. This guidebook is an easy-to-use reference for anyone needing to submit a landscape plan to the City of Wichita in compliance with the ordinance. It is not intended for this book to be a strict design manual, but used as a guide in understanding the landscape ordinance. This guidebook is not a substitute for the landscape ordinance. It may be viewed on the City of Wichita web site:

https://www.municode.com/library/ks/wichita/codes/code_of_ordinances?nodeId=TIT28ZO_CH28.06LAPALOSC

The most commonly asked question is "**Do I have to submit a landscape plan for my project?**" Yes, you must submit a landscape plan to Central Inspection with building or site development plans unless your project qualifies for one of the exceptions listed right. At least four copies of the plan will be required. The landscape plan should be at 1" = 20' minimum scale. Very large sites may warrant a smaller scale drawing.

The landscape plan must meet the requirements for:

1. Landscaped street yard
2. Side and rear yard buffers
3. Parking lot screening and landscaping

Exceptions to the Landscape Ordinance

1. You are building or renovating a single family home.
2. You are building or renovating a duplex home.
3. You are renovating a nonresidential building, but the renovation does not increase the value of the property by more than 50%, does not increase the square footage of the building by more than 30%, and does not alter the parking lot.
4. You are building or renovating a nonresidential building or parking lot but it is not located on a major street nor is it adjacent to residential zoning.

This guidebook will explain some of the definitions, show how to calculate landscaped street yard, and discuss buffer and parking lot requirements. A sample landscape plan, a checklist, recommended plant materials, and the entire landscape ordinance are included in the back. For answers to questions not covered in this guidebook you may call the Current Plans Division of the Planning Department at (316) 268-4421.



Definitions

In this section, some definitions from the landscape ordinance are illustrated. (From section 10.32.020 of the landscape ordinance)

Average Lot Depth: *The horizontal distance between the front and rear lot lines measured along the median between the side lot lines.*

In Figure 1.1, below, the line spaced equally between the sides (called the median) measures 175 feet in length, so the average lot depth is 175 feet. You must know the average lot depth to calculate the amount of landscaped street yard needed, but you never actually use this number in any calculation.

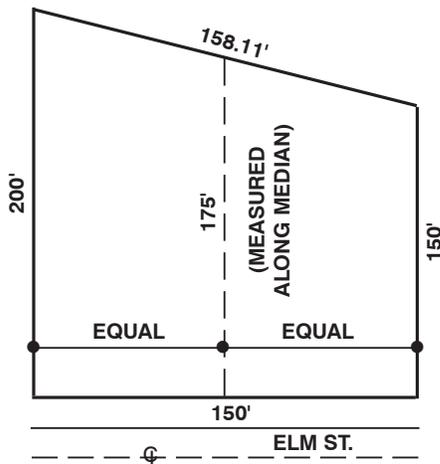


Figure 1.1 Average Lot Depth Single Street Frontage

For multiple-frontage lots, the average lot depth measured from each street shall be divided by the total number of streets to obtain one average depth for the lot.

Figure 1.2 illustrates the average lot depth for a lot with dual street frontage. The average lot depth is 163.50 feet. This number is derived by adding the average lot depths and dividing that number by the number of streets.

$$\begin{array}{r} 175.00' \quad (\text{Elm St. avg. lot depth}) \\ + 152.00' \quad (\text{Main St. avg. lot depth}) \\ \hline = 327.00' \quad (\text{Total avg. lot depths}) \end{array}$$

$$327.00' \text{ divided by } 2 \text{ (No. of streets)} \\ = \mathbf{163.50' \text{ (AVERAGE LOT DEPTH)}}$$

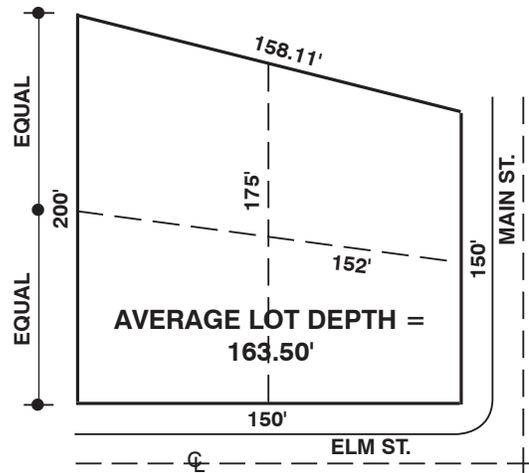


Figure 1.2 Average Lot Depth Dual Street Frontage

Street Wall: *Any building wall facing a street.*

Street Wall Line: *A line that extends from the building parallel to the street wall until it intersects a side or rear lot line or a wall line of another building.*

Figure 1.3 illustrates a street wall line.

Street Yard: *The area of a lot which lies between the property line abutting a street and the street wall line of the building.*

Figure 1.4 shown on the following page illustrates a street yard. The unpaved areas that are available for landscaping will be calculated for square footage of landscaped street yard, as shaded in Figure 1.5.

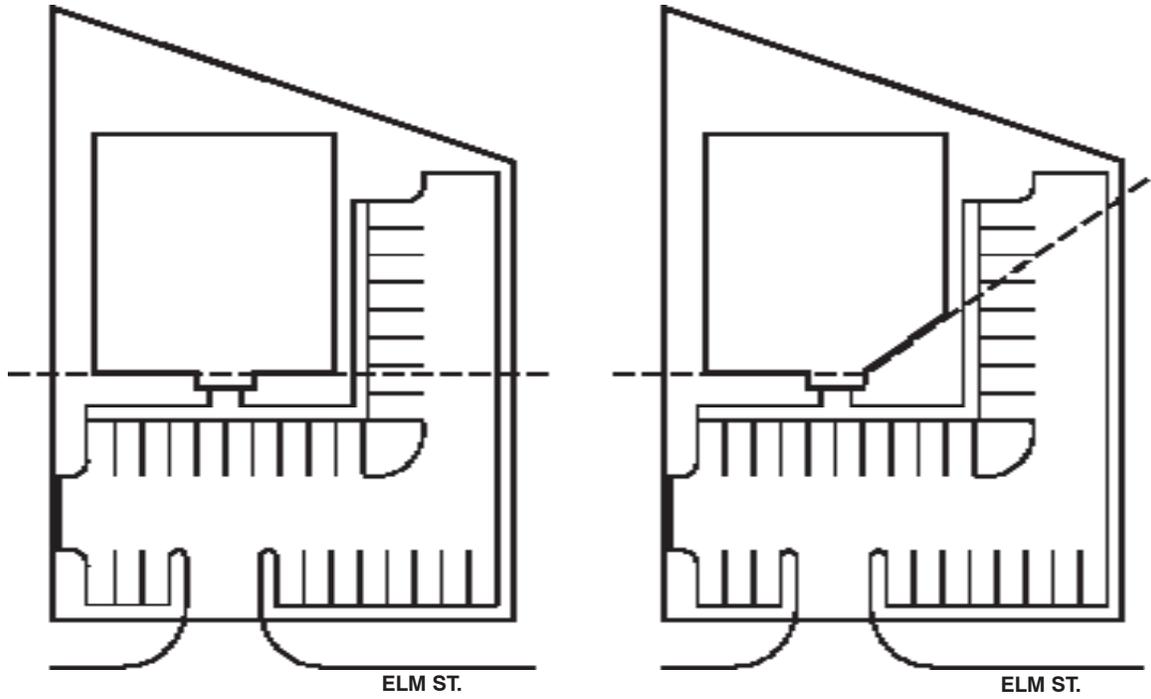


Figure 1.3 Street Wall Line

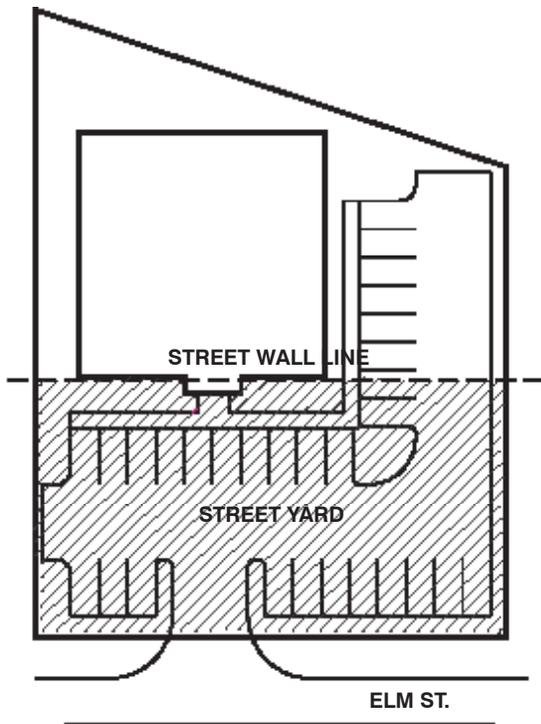


Figure 1.4 Street Yard

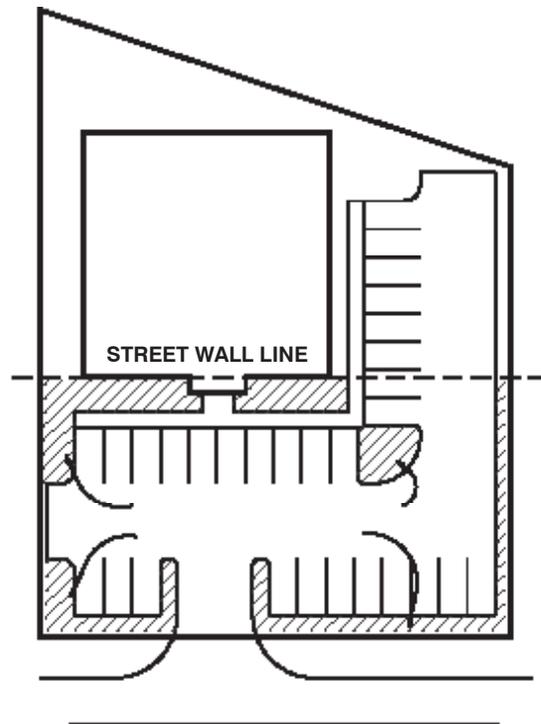


Figure 1.5 Landscaped Street Yard

Street Frontage: *The length of the property abutting on one side of a street measured along the dividing line between the property and the street.*

Usually, the length of street frontage is the same as the length of the property line. (See Figure 1.6) There are a few unusual cases in which the lengths are different. (See Figure 1.7) Consult the Planning Department prior to submitting your landscape plan if you have any questions.

Shade Tree: *Usually a deciduous tree -- rarely an evergreen -- planted primarily for its high crown of foliage or overhead canopy.*

Conifer Tree: *An evergreen tree, usually of the pine, spruce or juniper genus, bearing cones and generally used for its screening qualities.*

A conifer tree may be considered a shade tree if it is at least 5 feet in height when planted and reaches a mature height of at least 20 feet.

Ornamental Tree: *A deciduous tree possessing qualities such as flowers or fruit, attractive foliage, bark or shape, with a mature height generally under 40 feet.*

Shrub: *A deciduous or evergreen woody plant smaller than an ornamental tree and larger than ground cover, consisting of multiple stems from the ground or small branches near the ground, which attains a height of 24 inches or more.*

Ground Cover: *Living landscape materials or low-growing plants, other than turf grasses, installed in such a manner so as to provide a continuous cover of the ground surface, and which upon maturity normally reach the average maximum height of not greater than 24 inches.*

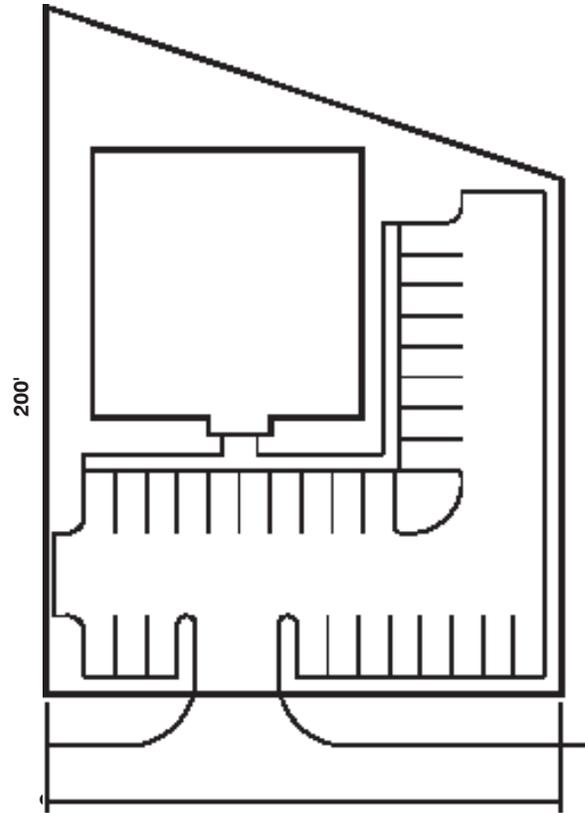


Figure 1.6 Street Frontage

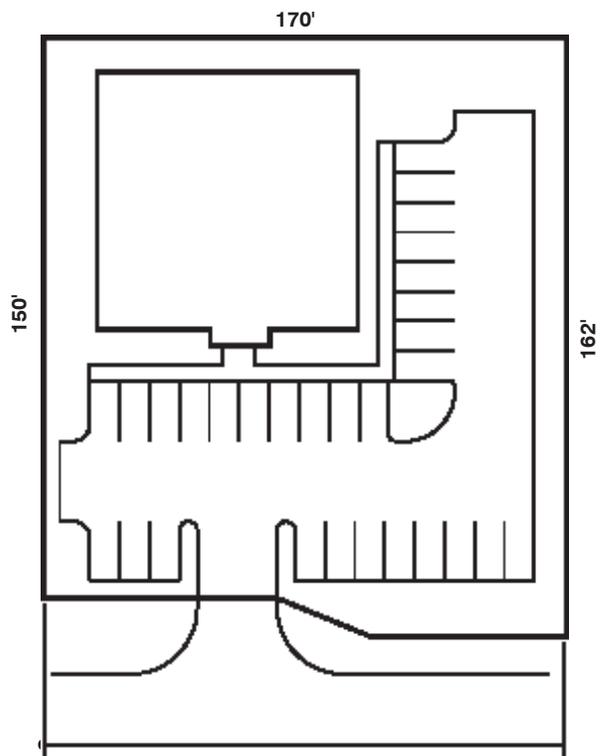


Figure 1.7 Street Frontage

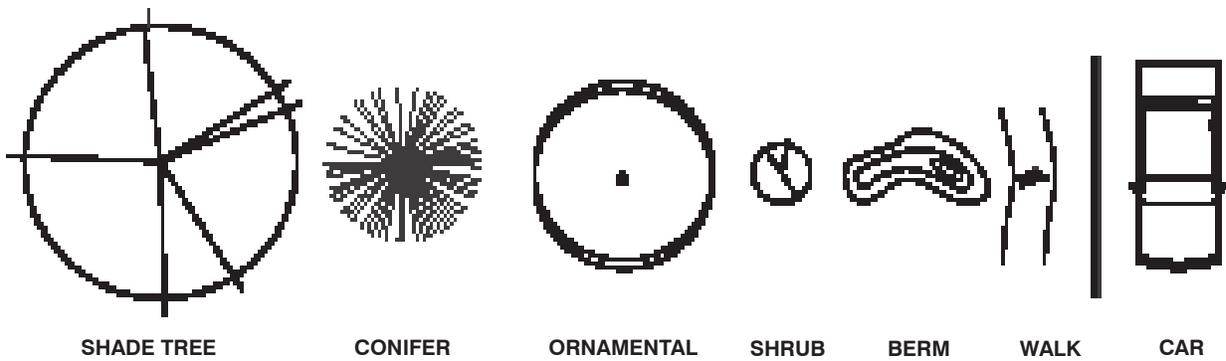
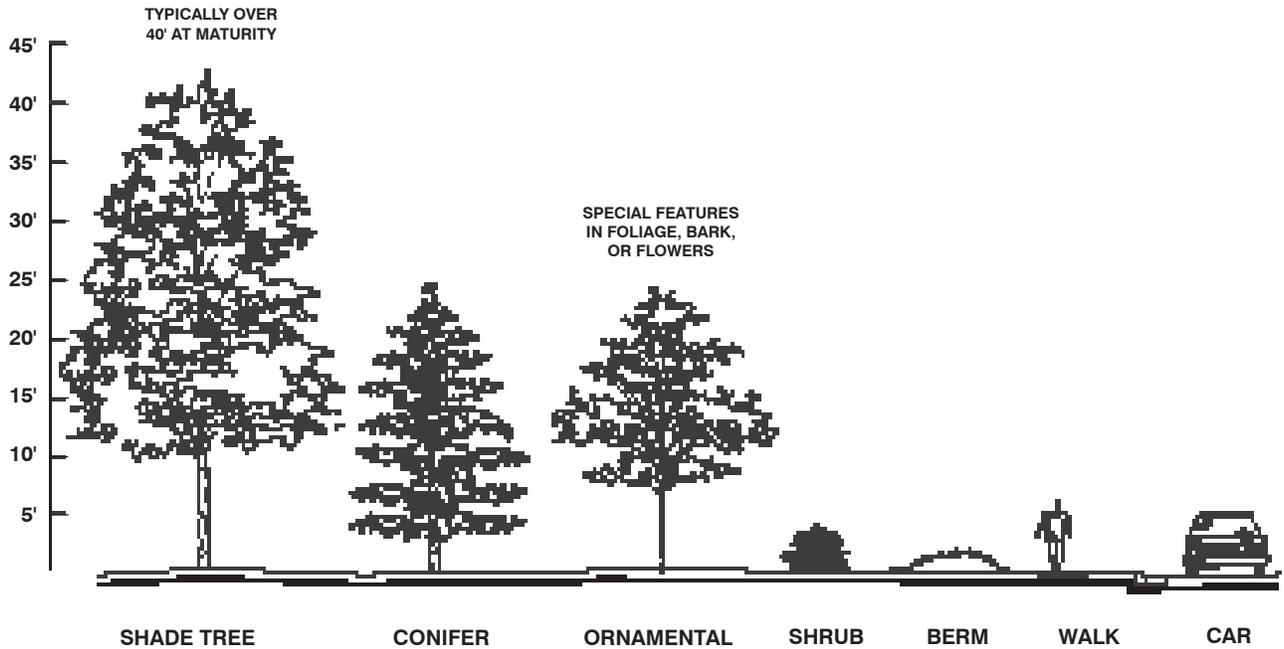


Figure 1.8 Plant Symbols: Plan view symbols are used throughout this guidebook.

Required Landscaped Street Yard

A landscaped street yard is required for all nonresidential developments, multi-family developments, and manufactured home parks which are adjacent to arterial streets, collector streets, at-grade expressway or freeway frontage roads, or across a street from residential zoning. The amount of required landscaped street yard depends on the average lot depth. (For help in calculating the average lot depth, see Figure 1.1) Table 2.1 gives a square footage factor based on average lot depth. The factor is the amount of landscaped street yard required per lineal foot of street frontage.

AVERAGE LOT DEPTH	SQUARE FOOTAGE FACTOR
175.00' or less	8 sq. ft. per lin. foot
175.01' - 275.00'	10 sq. ft. per lin. foot
275.01' - 375.00'	15 sq. ft. per lin. foot
more than 375.00'	20 sq. ft. per lin. foot

TABLE 2.1

To calculate the amount of required landscaped street yard, multiply the total lineal feet of street frontage by the square footage factor from the table above. Figure 2.1 is reusing the previous example of Figure 1.6. The average lot depth is 175 feet, so the required square footage is 8 square feet per lineal foot of street frontage. The total amount of street frontage is 150 feet.

150	(total lineal ft. of street frontage)
x 8	(sq. ft. factor from Table 2.1)
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1,200	(total sq. ft. of landscaped street yard required)

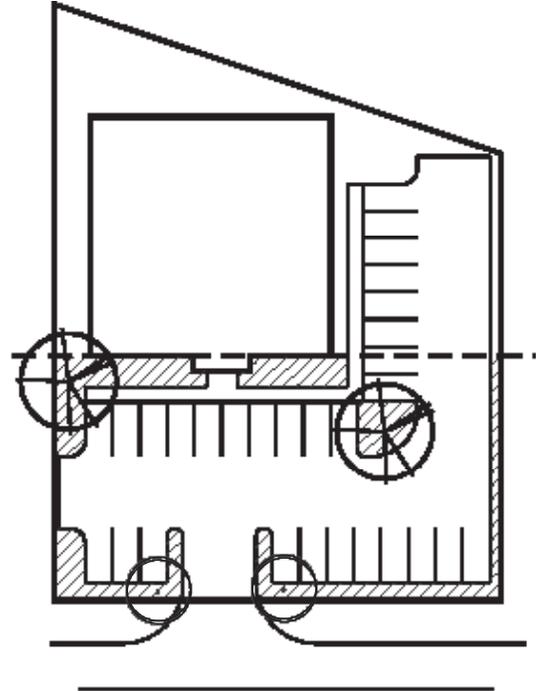


Figure 2.1 Landscaped Street Yard

Below are instances where a landscaped street yard is not required:

Exceptions to Landscaped Street Yard Requirements

- 1) The development is on collector streets with industrial zoning on both sides of the street.
- 2) The development is in the Central Business District

Buffer requirements, parking lot screening and landscaping may still be required. See Section 3, Buffer Requirements and Section 4, Parking Lot Screening and Landscaping.

To determine if we have enough landscaped street yard, all the unpaved areas available to be landscaped that are between the property lines and the street wall lines are included in the calculations. The shaded area in Figure 2.1 is 1,600 square feet of landscaped street yard. The required amount was only 1,200 square feet, so there are 400 square feet more than minimum. The ordinance requires one shade tree (or two ornamentals) per 500 square feet of the required landscaped street yard. Divide 1,200 (required square footage) by 500 (one tree per 500 square feet). The number is 2.4, which is rounded up to 3.

$$\begin{array}{r} \text{Length of street frontage} \\ \times \text{ Square footage factor from Table 2.1} \\ \hline = \text{ Required square footage of} \\ \text{landscaped street yard} \end{array}$$

$$\begin{array}{r} \text{Required square footage of landscaped} \\ \text{street yard divided by 500} \\ = \text{ Number of required trees located in the} \\ \text{landscaped street yard} \end{array}$$

Note: Always round up to the next whole number

For lots with two or more street frontages, calculations for street yard requirements can be done two different ways and the lesser of the numbers may be used. The first method is to calculate each street frontage requirement individually as shown below. The first method is usually the better method for long, narrow lots.

For the second method, take the sum of the street frontages, subtract the greatest perpendicular distance between the property line and the major street wall line, and multiply that number by the number of square feet required from Table 2.1 on previous page. This is usually the better method for lots with frontages of similar lengths. In Figure 2.2 the average lot depth is 163.50 feet and the total length of street frontage is 300 feet (150 + 150). In this instance, it is better to use the calculations shown in the second method.

Method 1	
150	(lineal ft. of North St)
x 8	(sq. ft. factor from Table 2.1)
1,200 (square footage of landscaped street yard required)	
150	(lineal ft. of East St.)
x 8	(sq. ft. factor from Table 2.1)
1,200 (square footage of landscaped street yard required)	
12,000	
= 1,200 (total landscape street yard required)	
Method 2	
300	(total lineal feet of street frontage)
- 80	(greatest perpendicular distance)
220 (adjusted street frontage number)	
220	
x 8	(sq. ft. factor from Table 2.1)
1,760 (total landscaped street yard required)	

The landscape ordinance requires one (2) shade tree or two (2) ornamental trees for every 500 square feet of **required** landscaped street yard. You may substitute ten (10) shrubs for one shade tree or five (5) shrubs for one ornamental tree, as long as you do not substitute more than one-third of the required trees. Shrubs required for parking lot screening may not be used as substitutes for trees. Using Method 2 for Figure 2.2 1,760 square feet of landscaped street yard is required. Divide 1,760 by 500 (1 tree per 500 square feet) to calculate the number of shade trees required in the street yard. The number is 3.52, which is rounded up to 4.

$\frac{1,760 \text{ (tl. landscaped street yard required)}}{500 \text{ (1 tree per 500 sq. ft.)}}$
 = 3.52 rounded up to 4 (number of shade trees required in street yard)

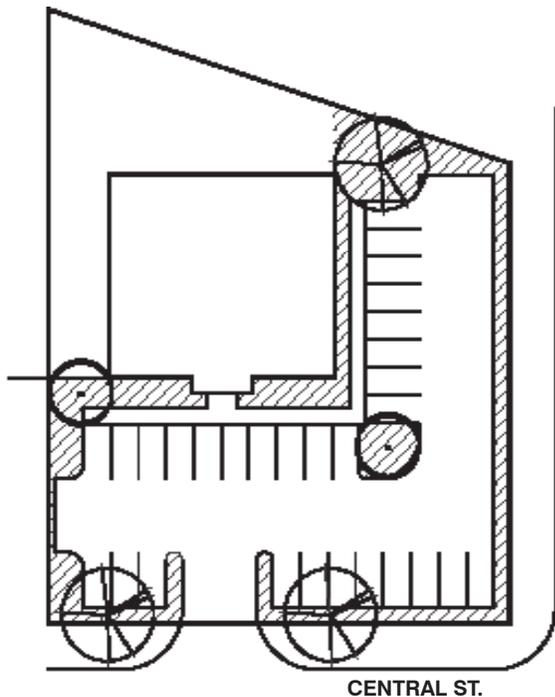


Figure 2.2 Landscaped Street Yard Dual Street Frontage

The equivalent to four shade trees can be provided in a variety of ways, including the following:

$$\begin{array}{r} 3 \text{ Shade Trees} \\ + 2 \text{ Ornamentals (=1 Shade Tree)} \\ \hline = 4 \text{ Shade Trees} \end{array}$$

$$\begin{array}{r} 2 \text{ Shade Trees} \\ + 2 \text{ Ornamentals (=1 Shade Tree)} \\ + 10 \text{ Shrubs (=1 Shade Tree)} \\ \hline = 4 \text{ Shade Trees} \end{array}$$

Figure 2.3 shows examples of plant material equivalents.

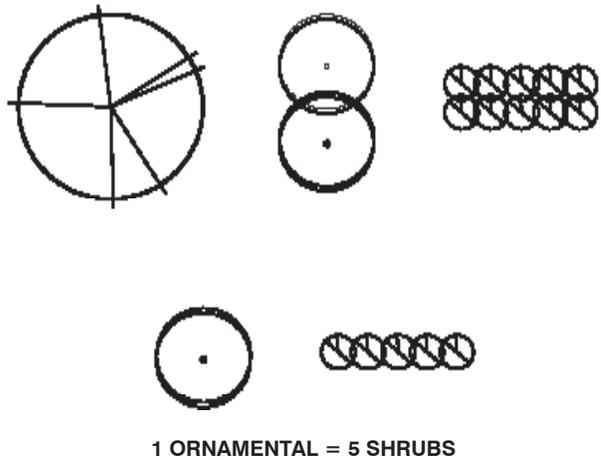


Figure 2.3 Plant Material Equivalents

The square footage of landscaped street yard may be reduced by 20% if the minimum planting sizes of plant materials is increased by 100% or more. The following chart shows the minimum sizes required for plantings in the landscaped street yard.

Minimum Planting Sizes	
Shade Trees	2" Caliper
Ornamental Trees	1" Caliper
Conifer Trees	5' in height
Shrubs	2 Gallon

Required Buffers

Landscaped buffers are required along rear and side boundaries of nonresidential developments when adjacent to residential districts. Landscaped buffers are also required when a multifamily or manufactured home park development is adjacent to a one or two family zoning district.

Existing buffers or plant materials on adjacent property are not counted as part of the required buffer. In the following instances the buffer requirement is waived:

Exceptions to Buffer Requirements

1. Site abuts a public park or public space with at least 100' of undisturbed natural foliage.
2. Site abuts railroad right-of-way.

BUFFER WITH SCREENING: *As a general rule, the zoning code requires a solid screening fence or wall to separate nonresidential uses from abutting residential uses, and also to separate multifamily and manufactured home parks from one or two family zoning districts. In addition to this screening, buffer trees must be planted.*

This buffer requires a quantity of **one shade tree or two ornamental trees per forty lineal feet** of property line abutting the residential area. These trees must be located within 15 feet of the property line unless easements dictate their location be further away. **This does not mean that there must be 15 feet of landscaped area.** The example in Figure 3.1 shows 158.11 lineal feet of property line abutting a residential area. One shade tree is needed per forty lineal feet.

$$158.11' \text{ divided by } 40' = 3.95 \text{ trees}$$

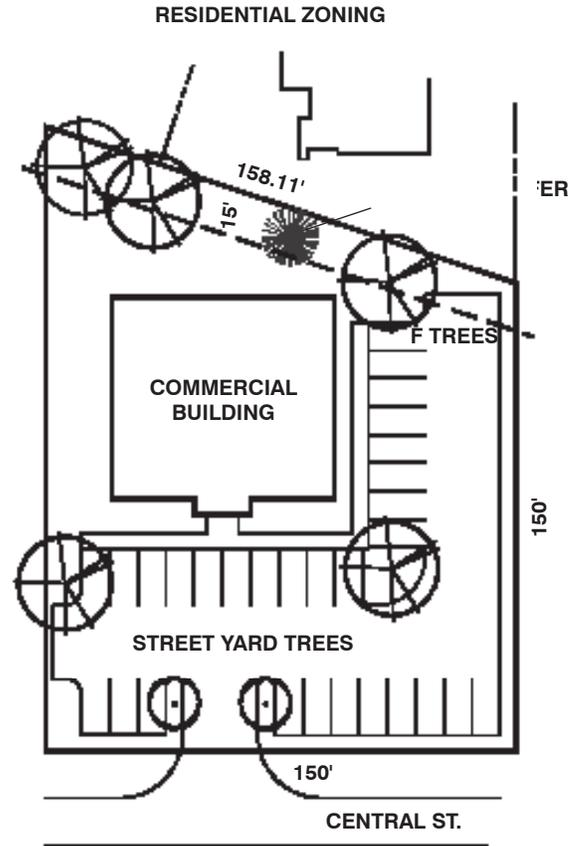


Figure 3.1 Buffer Between Nonresidential Development and Residential Zoning

The 3.95 trees is rounded up to 4 trees. These four shade trees are not required to be evenly spaced, but they are required to be within 15 feet of the property line abutting the residential area. See Figure 3.1.

The minimum installation sizes of plant materials for buffers are as follows:

Minimum Planting Sizes

Shade Trees	2" Caliper
Ornamental Trees	1" Caliper
Conifer Trees	5' in height
Shrubs	2 Gallon

BUFFER WITH NO SCREENING: *The zoning code requirement on solid screening may be waived in some cases, if a more densely planted buffer is provided. This buffer without solid screening can be applied along the common property line of any multifamily, manufactured home park, office or institutional project adjacent to a one family or two family zoning district.*

This landscaped buffer **must be at least 15 feet in width. One shade tree (or two ornamentals) and 5 shrubs are required for each 30 feet in length of the buffer.** A minimum of 1/3 of these trees and shrubs must be evergreen.

In Figure 3.2 the common property line between a multifamily development and a single family zoning district is 240 feet. Eight (8) shade trees (or 16 ornamentals) and 40 shrubs are required. Three shade trees and 14 shrubs must be evergreen. The chart on the previous page shows the minimum planting sizes.

240 (length of common property line)	
divided by 30 (1 shade tree & 5 shrubs per each 30 foot increment)	
= 8 (number of 30 foot increments and number of shade trees)	
8	(number of 30 foot increments)
x 5	(5 shrubs per 30 foot increment)
= 40	(total number of shrubs required in buffer)

The width of this buffer may be reduced to 12 feet if the minimum planting size is increased by 100% or more. Parking lot screening as required in section 10.32.050 of the landscape ordinance may be located in the buffer area, but parking stalls may not.

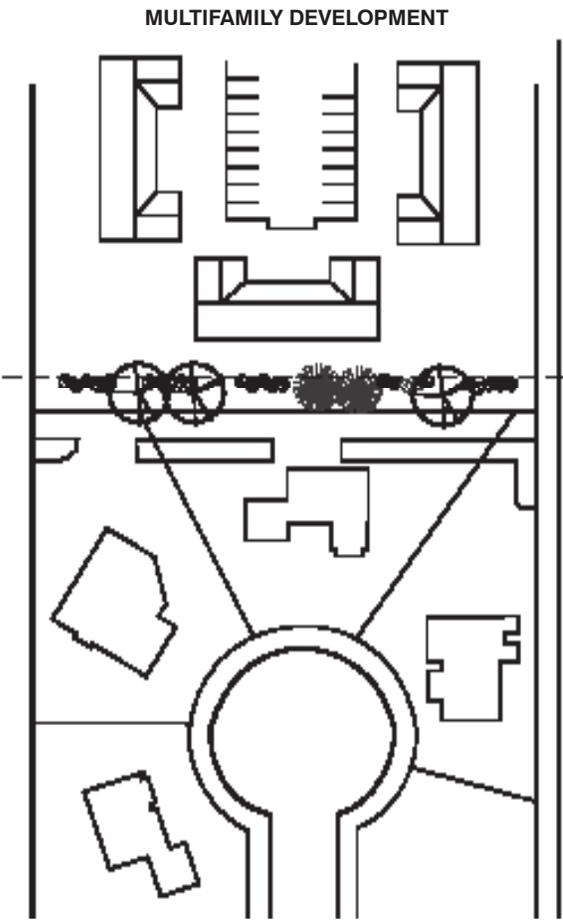


Figure 3.2 Buffer Between Multifamily Development and Single Family or Two Family Zoning

Parking Lot Screening and Landscaping

New parking lots or additions to existing parking lots in nonresidential and in multifamily developments which are adjacent to arterial streets, collector streets, at-grade expressways or freeway frontage roads must be screened. They must also be screened when across a street from residential zoning. The interiors of parking lots that are required to be screened also need to be landscaped if they have twenty or more spaces. Parking lots or additions to existing parking lots are exempted from the ordinance in the following cases.

Exceptions to Parking Lot Screening Requirements

1. Parking lots in one family or two family residential projects in any zoning district
2. Parking lots in industrial districts located on collector streets with industrial zoning on both sides of the street
3. Entire parking lot is 150 feet beyond the property line abutting the street.

REQUIRED SCREENING

Parking lots or additions to existing parking lots are to be continuously screened from view of the street except at driveways. Vehicle queuing and holding areas such as in car washes, drive up windows, and gasoline pumping stations are also to be screened.

Screening for additions to existing parking lots shall generally be required for the addition area only. (See Figure 4.1) If required existing landscaping materials are removed or destroyed, they must be replaced.

Screening can be accomplished with plants and berms. Fences or walls may be used as long as they are in combination with plants. When shrubs and trees are used exclusively for screening, the planting width should be at least 5 feet wide and adjacent to the parking lot paving. When berms are used in combination with plants, the planting strip should be at least 10 feet wide. Shrubs may be evergreen or deciduous as long as the screening is solid for 8 months of the year.

Walls and fences may be used as a sole source of screening only in the Central Business District if they are compatible with the architecture of adjacent buildings and berms or plants would result in the loss of parking spaces. **The required screening must be 18 inches in height at the time of planting and reach a minimum of 3 feet in height above the parking surface after 3 years of growth.**

The required screening can be in the landscape buffers and street yard. Shrub spacing is recommended to be about 3/4 of its mature spread, or close enough that there will be a continuous screen after 3 years of growth.

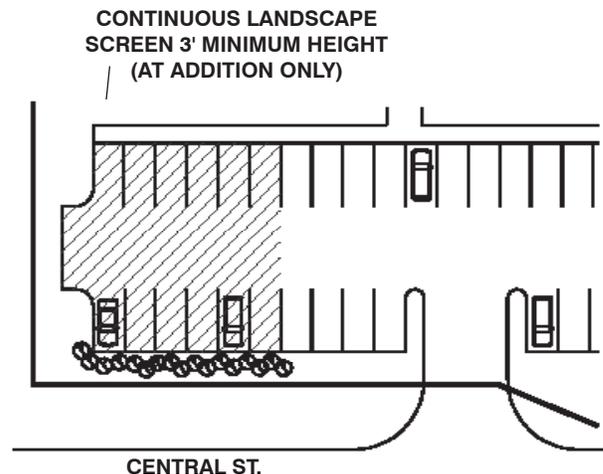


Figure 4.1 Parking Lot Screening

REQUIRED PARKING LOT TREES

One shade tree or two ornamental trees are required for each 20 spaces. Vehicle holding spaces are not counted for this calculation. **Up to one-half of the required street yard trees may be used to satisfy these parking lot tree requirements.** In parking lots with 50 or more spaces with two or more aisles and three or more bays in one contiguous area, at least one-half of the required trees must be in interior planting islands with at least 25 square feet of permeable area for each tree. The minimum planting sizes for parking lot requirements are shown in the chart below.

Minimum Planting Sizes	
Shade Trees	2" Caliper
Ornamental Trees	1" Caliper
Conifer Trees	5' in height
Shrubs	18" in height

Whenever the required number of trees results in the loss in potential parking spaces to the extent that the amount of parking spaces required by the zoning ordinance cannot be met, an adjustment in the number of parking spaces will automatically be granted.

In Figure 4.2, the average lot depth is 200 feet, the total amount of street frontage is 150 feet, and the total number of parking stalls is 40.

150'	(total street frontage)
x 10	(from Table 2.1)
<hr/>	
1,500	(square feet landscaped street yard required)

1,500 divided by 500
(1 shade tree per 500 sq. ft.) <

3 shade trees required for street yard

40 parking spaces divided by 20 (1 shade tree per 20 parking spaces) =

2 shade trees required for parking lot

(one-half of the street yard trees may be used to fulfill parking lot tree requirement)

Half of 3 shade trees = 1 1/2

1 1/2 street yard trees may be counted as parking lot trees

1 1/2 shade trees (1 shade + 1 ornamental)

+ 1/2 shade tree (1 ornamental)

= 2 shade trees (required parking lot trees)

Since one and one-half of the street yard trees can be used to fulfill the parking lot tree requirement, one additional ornamental tree will be required in the parking lot. Parking lot screening is required along the street. The landscape ordinance requires the calculations be shown on the landscape plan. A sample calculation table is shown below Figure 4.2.

In Figure 4.3 the vehicle queuing area is required to be screened from view from the arterial street. The screening must wrap around the corner of the minor street for a depth of 100 feet. The average lot depth is 295 feet, so the required square footage is 15 square feet per lineal foot of street frontage. Since there are less than twenty parking stalls and they are over 150 feet from the street, no parking lot trees are required. Queuing areas are not required to provide trees. The back of the site abuts single family zoning, so buffer landscaping is required.

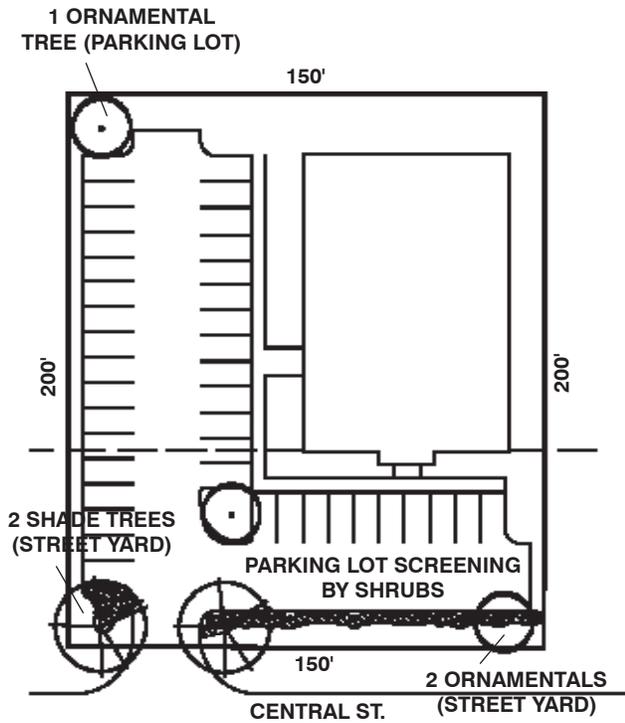


Figure 4.2 Combined Street Yard and Parking Lot Landscaping

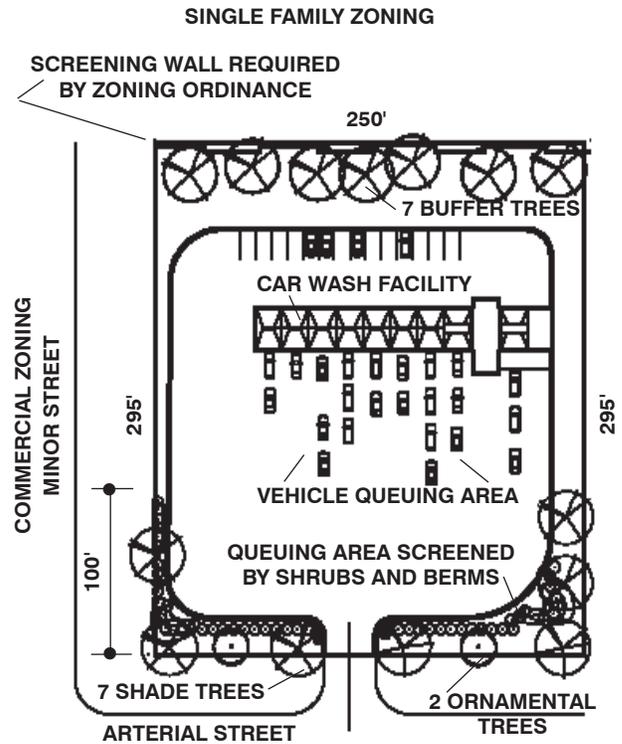


Figure 4.3 Street Yard Landscaping, Queuing Area and Buffer Area Screening

150' street frontage x 10 sq. ft. = 1,500 sq. ft. landscaped street yard required

Street yard trees required = 3 shade trees

Street yard trees provided = 2 shade trees + 2 ornamentals

Parking lot trees required = 2 shade trees

Parking lot trees provided = 1 shade tree + 2 ornamentals (1 shade tree and 1 ornamental tree are provided by street yard requirements)

Parking lot screening is provided with shrubs

No buffer is required

40 parking spaces provided

Landscaped Street Yard Required: 250 x 15 sq. ft. = 3,750 sq. ft.

Landscaped street yard provided = 4,230 sq. ft.

Street yard trees required = 8 shade trees

Street yard trees provided = 7 shade, 2 ornamentals

Parking lot trees required = 0 shade trees

Queuing area screening is provided with shrubs and berms

Buffer area = 250' divided by 40' = 6.25

7 shade trees are required in the buffer

Shade trees provided in the buffer = 7

14 Parking stalls provided

Other Landscape Regulations

No part of the required landscaping (in the street yard, buffer, or in the parking lot) can obstruct traffic visibility. Figure 5.1 shows a triangle of area in which landscaping must be maintained under 3 feet in height.

Visibility triangles at street intersections vary depending on type of street, speed limit and whether or not it is a controlled intersection.

For visibility requirements at intersections such as in Figure 5.2, consult Chapter 11.22 of the Wichita City Code.

In the 3 feet around fire hydrants, traffic signs, traffic signals, or utility structures, plantings must remain under 8 inches tall. See Figure 5.3.

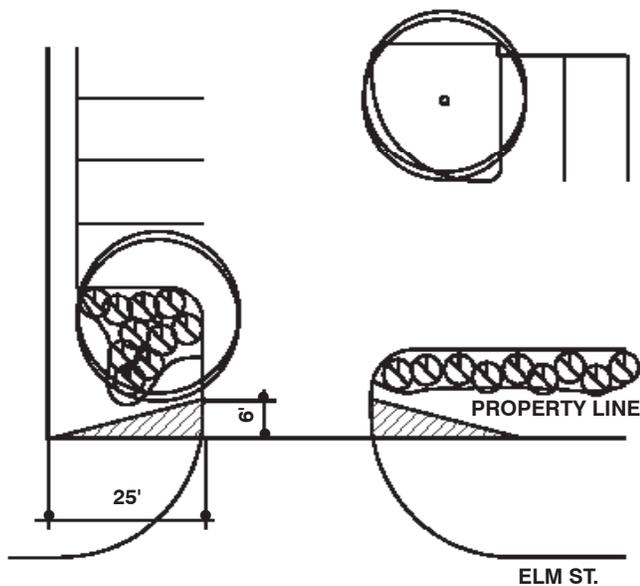


Figure 5.1 Visibility Triangle at a Drive Approach

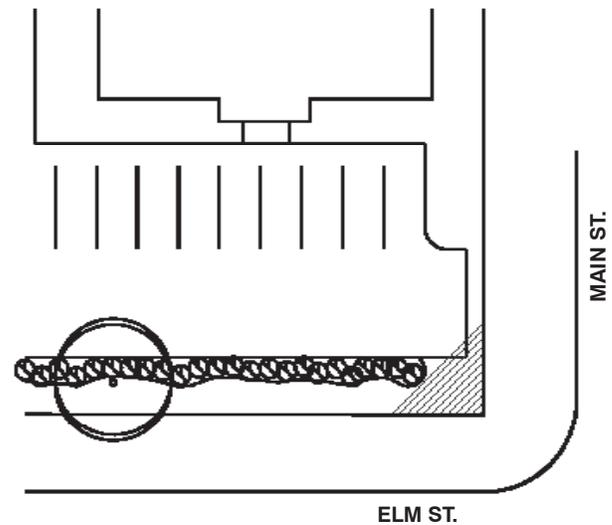


Figure 5.2 Visibility Triangle at a Street Intersection

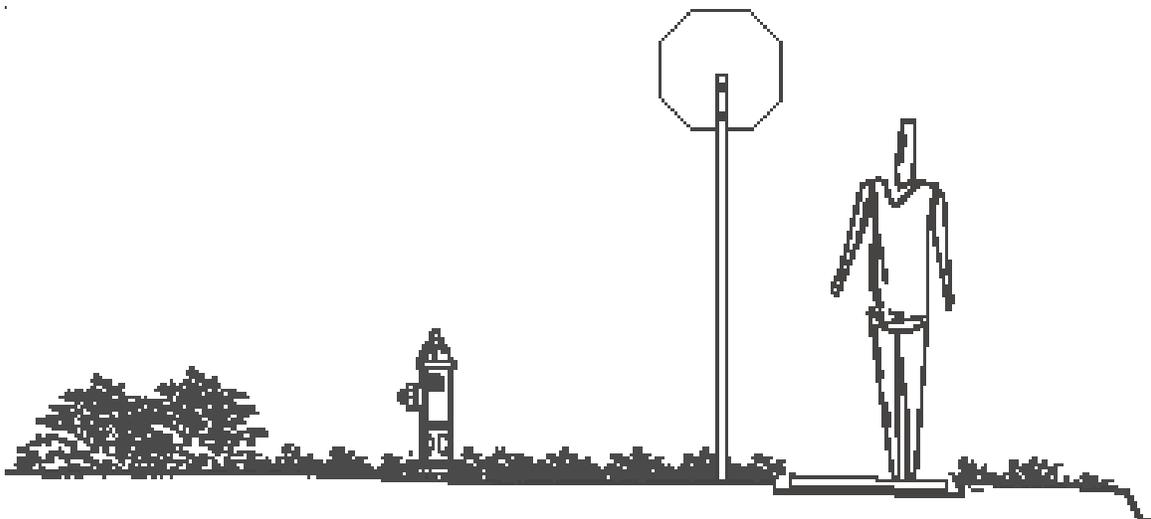


Figure 5.3 Planting Clearances

COST "CAP"

To avoid the possibility of economic hardship being created by requiring compliance with this code, a "cap", or maximum required expenditure, expressed as a percentage of total project construction costs, has been established. The cap may be exceeded but does not have to be exceeded. The cap is 4% for projects involving buildings and 8% for projects involving only parking lots. To qualify for this cap, the property owner must first have an approved landscape plan. The owner must then submit a bona fide bid from a licensed contractor or nurseryman for materials and installation costs for the approved landscape plan. The bid for landscaping must distinguish those items which are required

by this code from any other items that are not required by this code. The costs of the required plant materials and installation will be compared with the total project construction costs to determine the percentage. In order to know what the total project construction costs are, the owner must also submit a bona fide bid from a licensed contractor for those costs. If the total cost of required landscaping exceeds 4% of total construction costs for projects involving buildings, or 8% for projects involving only parking lots, the property owner may select landscape items to be deleted in order to bring the cost down to the "cap" amount. A list of items to be deleted shall be submitted as an addendum to the approved landscape plan.

Xeriscape Principles

Xeriscape: *Water conservation through creative landscaping which applies the following seven principles:*

1. *Plan and design carefully.*
2. *Improve the soil water holding capacity through use of soil amendments.*
3. *Use efficient irrigation methods and equipment.*
4. *Select site-specific, hardy plant materials, and then group all plants according to their sun and moisture needs.*
5. *Use turf grass appropriately in locations where it provides functional benefits.*
6. *Mulch.*
7. *Give appropriate and timely maintenance.*

When many people think of xeriscape, they think of a dry, desert landscape of cactus and rocks. It does not have to be like that at all! You can have a lush, beautiful landscape and still follow the xeriscape principles listed.

Following these principles does not mean that plants with high water requirements can not be used. Rather, it encourages a reduction in lawn area and the number of high water requiring plants, grouping plants with similar water requirements together, and watering them efficiently.

PLAN AND DESIGN CAREFULLY

Lawn areas require more water and maintenance than shrub and groundcover beds. Reducing the amount of turf area reduces the amount of irri-

gation needed. Group plants with similar water requirements together.

IMPROVE THE SOIL

Adding amendments to the soil can help it absorb water and nutrients and allow for the water to move through the root zone easily. Soils that are too sandy tend to let water move too quickly. Clay soils tend to hold water and nutrients too tightly, making it hard for roots to absorb moisture and nutrients. Incorporating composted organic materials twelve inches into the existing soil will improve the water absorption and retention quality.

EFFICIENT IRRIGATION

Nearly all plants need supplemental water during their first and second growing season to establish their root systems. Cool-season lawns will need additional water every summer. This does not mean that there must be an automatic irrigation system. The landscape ordinance requires there to be a permanent water supply available. There are several ways to provide a permanent water supply including the following:

1. An exterior faucet on a building within 100' (length of hose) of the farthest planting
2. A quick-coupling system. This is an inground water line with hose connections. The connections should be spaced so that the length of the hose can reach the farthest plantings. See Figure 6.1

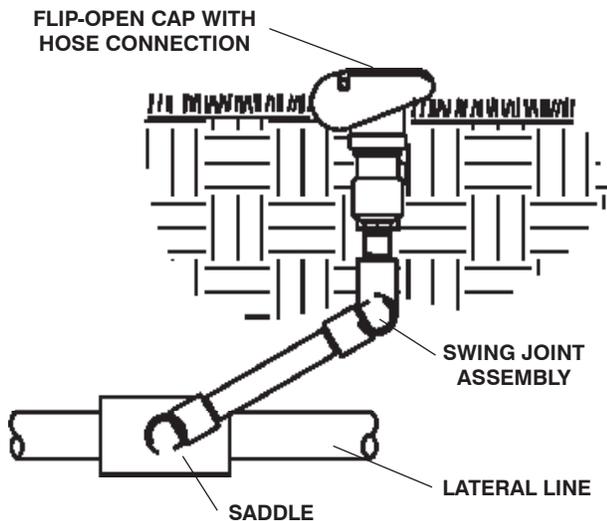


Figure 6.1 Quick Coupling Valve

3. An automatic irrigation system with a moisture sensing device or rain shut-off switch. If using an automatic irrigation system to fulfill this requirement, the following points should be observed:
 - A. Sprinklers should not over-spray onto pavement.
 - B. Lawn areas should be irrigated separately from shrub and groundcover beds.
 - C. Drip irrigation is recommended for shrub and groundcover beds. Drip irrigation must be used in areas smaller than five feet in any direction.
 - D. Spray heads should have a low trajectory and a course stream (to avoid wind evaporation). Pressure compensating heads will even out the water pressure through the irrigation zone, making it more efficient.

PLANT SELECTION

Native plants or plants that are well adapted to Kansas's weather and annual rainfall are best to use. Take into account how much sun exposure each location receives when choosing plants. See Section 8 for a list of recommended trees, shrubs, and turf.

TURF GRASS USES

Lawn areas are necessary in nearly every landscape design. No other plant material can take foot traffic without damage. However, lawn areas use more water than shrub and groundcover areas. By reducing the amount of lawn area in a landscape, you also reduce the amount of watering, mowing and edging required. Warm season grasses such as Buffalo grass or Bermuda grass use less water than cool season grasses such as Fescue or Kentucky Blue Grass. See Section 8 for a list of recommended turf grasses.

MULCH

Using a mulch around trees, shrubs, and groundcover helps the soil retain moisture and keep down the number of weeds competing for available moisture and nutrients. Recommended mulches are hardwood chip, shredded cypress, and cotton bur. Rocks are not generally recommended because they reflect sunlight and heat to the underside of the plants.

MAINTENANCE

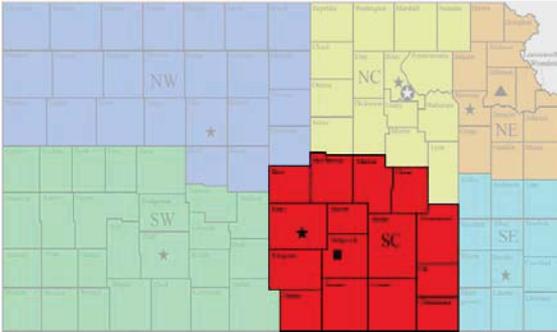
Proper watering, mowing, fertilizing, and pruning are necessary to keep the landscape looking good. Reapply mulch as needed to reduce moisture evaporation. The landscape ordinance requires the landowner keep the landscaping materials in a proper and neat appearance. Plants which die should be replaced within 60 days or within the first 30 days of the next planting season.

Checklist and Sample Landscape Plan

The following checklist is for all landscape plans to be submitted to Central Inspection for construction permits.

- 1. Plan is drawn to scale with north arrow and the scale noted on the plan. Recommended scale is 1" = 20'. A scale of 1"=10' or 1/8" = 1' is also acceptable.
- 2. All existing and proposed structures and parking lots are shown.
- 3. Lot dimensions are shown.
- 4. All utility and drainage easements are shown.
- 5. Legal description and address (if known) of the site is included on the plan.
- 6. A list of all proposed plant materials with quantities, botanical names, common names, and sizes at installation is provided.
- 7. A statement of how plants are to be watered is included. If an automatic irrigation system is proposed, there is a statement about providing a moisture-sensing device or a rain shut-off switch.
- 8. Number of parking stalls is shown.
- 9. Calculations of required landscaped street yard, parking lot trees, and perimeter buffers are included. The amounts actually provided are also included.

Preferred Trees for South Central Kansas



Growing trees successfully depends on the selection of the right trees for the intended site. It is important to match the growing conditions and space available on the site with the cultural requirements and projected size of each tree to be planted. The following four charts show the tolerances of individual trees to various environmental conditions as well as the major landscape attributes of each tree. Not all recommended trees for planting in South Central Kansas are included. The preferred trees listed were recommended by industry professionals such as city foresters, local tree boards, county and horticulture extension agents, commercial arborists and retail/production nursery interests. For a more extensive list see *Shade & Ornamental Trees for Kansas MF-2688*.

KEY TO USING THIS INFORMATION:

TREE SPECIES AND CULTIVARS: The names of the trees are listed in the center of four different charts. Three of the charts list deciduous trees according to average mature height [a plus (+) indicates they may grow slightly larger.] The fourth chart lists evergreen trees. If improved cultivars of the species are available and recommended, they are listed. Cultivars often possess improved plant characteristics like better fall color; a unique form; more attractive flowers, fruit or bark; greater heat tolerance; or increased pest resistance.

ENVIRONMENTAL TOLERANCES: The left side of each chart indicates whether the tree is tolerant to various environmental conditions including full sun, light shade, alkaline soil, drought or wet soil. 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. A "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 "alkaline soil" and "pests" categories follows:

ALKALINE SOIL: (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.

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. The size is sometimes highly variable due to the size and shape of different cultivars planted and variability among growing sites. The landscape attributes of flowers, fruit, autumn color and ornamental bark are also listed.

DESIRABLE FLOWERS: (G) = the flowers are showy, adding unique ornamental interest to the landscape; (F) = the flowers are not particularly showy, but may possess other desirable characteristics such as fragrance; (blank) = the flowers are generally considered insignificant.

SHOWY OR USEFUL 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.

AUTUMN FOLIAGE COLOR: (G) = the autumn leaf color is typically quite good (may vary with individual trees, cultivars and environmental conditions, however); (F) = the fall color may provide interest in some years; (blank) = autumn foliage color is generally not considered an asset of this particular tree.

ORNAMENTAL BARK: (G) = the bark or twigs are considered to be exceptionally ornamental; (F) = the bark or twigs (on at least some cultivars) lend interest to the landscape (good color, texture, etc.); (blank) = the bark or twigs are not generally considered to be ornamental.

ENVIRONMENT (tolerant of)						LANDSCAPE ATTRIBUTES						
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	SMALL DECIDUOUS TREES (usually under 20 feet at maturity) <i>Trees with mature height 20 feet or less can be used within 15 feet on either side of utility lines.</i>	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G	F	F	G	F	F		Amur Maple (<i>Acer tataricum</i> var. <i>ginnala</i>) Cultivars: 'Compactum'; 'Flame'	15-20	15-25	F	F	G
G	F	G	G		F	Tatarian Maple (<i>Acer tataricum</i>).	20-25	15-25		F	F	
F	G	G	F		F	Eastern Redbud (<i>Cercis canadensis</i>) Cultivars: also available: var. <i>alba</i> (white flowers) 'Forest Pansy' (red/purple new growth)	20-25+	20-25+	G		F	F
G	F	G	F		F	Oklahoma Redbud (<i>Cercis canadensis</i> subsp. <i>texensis</i> 'Oklahoma') (glossy green leaves, more intense flower color, insect resistance)	15-20+	15-20+	G		F	F
G		G	G			Cockspur Hawthorn (<i>Crataegus crusgalli</i>) - heavily thorned. Cultivar also available: var. <i>inermis</i> (thornless). Subject to cedar-hawthorn rust in wet years.	15-20+	20-25	G	G	F	
G		G	G			Washington Hawthorn (<i>Crataegus phaenopyrum</i>) Subject to cedar hawthorn rust in wet years.	20-25+	20-25	G	G	G	
G	F	G	G			Winterberry Euonymus (<i>Euonymus bungeanus</i>)	15-20+	10		G	F	
G		F	F		F	Flowering Crabapple (<i>Malus</i> spp.) For disease resistant cultivars see Crabapple publication MF-875.	varies	varies	G	G		F
F			F		F	Smoketree (<i>Cotinus</i> spp.) American Smoketree (<i>Cotinus obovatus</i>) and Red Smoketree varieties (<i>Cotinus coggygria</i>)	15	10	F		F	
F			F		F	Canada Red Chokecherry , (<i>Prunus virginiana</i> 'Canada Red'.) Has tendency to sucker.	25	25	F			

ENVIRONMENT (tolerant of)						LANDSCAPE ATTRIBUTES						
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	MEDIUM DECIDUOUS TREES (usually 20 to 40 feet at maturity)	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G	F	F	F	F	F		Trident Maple (<i>Acer buergerianum</i>) Some trees could suffer winter damage north of Newton.	20-35	20-30			G
G	G	F	G		G	Hedge Maple (<i>Acer campestre</i>)	25-35	25-35			F	F
G	F	F	F		G	Shantung Maple (<i>Acer truncatum</i>). Hybrids also available: Norwegian Sunset; Pacific Sunset (hybrids with Norway Maple). Range of fall color, yellow-red.	25-30	25-30			F	
G		G	G			Goldenraintree (<i>Koelreuteria paniculata</i>). Host to boxelder bugs.	30-40	30-40	G	G	F	
G		G	G	F	G	Osage Orange (<i>Maclura pomifera</i>) Cultivars: 'Wichita'; 'Whiteshield' (vase-shaped). Use fruitless and thornless cultivars only.	30-40+	20-40			G	F
G		F	F			Flowering Crabapple (<i>Malus</i> spp.) For disease resistant cultivars see Crabapple publication MF-875.	varies	varies	G	G		F
G	F	G	G	F		White Mulberry (<i>Morus alba</i>) Use fruitless forms.	30-40+	30-40		F		
G		G	G		G	Chinese Pistache (<i>Pistacia chinensis</i>). Do not plant north of Harvey County. Use cold-hardy seed source if possible.	30-35	30-40		F	G	
G		F	G		F	Callery Pear (<i>Pyrus calleryana</i>) Cultivars: 'Aristocrat'; 'Capital'; 'Chanticleer' 'Cleveland Select'; 'Redspire'; DO NOT plant 'Bradford'.	30-40+	10-45	G	F	G	
F			F		F	Japanese Tree Lilac , (<i>Syringa reticulata</i>)	25	20	F			F
G		G	G		G	Chinkapin Oak (<i>Quercus muehlenbergii</i>)	35-40+	40-45		F	F	

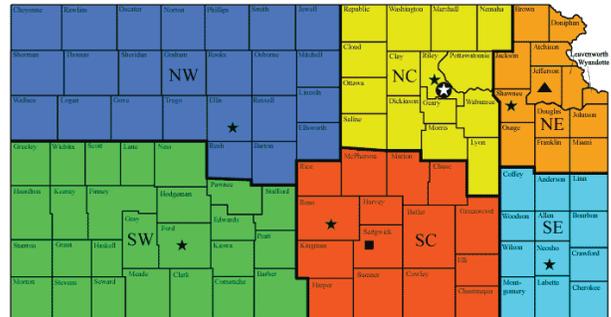
ENVIRONMENT (tolerant of)						LANDSCAPE ATTRIBUTES						
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)		MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
						LARGE and VERY LARGE DECIDUOUS TREES (usually 40 feet and larger at maturity)						
G	F	F	F	F		Freeman Maple (<i>Acer x freemanii</i>) Cultivars: Autumn Blaze™; Autumn Fantasy™.	50-60	40-50			G	F
G	F			G		Red Maple (<i>Acer rubrum</i>) Cultivars: 'Autumn Flame'; 'October Glory'; 'Red Sunset'; Burgundy Belle™	40-60	35-50	F		G	F
G	G	F	F			Sugar Maple (<i>Acer saccharum</i>). Caddo (seedling). Cultivars: 'Commemoration'; 'Legacy'; 'John Pair'; 'Autumn Splendor'. All are more heat tolerant and leaf tatter resistant cultivars.	40-60+	30-50			G	
G				G	F	River Birch (<i>Betula nigra</i>). Also available: cultivars 'Heritage' (larger leaves, better salmon-white bark). Dura-Heat™ (better leaf retention and color).	40-60	40-50	F		F	G
G	F	G	F	G		Common Hackberry (<i>Celtis occidentalis</i>).	40-60	40-50		F	F	G
G	F	G				White Ash (<i>Fraxinus americana</i>). Cultivars available. Ash is very prone to wood borers when young.	45-60+	25-50			G	
G		G	G	G		Green Ash (<i>Fraxinus pennsylvanica</i>). Cultivar: 'Urbanite'. Ash is very prone to wood borers when young.	40-60	30-45			G	
G		G	G		G	Ginkgo (<i>Ginkgo biloba</i>). Cultivars: 'Autumn Gold'; 'Princeton Sentry' (narrow pyramidal form). Slow-growing. Use named MALE cultivars only.	50-60+	25-40			G	F
G		G	G	F		Thornless Honeylocust (<i>Gleditsia triacanthos var. inermis</i>). Cultivars: 'Shademaster'; 'Skyline'; Honeylocusts are susceptible to many pests.	40-60+	30-50			F	
G	F	G	G	F	G	Kentucky Coffee Tree (<i>Gymnocladus dioica</i>) Male cvs. are avail.	50-60+	30-45		F	F	F
G				G		Sweetgum (<i>Liquidambar styraciflua</i>). Several cultivars available for more consistent fall color.	50-75	35-50		F	G	F
G	F	G	F	G		London Planetree (<i>Platanus x acerifolia</i>) Cultivar 'Bloodgood', best disease resistance to anthracnose.	60-80	50-65		F		G
G		F	G	F	G	Sawtooth Oak (<i>Quercus acutissima</i>).	40-50	30-45		F	F	
G			F	G	F	Swamp White Oak (<i>Quercus bicolor</i>)	50-60	40-60		F	F	F
G			G	F	F	Shingle Oak (<i>Quercus imbricaria</i>)	50-60	40-60		F	F	
G		G	G	F		Bur Oak (<i>Quercus macrocarpa</i>).	60-80	50-70		F		
G		G	F		F	English Oak (<i>Quercus robur</i>). Also available: cv. 'Fastigiata', (upright form only 10-15 feet wide).	40-60+	45-65		F		
G					F	Red Oak (<i>Quercus rubra</i>).	60-75	40-60		F	G	
G		F	G	F	F	Shumard Oak (<i>Quercus shumardii</i>).	60-80	40-60		F	G	
F			F	F	F	Willow Oak (<i>Quercus phellos</i>)	50-60					
G			F	G	G	Baldcypress (<i>Taxodium distichum</i>). Knees can be a problem in the landscape.	50-70+	20-50		F	G	F
G	F	F		F	F	American Linden (<i>Tilia americana</i>). Also available: cultivar 'Redmond' pyramidal form. Better north of Harvey County.	50-60+	35-40	F		F	
G	F	G			F	Littleleaf Linden (<i>Tilia cordata</i>) form more rounded. Cultivar: 'Greenspire' (pyramidal). Better north of Harvey County.	35-45	25-40	F		F	
G	F	G	G	F	F	Lacebark Elm (<i>Ulmus parvifolia</i>). Also available: cultivars 'Athena'; 'Allee'; 'Emerald Prairie'; others.	40-60	35-50		F	F	G
F			F		F	Japanese Zelkova (<i>Zelkova serrata</i>)	30-40	25-30				F

ENVIRONMENT (tolerant of)						LANDSCAPE ATTRIBUTES						
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)		MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G	F	G	G			Evergreen Trees						
						Upright Chinese Juniper (<i>Juniperus chinensis</i>). Very rust resistant. Cultivars: 'Keteleeri'; 'Robusta Green'; 'Wintergreen'; other disease resistant cultivars are available.	varies	varies		G		F
						Eastern Red Cedar (<i>Juniperus virginiana</i>). Also available: cultivar 'Canaertii' (irregular form); 'Taylor' (upright growth) other cvs. available.	30-40+	25-Oct		G		F
						Black Hills Spruce (<i>Picea glauca</i> var. <i>densata</i>)	30-40	15-20		F		
						Pinyon Pine (<i>Pinus edulis</i>). Slower growing.	10-20+	10-15+		F		
						Vanderwolf's Pyramid Limber Pine (<i>Pinus flexilis</i> 'Vanderwolf's Pyramid') Vigorous upright selection of Limber Pine.	30-40	15-30		F		
						Austrian Pine (<i>Pinus nigra</i>). Limited use - subject to Sphaeropsis blight and pine wilt diseases.	40-60	25-40		F		F
						Southwestern White Pine (<i>Pinus strobiformis</i>).	40-60	25-40		F		

This publication is coordinated and updated by the Kansas Forest Service. For further information and assistance, or to provide feedback and recommendations to the preferred tree listing please contact:

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Preferred tree lists are available for other areas of the state.
 Visit us on the web for more information.



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SHRUBS Parking Lot Screening		MATURE HEIGHT (FT.)	MATURE SPREAD (FT.)	SUN	SHADE	COMMENTS
COMMON NAME	SCIENTIFIC NAME					
Red Leaf Barberry	<i>Berberis thunbergii atropurpurea</i>	3-4	2-3		Tolerant	Very hardy-evergreen-red color
Golden Barberry	<i>Berberis thunbergii atropurpurea</i> 'Golden'	3-4	2-3		Poor	Hardy-evergreen-yellow color
Mentor Barberry	<i>Berberis x mentorensis</i>	3-5	2-3		Tolerant	Hardy evergreen-green color
Jet Trail Quince	<i>Chaenomeles speciosa</i> 'Jet Trail'	3-4	2-3		Poor	Bushy-spreading-white flowers
Texas Scarlet	<i>Chaenomeles speciosa</i> 'Texas Scarlet'	3-4	2-3		Poor	Bushy-spreading-scarlet flowers
Spreading Cotoneaster	<i>Cotoneaster divaricatus</i>	4-5	3-4		Tolerant	Hardy-roundish-red berries
Slender Deutzia	<i>Deutzia gracilis</i>	2-3	2-3		Tolerant	Hardy-formal-white flowers
Compact Burning Bush	<i>Euonymus alatus</i> 'compacta'	4-5	3-4		Tolerant	Hardy-green-red fall color
Manhattan Euonymus	<i>Euonymus patens</i> 'Manhattan'	4-5	3-4		Tolerant	Evergreen-need protection
Pauli Euonymus	<i>Euonymus patens</i> 'Paulii'	4-5	3-4		Tolerant	Evergreen-fruit-attractive
Sarcoxie Euonymus	<i>Euonymus radicans</i> 'Sarcoxie'	3-4	3-4		Good	Hardy-shrub or vine-evergreen
Gold Coast Juniper	<i>Juniperus chinensis</i> 'Gold Coast'	3-4	4-6		Poor	Hardy-compact-gold color
Mint Julep Juniper	<i>Juniperus chinensis</i> 'Mint Julep'	3-4	4-5		Poor	Good growth-excellent color
Pfizer Compact Juniper	<i>Juniperus chinensis pfizeriana compacta</i>	3-4	4-6		Tolerant	Compact-dense-lush green
Golden Vicari Privet	<i>Ligustrum x vicaryi</i>	5-6	3-4		Poor	Needs protection-yellow foliage
Winter Honeysuckle	<i>Lonicera fragrantissima</i>	5-6	4-5		Poor	Hardy-attractive-white flowers
Arnold Red Honeysuckle	<i>Lonicera tatarica</i> 'Arnold Red'	7-8	4-5		Poor	Less Disease resistant-red flower
Dwarf Mugho Pine	<i>Pinus mugho</i> 'Compacta'	3-5	3-4		Poor	Hardy-compact-dense
Gnome Pyracantha	<i>Pyracantha angustifolia</i> 'Gnome'	3-4	3-4		Tolerant	Evergreen-white flowers
Snowmound Spirea	<i>Spiraea nipponica</i> 'Snowmound'	3-5	3-4		Poor	Hardy-white flower-short bloom

For other cultivars and varieties consult your local nursery center.

SHRUBS Foundation Planting		MATURE HEIGHT (FT.)	MATURE SPREAD (FT.)	SUN	SHADE	COMMENTS
COMMON NAME	SCIENTIFIC NAME					
Crimson Pygmy Barberry	Berberis thunbergii atrovirens 'Nana'	1-2	1-2		Poor	Hardy-evergreen-red color
Blue Mist Shrub	Caryopteris x clandonensis 'Blue Mist'	2-3	2-3		Poor	Mound form-blue flowers
Kelsey Dwarf Dogwood	Cornus sericea 'Kelsey'	2-3	2-3		Good	Dwarf red twig-afternoon shade
Cranberry Cotoneaster	Cotoneaster apiculatus	3-4	4-5		Tolerant	Attractive-shiny green-red berries
Compact Burning Bush	Euonymus alatus 'compacta'	4-5	3-4		Tolerant	Hardy-green-red fall color
Emerald Gaiety Euonymus	Euonymus fortunei 'Emerald Gaiety'	2-3	3-4		Tolerant	Dark green-dense-evergreen
Andorra Compact Juniper	Juniperus horizontalis 'Andorra Compacta'	2-3	3-4		Tolerant	Fine texture-green-plum fall color
Turquoise Spreader	Juniperus horizontalis 'Turquoise Spreader'	1-2	3-4		Tolerant	Spreading-blue/green color
Lodense European Privet	Ligustrum vulgare 'Lodense'	2-3	2-3		Poor	Compact-green-ideal for hedge
Emerald Mound Honeysuckle	Lonicera xylosteum 'Compacta'	2-3	2-3		Tolerant	Mound-yellowish flower-red berries
Plume Grass (Maiden Grass)	Miscanthus sinensis 'Gracillimus'	3-5	2-3		Tolerant	Hardy-silver green-white plumes
Japanese Silver Grass	Miscanthus sinensis 'Variegatus'	3-5	2-3		Tolerant	Hardy-silver green-white plumes
Chinese Fountain Grass, Dwarf	Pennisetum alopecuroides 'Hameln'	2-3	2-3		Tolerant	Hardy-buff color-golden fall color
Abbots Wood Potentilla	Potentilla fruticosa 'Abbots Wood'	2-3	2-3		Poor	Hardy-white flower-dense spread
Jackmans Potentilla	Potentilla fruticosa 'Jackmani'	3-4	2-3		Tolerant	Hardy-yellow flower-long bloom
Fragrant Sumac	Rhus aromatica	4-6	4-5		Tolerant	Hardy-yellow flower-red berries
Gro-Low sumac	Rhus aromatica 'Gro-Low'	2-3	3-4		Tolerant	Hardy-dwarf-good color
Anthony Waterer Spirea	Spiraea bumalda 'Anthony Waterer'	2-3	2-3		Poor	Attractive-red flower/fall color
Goldflame spirea	Spiraea bumalda 'Goldflame'	2-3	2-3		Poor	Attractive-long red/yellow bloom
Snowmound spirea	Spiraea nipponica 'Snowmound'	3-5	3-4		Poor	Hardy-white flower-short bloom
Judd Viburnum	Viburnum carlesii 'Juddii'	5-7	4-5		Poor	Dense-pink/white flower-red fruit

For other cultivars and varieties consult your local nursery center.

GRASSES

Seed

COMMON NAME	SCIENTIFIC NAME	VARIETY	COMMENTS
Buffalograss (native)	Buchloe dactyloides	Sharp's Improved (warm season grass)	seed rate 1-2 lbs./1,000 sq. ft.-lawns
	Buchloe dactyloides	Texoka (warm season grass)	seed rate 1-2 lbs./1,000 sq. ft.-lawns
	Buchloe dactyloides	Top Gun (warm season grass)	seed rate 1-2 lbs./1,000 sq. ft.-lawns
Bermudagrass	Cynodon dactylon	Midlawn (warm season grass)	seed rate 2-3 lbs./1,000 sq. ft.-lawns
Kansas Premium Fescue Blend	Festuca arundinacea	Equal parts - Olympic II, Bonanza, Apache, Monarch	seed rate 6-8 lbs./1,000 sq. ft.-lawns
Tall Fescue	Festuca arundinacea	Eldorado (cool season grass)	seed rate 6-8 lbs./1,000 sq. ft.-lawns
	Festuca arundinacea	Monarch (cool season grass)	seed rate 6-8 lbs./1,000 sq. ft.-lawns
	Festuca arundinacea	K-31 (cool season grass)	seed rate 6-8 lbs./1,000 sq. ft.-lawns
	Festuca arundinacea	Rebel II (cool season grass)	seed rate 6-8 lbs./1,000 sq. ft.-lawns
	Festuca arundinacea	Rebel 3D (cool season grass)	seed rate 6-8 lbs./1,000 sq. ft.-lawns
Ryegrass	Loium perenne	Pennfine (temporary seed)	seed rate 5-6 lbs./1,000 sq. ft.
Kentucky Blue Grass	Poa pratensis	Baron	seed rate 2-3 lbs./1,000 sq. ft.-lawns
	Poa pratensis	Glade	seed rate 2-3 lbs./1,000 sq. ft.-lawns

Sod

Buffalograss (native)	Buchloe dactyloides	Female clones only of seed varieties	well suited for low maintenance
Bermudagrass	Cynodon dactylon	Midfield (warm season sod)	rapid establishment-long lasting
Tall Fescue	Festuca arundinacea	Eldorado (cool season grass)	sensitive to drought-vigorous
	Festuca arundinacea	Monarch (cool season grass)	sensitive to drought-vigorous
	Festuca arundinacea	K-31 (cool season grass)	sensitive to drought-vigorous
	Festuca arundinacea	Rebel II (cool season grass)	sensitive to drought-vigorous
	Festuca arundinacea	Rebel 3D (cool season grass)	sensitive to drought-vigorous
Kentucky Blue Grass	Poa pratensis	Baron	sensitive to drought-vigorous
		Glade	sensitive to drought-vigorous

For other cultivars and varieties consult your local nursery center.