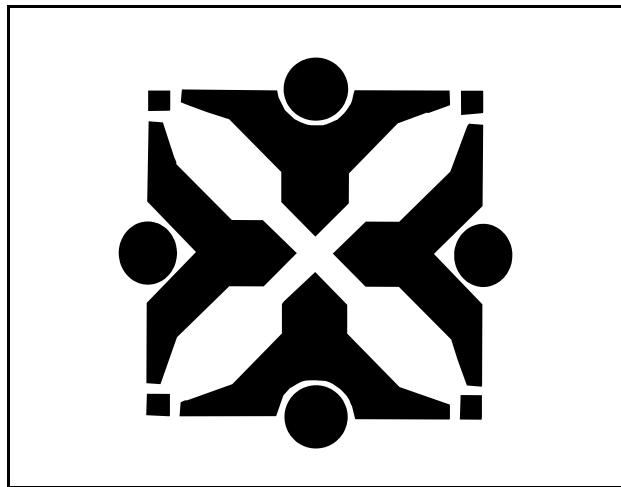


Standards and Guidelines  
for  
**LANDSCAPING**  
and  
**TREE PRESERVATION**



Columbia, Missouri  
**Public Works Department**

Lowell B. Patterson, P.E.,  
Director

January 1, 2005

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## **TREE PRESERVATION AND LANDSCAPING PLAN CHECKLIST**

All plans should contain the following information:

- (a) Name and address of applicant for Land Disturbance Permit
- (b) Name and address of owner(s) of property if other than applicant
- (c) Lot, block and subdivision or, if not subdivided, other property description information
- (d) Property size in acres/square feet
- (e) Parking lot size in square feet (include driveways and paved access areas)
- (f) Pervious area in square feet created for tree planting in parking lot islands, when present
- (g) Present and requested zoning
- (h) North arrow and scale
- (i) Existing contours at no greater than 5-foot intervals
- (j) Limits of all wetlands and the location of the 100-year flood plain
- (k) Location of existing and proposed structures
- (l) Locations of all existing and proposed roads and right-of-way
- (m) Locations of any significant, state-listed champion or rare or endangered plants
- (n) Location and areas in square feet of climax forest
- (o) Location and area in square feet of climax forest to be preserved
- (p) The number, spacing, size and species of planting materials, including new trees and final ground cover that will be planted as part of the landscaping plan
- (q) The size and location of any walls, earth berms and fences
- (r) Provisions for watering, soil stabilization, plant protection and maintenance
- (s) Location and description of barriers to be erected to protect any vegetation from damage both during and after construction (detail standard is provided)

## **DEFINITIONS**

For the purposes of this document, the following words and phrases shall have the meaning given herein.

*Agricultural activity.* Normal farming operations including improvements conducted under the auspices of the Natural Resource Conservation Service.

*City utility service customer.* A purchaser of city water, electric, sewage or refuse collection utility service.

*Clear cutting.* The practice of removing over half of the standing climax forest area on a site.

*Climax forest.* Any woodland community of over twenty thousand (20,000) square feet which is dominated by\* climax species such as oak, hickory, sugar maple or bottomland hardwoods such as river birch, basswood, sycamore and hornbeam and which includes an area of five thousand (5,000) square feet with a maximum aspect ratio of 4:1.

\* "dominated by" is defined as greater than 50% climax species

*dbh (diameter breast height).* Trunk diameter at 4.5 feet about ground.

*Developed land.* Real estate altered by the addition of impervious surface which changes the hydrology of the property from its natural state.

*Developer.* A person whose intent or function is to bring about any change of land use or improvement on any parcel of land.

*Development.* Any change of land use or improvement on any parcel of land.

*Director.* The director of public works or his designee.

*Dwelling unit.* A building or portion thereof, designed to house a family.

*Forest land.* Forested land area with the aerial canopy dominated by trees greater than four (4) inches in diameter, measured four and one-half (4 1/2) feet above the ground.

*Forest parcel.* An envelope of trees delineated by the boundaries of grading limits or land disturbances.

*Impervious surface.* A surface on real property where infiltration of storm water into the earth has been virtually eliminated by the works of man. Impervious surfaces shall include, but not be limited to: Roofs, paved driveways, patio areas, sidewalks, parking lots, storage areas, and other oil or macadam surfaced areas which prevent percolation of storm waters into the earth's surface.

*Land disturbance.* Any activity, including mechanized clearing, which removes the vegetative ground cover.

*Land disturbance permit.* A permit issued by the City of Columbia that authorizes the commencement of land disturbance activities or logging.

*Logging.* The removal of more than three (3) existing trees for commercial purposes on any tract of land larger than one (1) acre.

*Main floor area.* The area within the perimeter of the exterior walls of a building excluding any attached garage. The main floor area does not include the area of decks, porches, patios or garages.

*Maximum aspect ratio of 4:1.* A means of defining the configuration of an area of trees such that the measurement of length of the area shall not be more than four (4) times as long as the measurement of width of the area.

*Mechanized clearing.* Clearing of land by tracked or wheeled vehicles which scrape, cultivate or scarify the surface of the ground exposing bare soil and uprooting vegetation.

*Multiple-family building.* A building with more than one (1) dwelling unit.

*Nonresidential use.* The use of developed land for any purpose other than for a single-family residence or a multiple-family building.

*Occupant.* The person in possession or lawfully entitled to possession of a parcel of land.

*Owner.* Any person having legal title to, or a proprietary interest in real property. Proprietary interest shall include, but not be limited to, estate administration, trusteeship, guardianship, and actions under a valid power of attorney.

*Pervious surface.* A surface on real property where infiltration of storm water into the earth is not impeded by the works of man. Pervious surfaces shall include, but not be limited to: Grass, mulch and ground cover.

*Site.* The total area of the parcel, tract, lot or ownership of land upon which development or land disturbance is proposed irrespective of the actual limits or size of the proposed development or land disturbance activity.

*Tree, existing.* A tree which meets or exceeds the following size standards: Deciduous shade trees shall have a four (4) inch diameter, measured four and one-half (4 1/2) feet above the ground and ornamental and evergreen species shall be a minimum of six (6) feet in height.

*Unimproved land.* Land or property having little or no "impervious surface."

## **Section 29-25 Screening and landscaping requirements.**

- (a) *Purpose.* The intent of this section is to:
  - (1) Establish healthy environmental conditions by providing shade, air purification, oxygen regeneration, groundwater recharge, storm water runoff retardation, erosion control, and noise, glare and heat abatement.
  - (2) Provide visual buffering from streets, to buffer potentially incompatible land uses and to generally enhance the quality and appearance of a development site, and the city in total.
  - (3) Encourage the preservation of existing trees and vegetation.
  - (4) Supplement the land disturbance permit requirements.
- (b) *Authority.* The director of public works is hereby designated as the enforcement officer under this section.
- (c) *Lands to which this section applies.* The landscaping and screening requirements of this section shall apply to all land public and private located in the City of Columbia, Missouri, except the following:
  - (1) Land within zoning districts A-1; R-1; R-2 (except for those R-2 zoned developments having lots which contain attached residences and which have side or rear property boundaries abutting collector or arterial street right of way); RMH; M-C; M-U; F-1; and PUD or portions thereof consisting of single-family detached dwellings on individual lots and two-family attached dwellings on individual lots (except for two-family developments having lots which have side or rear property boundaries abutting collector or arterial street right of way). Notwithstanding this exception, parking areas and loading/unloading areas in any zoning district shall be subject to the provisions contained in this section. Buildings or additions to buildings in district C-2 shall be exempt from the provisions of this section; however, any parking areas associated with buildings or additions to buildings in District C-2 shall not be exempt from the provisions of this section.
  - (2) Development existing or approved by the City of Columbia in the form of building permit issuance or final development plan approval, prior to August 19, 1991.
  - (3) An existing single-family detached dwelling unit.
- (d) *Landscape plan requirements.* A landscaping plan, prepared by an individual who

can demonstrate knowledge of landscape design, shall be required as specified in chapter 12-A, the Land Preservation Act. In addition to those requirements, approval of a landscape plan shall be required prior to the issuance of building permits, prior to the approval of development plans in PUD (Other than PUDs or portions thereof consisting of single-family detached dwellings on individual lots or consisting of two-family attached dwellings on individual lots which do not have side or rear property boundaries abutting collector or arterial street right of way), O-P and C-P zoning districts, and prior to the development of any parking area or loading/unloading area.

- (e) *Screening and landscaping requirements.* In addition to the requirements and purpose of the Land Preservation Act:
- (1) A minimum of fifteen (15) percent of the total land area of any tract, parcel or lot shall be landscaped. Landscaping shall be reasonably distributed throughout the site.
  - (2) No new buildings or additions to existing buildings shall be permitted unless additional landscaping is provided on the tract, parcel or lot in an area equal to at least fifteen (15) percent of the land area occupied by the new building or addition. This subsection shall not apply to any land which meets the minimum requirement of subsection (e)(1).
  - (3) All paved areas with more than fifty (50) feet of length, within twenty (20) feet of a street right-of-way shall have a six (6) feet wide street yard landscaping strip within private yards separating parking areas from abutting street rights-of-way containing no less than four (4) of the categories of planting materials listed in paragraph (f) of this section. The street yard landscaping strip shall contain one tree per fifty (50) feet of street frontage. Such trees may be clustered or arranged within the area and need not be placed at even intervals. The street yard landscaping strip may contain driveways.

No parking areas shall contain more than one hundred fifty (150) spaces. If a greater number is required, separate parking areas of not more than one hundred fifty (150) spaces shall be provided and shall be separated by a landscaped area of at least ten (10) feet in width. The ten (10) feet wide landscaped area shall contain four (4) of the categories of planting materials listed in paragraph (f) of this section. In addition, trees shall be planted within the ten (10) feet wide landscaped area at the rate of one tree for each fifty (50) lineal feet. Appropriately placed connections between parking areas are permitted.

No less than fifty (50) percent of the linear street frontage forming the perimeter of parking areas described above, exclusive of driveways and



entrances, shall contain screening materials. These materials may consist of plantings from the tree and shrub categories, or ornamental fences or walls, or earthen berms, or some combination thereof. This screening shall extend to a minimum of three (3) feet above the grade of the parking lot.

- (4) In addition to the above, paved areas developed after August 19, 1991, and additions to paved areas which were developed prior to August 19, 1991, exceeding four thousand five hundred (4,500) square feet in area shall contain a minimum of one (1) tree for every four thousand five hundred (4,500) square feet of paved area. All required trees planted to achieve compliance, are to be distributed in a configuration which shades the paved areas within the site. In a case where the location of trees within the site interferes with the loading and unloading of large vehicles, the required trees may be placed at the perimeter of the paved areas or in other suitable locations on the site. All required trees planted to achieve compliance must be a locally adapted species, approved for the site by the director of public works. The director of public works is authorized to adopt and maintain a list of approved species to be used for planting required by this section. When a site, in the opinion of the director of public works, is configured in a manner that makes planting of required trees impractical or unsafe, shrubs and ground cover may be substituted for trees. Existing trees saved on the site within the parking area may be credited toward minimum tree requirements only if it is demonstrated that they have been properly protected during and following development and if they meet the size requirements of chapter 12A.
- (5) Paved areas containing more than one thousand five hundred (1,500) square feet within fifty (50) feet of a residential use or residential zoning district or any motor vehicle loading/unloading areas within fifty (50) feet of a residential use or residential zoning district, but not separated by street right-of-way, shall be screened from view of the adjoining residential use or residential zoning district, by landscaping materials, ornamental fence and walls in combination with plant materials, properly stabilized earthen berms, or a combination of any of these methods. Screening shall be so designed that at least eighty (80) percent opacity is achieved, viewed horizontally, in the space between one foot and five (5) feet above grade at the screen line, at the time of installation; provided, that where plant materials are used for screening, these shall be selected and placed to achieve the same objective within four (4) full growing seasons following planting. All screening material, including plant material, shall be continuously maintained in good condition, to the above standards.
- (6) Landscaping and screening shall not be allowed to obstruct the view of motorists using any street, private driveway, parking aisles or the

approach to any street intersection so as to constitute a traffic hazard or condition dangerous to the public safety upon any such street.

- (7) Of the combined total number of trees required to be planted in the six (6) feet wide street yard landscaping strip and in the interior parking lot, no less than thirty (30) percent shall be of a species of medium to large shade trees.
  - (8) Lots which contain attached residences and which have side or rear property boundaries abutting collector or arterial street right of way shall have screening either along such boundaries or around any patios on the lot which are visible from the right of way. The screening shall consist of landscape materials, ornamental fences or walls in combination with plant materials, properly stabilized earthen berms, or a combination of these methods. Screening shall be so designed that at least fifty (50) percent opacity is achieved, viewed horizontally, in the space between one foot and five feet above grade at the screening line, at the time of installation; provided that where plant materials are used for screening, these shall be selected and placed to achieve the same objective within four (4) full growing seasons following planting. Screening shall be placed on private property. All screening material, including plant material, shall be continuously maintained in good condition to the above standards.
- (f) *Planting requirements.* The categories of planting material and the minimum planting sizes for planting materials, where applicable, shall be as follows:
- (1) *Medium and large deciduous shade trees:* Two (2) inch caliper, as measured six (6) inches above the ground, as specified by the American Association of Nurserymen.
  - (2) *Small deciduous or ornamental trees:* Four (4) feet in height as specified by the American Association of Nurserymen, with the exception of true dwarf species.
  - (3) *Conifers:* Six (6) feet in height.
  - (4) *Upright evergreen trees:* Four (4) feet in height as specified by the American Association of Nurserymen, except for true dwarf species.
  - (5) Deciduous shrubs (minimum two (2) gallon size).
  - (6) Evergreen shrubs (minimum two (2) gallon size).
  - (7) *Ground cover plants (Crowns, plugs, containers):* In a number as appropriate by species to provide fifty (50) percent surface coverage after

two (2) growing seasons.

- (8) *Grass seeding or sod:* As appropriate to provide complete coverage within the first growing season.
  - (9) Perennial flowers.
  - (10) Ornamental grass.
- (g) *Installation, maintenance and enforcement.*
- (1) Required landscaping shall not be installed until all street yard landscaping strips, setbacks, tree planting sizes and locations, screening locations and overall planting configurations are inspected and approved by the city. Deviations from the approved plans shall be corrected to conform to the approved plan. If, in the opinion of the director of public works, compliance is not achievable due to unforeseen circumstances, the landscaping plan may be amended, but in all cases must comply with the requirements of the landscaping requirements for the zoning district in which the site is located.
  - (2) All landscaping called for in the approved landscape plan, living and non-living, shall be in place and approved by the city prior to issuance of certificates of occupancy. It shall be unlawful to occupy any structure, or to represent to any person that the structure may be occupied, prior to the final approval of the landscaping. If, at the time of request for the certificate, the required landscaping would be jeopardized by weather conditions, the developer shall comply with applicable provisions of chapter 12A.
  - (3) The trees, shrubs, fences, walls and other landscaping materials depicted on approved plans shall be considered as elements of the project in the same manner as parking, building materials and other elements. The developer, his successor and subsequent owners and their agents who are authorized to maintain the property, shall be responsible for the continued maintenance. Plant material which exhibits evidence of insect pest disease or damage shall be appropriately treated, and dead plants promptly removed and replaced within the next planting season. All landscaping will be subject to periodic inspection by the city to ensure compliance.
  - (4) A minimum one hundred seventy (170) square feet pervious growing area per medium to large tree shall be provided. A minimum seventy-five (75) square feet pervious growing area shall be provided for ornamental trees.
- (h) *Alternative methods of compliance.* Although certain material or a particular

method of construction is specifically prescribed by this section, this section is not intended, especially whenever a stream, natural rock formation or other physiographic condition exists, to prevent the use of a material or method of construction not prescribed specifically by this section; provided, any such alternate material or method has been approved in writing or in plan and its use authorized by the director of public works. The director may approve in writing or in plan any such alternate material or method of construction; provided, it is found that the proposed alternate is for the purpose intended, and is at least the equivalent of that specifically prescribed by this section in quality, effectiveness, durability, hardness, and performance.

- (i) *Exceptions.* The following uses are exempt from the requirements of subsection (e)(3) and (4) above:

Motor vehicles or trailer sales and service;  
Farm machinery sales and service;

except that paved areas of such exempted uses with more than fifty (50) feet of length within twenty (20) feet of a street right-of-way shall have a six (6) feet wide street yard landscaping strip within private yards separating such areas from abutting street rights-of-way containing no less than four (4) of the categories of planting materials listed in paragraph (f) of this section. Such landscaping strip shall not be subject to the tree or screening requirements imposed by subsection (e)(3); except that the required landscaped areas shall include not less than one ornamental or other type of tree for each four thousand five hundred (4,500) square feet of paved area, provided however, that one (1) large shrub or two (2) medium shrubs may be substituted for each required tree. A large shrub is defined as one that reaches at least six (6) feet in height in four (4) growing seasons, and a medium shrub is defined as one that reaches at least thirty (30) inches in height in three (3) growing seasons. Shrubs which may be grouped together or planted individually, should be from the deciduous woody ornamental or evergreen families (minimum of five (5) gallon size); and except that when a use listed above has been abandoned, and trees and screening have not been installed in accordance with the provisions of this section, such tree planting and screening shall then be required prior to occupancy for any other use.

- (j) As used in this section, “paved area” means open areas used or occupied by motor vehicles including parking areas, loading areas and driveways. “Paved area” does not include areas under the roof of a building, sidewalks or pedways.

**(Ord. No. 13058, §§ 1, 8-19-91; Ord. No. 14334 §§ 1, 1-3-95; Ord. No. 14963, §§ 1, 9-3-96; Ord. No. 15474, §§ 1, 1-5-98; Ord. No. 15640, §§ 1, 6-15-98; Ord. No. 16126, §§ 2, 8-16-99; Ord. No. 16798, §§ 1, 3-5-01; Ord. No. 17584, §§ 1, 2-17-03)**

**Editor's note--Ord. No. 11767, §§ 1, adopted Feb. 1, 1988, repealed §§ 29-25,**

**pertaining to design standards for travel trailer parks, which derived from Code 1964, §§ 19.202; Ord. No. 9958, §§ 1, adopted Oct. 3, 1983 and Ord. No. 11702, §§ 1, adopted Dec. 7, 1987(Ord. 17584, Amended, 02/17/2003, Prior Text; 16798, Amended, 03/05/2001, Prior Text; 16126, Amended, 08/16/1999, Prior Text; 15640, Amended, 06/15/1998, Prior Text)**

## **ARTICLE III. TREE PRESERVATION AND LANDSCAPING REQUIREMENTS**

### **Sec. 12A-49. Clearing of trees; permit required.**

- (a) The mechanized clearing of trees, logging of trees or clear-cutting of trees by any means on tracts of land over one (1) acre shall be unlawful unless done in compliance with a land disturbance permit.
- (b) A minimum of twenty-five (25) percent of any climax forest area on any tract of land subject to land preservation requirements shall be maintained. Trees thus retained will count toward landscaping requirements contained in the zoning ordinance.
- (c) When logging is to occur prior to approval of a tree preservation plan or on property not otherwise subject to land disturbance requirements, a logging plan demonstrating compliance with tree preservation requirements must be submitted to the director. This logging plan will include the area in square feet of forest land, the area in square feet of climax forest, and demonstrate that twenty-five (25) percent of the area of climax forest will be preserved after logging. Each logging operation on the same site will require a separate land disturbance permit. Under no circumstance shall successive logging remove greater than seventy-five (75) percent of the climax forest present upon the site before logging.
- (d) A landscaping plan demonstrating compliance with the specific requirements of the existing zoning of the site shall accompany all applications for land disturbance permits. The plan will be a drawing of the site sufficient in detail to illustrate the features of the plan. The plan may be incorporated with other drawings or documents but shall contain the following information.
  - (1) The area, in square feet or acres, of any climax forest areas on the site and those portions, in square feet or acres, of the climax forest to be preserved. The areas may be determined by actual field measurement or planimetry of scaled aerial photographs.
  - (2) The number, spacing, size and species of planting materials, including new trees and final ground cover that will be planted as part of the landscaping plan.
  - (3) The size and location of any walls, earth berms, and fences.

- (4) Provisions for watering, soil stabilization, plant protection and maintenance.
  - (5) Location and description of any barriers to be erected to protect any vegetation from damage both during and after construction.
- (e) Tree protection shall be required prior to and during the activities associated with the land disturbance permit in accordance with administrative standards promulgated and enforced by the director, but under no circumstances shall activities with the potential of causing damage to the root systems of trees be allowed within the perimeter of the drip line of the trees being preserved, protected or planted as part of the landscaping plan.
  - (f) If any of the trees required to be retained or trees planted as part of the landscaping plan should die within a period of eighteen (18) months after completion of the activities associated with the land disturbance permit, the owner of the property shall replace the trees within six (6) months at a ration of one-to-one with an approved tree having a minimum diameter of two (2) inches measured at a point one (1) foot above natural grade. Shrubbery or other plantings which die within eighteen (18) months of completion of the activities shall be replaced in kind within six (6) months.
  - (g) All landscaping work must be completed prior to the final inspection of a building or within one year of issuance of the land disturbance permit, whichever occurs later. If completion of the work or building is at such time of the year that the landscaping cannot be completed, a performance bond or other acceptable financial instrument for completion of the work may be accepted to allow the issuance of a certificate of occupancy.
  - (h) Landscaping plans may be amended during or after development with the approval of the director, but in all cases must comply with the current landscaping requirements of the zoning district in which the site is located.

**(Ord. No. 13019, §§ 1, 7-1-91; Ord. No. 13258, §§ 1, 3-2-92; Ord. No. 14389 §§ 1, 3-6-95; Ord. No. 17278, §§ 1, 5-6-02; Ord. No. 018164, §§ 1, 7-19-04 )**

**(Ord. 018164, Amended, 07/19/2004, Prior Text; Ord. 17278, Amended, 05/06/2002, Prior Text)**

The above is excerpted from Chapter 12A  
LAND PRESERVATION of the COLUMBIA CODE.

RECOMMENDED PLANT MATERIALS FOR  
COMMERCIAL LANDSCAPES

**MEDIUM TO LARGE SHADE TREES:**

<b><u>BOTANICAL NAME</u></b>	<b><u>COMMON NAME</u></b>
Acer campestre	Hedge Maple
Acer rubrum 'Red Sunset'	Red Maple
Acer saccharum 'Green Mountain'	Sugar Maple
Betula nigra 'Heritage'	River Birch
Carpinus betulus 'Fastigiata'	European Hornbeam
Fraxinus americana 'Autumn Purple'	White Ash
Fraxinus pennsylvanica 'Patmore'	Green Ash
Fraxinus pennsylvanica 'Summit'	Green Ash
Gleditsia triacanthos 'Imperial'	Honey Locust
Gleditsia triacanthos 'Skyline'	Honey Locust
Gymnocladus dioica	Kentucky Coffee Tree
Liquidambar styraciflua	Sweetgum



Liriodendron tulipifera	Tuliptree
Platanus x acerifolia 'Bloodgood'	London Plane Tree
Quercus accutissima	Sawtooth Oak
Quercus palustris	Pin Oak
Quercus robur	English Oak
Quercus rubra	Red Oak
Quercus shumardii	Shumard Oak
Taxodium distichum	Bald Cypress
Tilia americana 'Redmond'	American Linden
Tilia cordata 'Greenspire'	Littleleaf Linden
Zelkova serrata 'Green Vase'	Japanese Zelkova
Zelkova serrata 'Village Green'	Japanese Zelkova

### **SMALL DECIDUOUS OR ORNAMENTAL TREES:**

#### **BOTANICAL NAME**

#### **COMMON NAME**

Acer ginnala 'Flame'	Amur Maple
Amelanchier sp.	Serviceberry

<i>Cercis canadensis</i>	Redbud
<i>Cornus florida</i>	Flowering Dogwood
<i>Cornus mas</i>	Cornelian Cherry
<i>Cotinus obovatus</i>	American Smoketree
<i>Crataegus phaenopyrum</i>	Washington Hawthorn
<i>Crataegus viridis</i> 'Winter King'	Hawthorn
<i>Ilex decidua</i>	Possumhaw
<i>Koelreuteria paniculata</i>	Goldenrain Tree
<i>Magnolia quinquepeta</i> 'Nigra'	Lily Magnolia
<i>Magnolia quinquepeta</i> 'Betty'	Lily Magnolia
<i>Magnolia stellata</i> 'Royal Star'	Star Magnolia
<i>Malus</i> sp.	Crabapple
<i>Prunus x yedonensis</i> 'Akebono'	Yoshino Cherry
<i>Pyrus calleryana</i> 'Aristocrat'	Callery Pear
<i>Pyrus calleryana</i> 'Capital'	Callery Pear
<i>Pyrus calleryana</i> 'Faureii'	Callery Pear
<i>Syringa reticulata</i> 'Ivory Silk'	Japanese Tree Lilac

## CONIFERS OR UPRIGHT EVERGREEN TREES:

### BOTANICAL NAME

### COMMON NAME

*Ilex opaca* 'Croonenburg'

American Holly

*Juniperus virginiana*

Eastern Red Cedar

*Picea abies*

Norway Spruce

*Picea omorika*

Serbian Spruce

*Pinus resinosa*

Red Pine

*Pinus strobus*

Eastern White Pine

*Tsuga canadensis*

Canadian Hemlock

## UPRIGHT EVERGREEN SHRUBS:

### BOTANICAL NAME

### COMMON NAME

*Juniperus chinensis* 'Perfecta'

Juniper

*Juniperus chinensis* 'Spartan'

Juniper

Juniperus scopulorum 'Gray Gleam' or 'Wichita Blue'	Juniper
Juniperus virginiana 'Canaertii'	Juniper
Thuja occidentalis 'Emerald'	Arborvitae
Thuja occidentalis 'Nigra'	Arborvitae
Thuja occidentalis 'Techny'	Arborvitae

## **LARGE DECIDUOUS SHRUBS (over 4 feet)**

<b><u>BOTANICAL NAME</u></b>	<b><u>COMMON NAME</u></b>
Aronia arbutifolia 'Brilliantissima'	Red Chokeberry
Berberis thunbergii 'Rose Glow'	Barberry
Cornus alba 'Siberica'	Dogwood
Euonymus alata 'Compacta'	Burning Bush
Forsythia x intermedia 'Lynwood Gold'	Forsythia
Hydrangea paniculata 'Grandiflora'	Pee Gee Hydrangea
Hydrangea quercifolia	Oakleaf Hydrangea
Ilex glabra 'Nordic'	Inkberry

<i>Ilex verticillata</i> 'Winter Red'	Winterberry
<i>Myrica pennsylvanica</i>	Northern Bayberry
<i>Rhododendron yedoense</i> var. <i>poukhanense</i>	Korean Azalea
<i>Rhododendron</i> 'PJM'	PJM Azalea
<i>Viburnum carlesii</i> 'Cayuga'	Koreanspice Viburnum
<i>Viburnum</i> x <i>juddii</i>	Judd Viburnum
<i>Viburnum dentatum</i> 'Chicago Luster'	Arrowwood Viburnum
<i>Viburnum lantana</i> 'Mohican'	Wayfaringtree Viburnum
<i>Viburnum plicatum</i> var. <i>tomentosum</i>	Shasta Viburnum
<i>Viburnum</i> x <i>rhytidophylloides</i>	Alleghany Viburnum
<i>Viburnum</i> x <i>rhytidophylloides</i>	Willowwood Viburnum
<i>Viburnum trilobum</i> 'Alfredo'	American Cranberry Bush

### **SMALL DECIDUOUS SHRUBS (less than 4 feet)**

#### **BOTANICAL NAME**

#### **COMMON NAME**

<i>Berberis thunbergii</i> 'Atropurpurea Nana'	Crimson Pygmy Barberry
<i>Chaenomeles speciosa</i> 'Texas Scarlet'	Dwarf Quince

Cornus sericea 'Kelsey'	Dwarf Redtwig Dogwood
Hypericum frondosum	Golden St. Johnswort
Rhus aromatica	Aromatic Sumac
Spiraea x bumalda 'Anthony Waterer'	Red Spirea
Spiraea x bumalda 'Froebelii'	Pink Spirea
Spiraea x bumalda 'Golden Flame'	Spirea
Spiraea 'Goldflame'	Spirea
Spiraea japonica 'Little Princess'	Spirea
Spiraea japonica 'Shirobana'	Spirea
Spiraea nipponica 'Snowmound'	Spirea
Syringa meyeri 'Palibin'	Dwarf Korean Lilac

## EVERGREEN SHRUBS

### BOTANICAL NAME

### COMMON NAME

Buxus microphylla 'Green Velvet' or 'Green Mountain'	Hardy Boxwood
Buxus sinica insularis 'Wintergreen'	Hardy Boxwood

<i>Juniperus chinensis</i> 'Kallays Compacta'	Juniper
<i>Juniperus chinensis</i> 'Sea Green'	Juniper
<i>Juniperus horizontalis</i> 'Plumosa Compacta'	Andorra Juniper
<i>Juniperus horizontalis</i> 'Wiltonii'	Blue Rug Juniper
<i>Juniperus procumbens</i>	Procumbens Juniper
<i>Juniperus procumbens</i> 'Nana'	Dwarf Procumbens Juniper
<i>Juniperus virginiana</i> 'Grey Owl'	Juniper
<i>Pinus mugo</i>	Mugho Pine
<i>Pinus mugo</i> var. <i>pumilio</i>	Dwarf Mugho Pine
<i>Thuja occidentalis</i> 'Hetz Midget'	Dwarf Globe Arborvitae

## **TURF**

### **BOTANICAL NAME**

### **COMMON NAME**

<i>Poa pratensis</i> 'Park', 'Kenblue', 'Arboretum', 'South Dakota Common' or 'Aquila'	Common Kentucky Blue Grass
<i>Festuca arundinacea</i> 'K-31' or 'Clemfine'	Common Tall Fescue
<i>Festuca arundinacea</i> 'Apache', 'Bonanza', 'Falcon', 'Houndog', 'Maverick' or 'Rebel II'	Turf-type Tall Fescue

## **PERENNIALS FOR SUN (mass plantings)**

<b><u>BOTANICAL NAME</u></b>	<b><u>COMMON NAME</u></b>
Coreopsis verticillata 'Moonbeam'	Golden Daisy
Coreopsis verticillata 'Zagreb'	Golden Daisy
Hemerocallis var.	Daylily
Hemerocallis 'Stella de Oro'	Dwarf Daylily
Iris siberica 'Caesar's Brother'	Siberian Iris
Perovskia atriplicifolia	Russian Sage
Rudbeckia fulgida 'Goldsturm'	Black Eyed Susan
Sedum spectabile 'Autumn Joy'	Stonecrop

## **PERENNIALS FOR SHADE (mass plantings)**

<b><u>BOTANICAL NAME</u></b>	<b><u>COMMON NAME</u></b>
Astilbe var.	Astilbe
Brunera macrophylla	Alkanet



Hosta var.

Hosta

Pulmonaria saccharata 'Mrs Moon'

Lungwort

Tiarella wherryi

Foamflower

## **ORNAMENTAL GRASSES**

### **BOTANICAL NAME**

### **COMMON NAME**

Calamagrostis arundinacea 'Karl Foerster'

Feather Reed Grass

Erianthus ravennae

Hardy Pampass Grass

Miscanthus sinensis 'Gracillimus'

Maiden Grass

Miscanthus sinensis 'Strictus'

Porcupine Grass

Miscanthus sinensis 'Silberfeder'

Silver Feather Grass

Pennisetum alopecuriodes

Fountain Grass

Pennisetum alopecuriodes 'Hameln'

Dwarf Fountain Grass

## GROUNDCOVERS

### BOTANICAL NAME

### COMMON NAME

*Ajuga reptans* 'Gaiety'

Bugleweed

*Ceratostigma plumbaginoides*

Leadwort

*Euonymus fortunei* 'Colorata'

Purpleleaf Wintercreeper

*Hedera helix* 'Thorndale'

English Ivy

*Liriope spicata*

Creeping Lilyturf

*Liriope muscari* 'Majestic'

Lilyturf

*Pachysandra terminalis* 'Green Carpet'

Japanese Spurge

*Sedum kamtschaticum*

Pachy Sedum

*Sedum spurium* 'Dragon's Blood'

Stonecrop

*Sedum* 'Vera Jameson'

Stonecrop

*Vinca minor* 'Bowles'

Myrtle

*Waldstenia ternata* Barren Strawberry

## **TYPICAL STREET BUFFER PLANTING REQUIREMENTS**

### **150-FOOT STRIP**

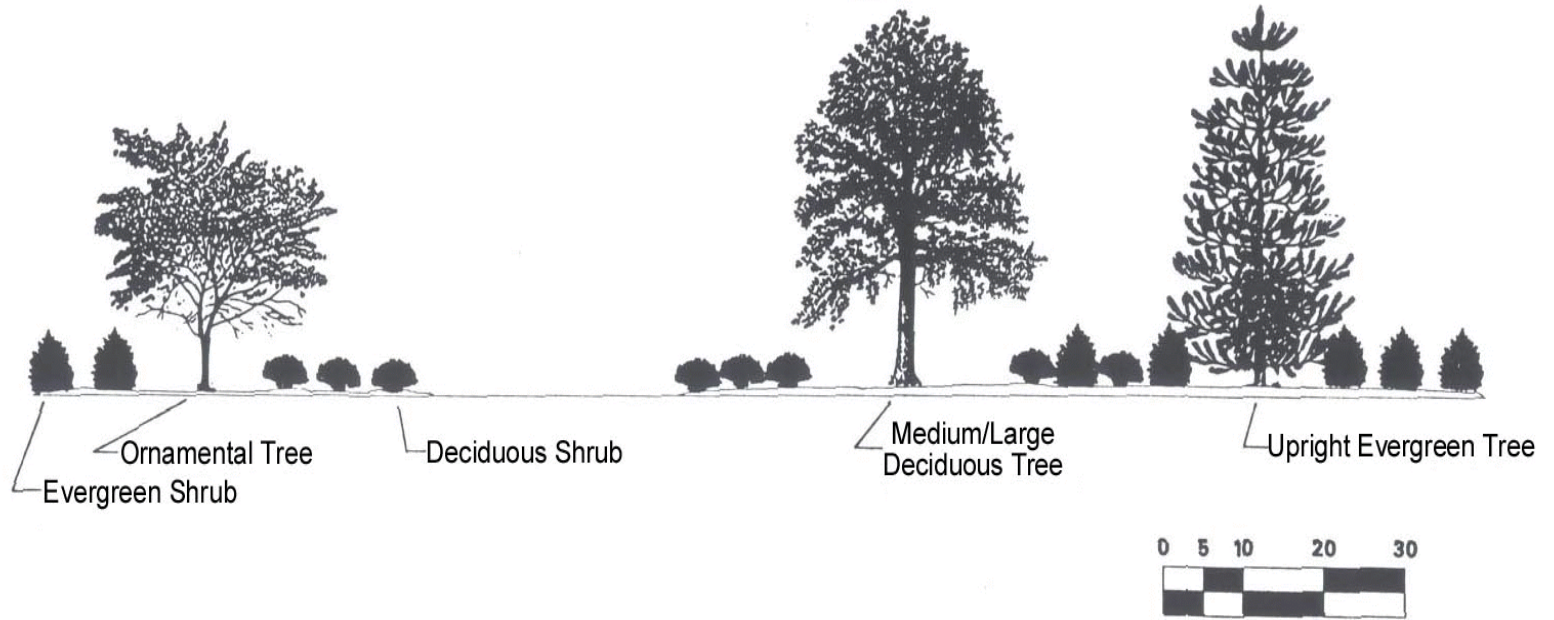
- 1) The buffer itself must be a minimum of six (6) feet wide from street right-of-way to paved lot back of curb.
- 2) There must be fifty (50) percent screening for the entire buffer strip between zero (0) and three (3) feet in height above the parking lot grade. (Minimum size of two (2) gallons if container grown)
  - a) Each shrub will screen five (5) linear feet if it is capable of reaching three (3) feet in height and five (5) feet in width within four (4) growing seasons.
  - b) There must be a minimum of four (4) of the plant categories listed in Section 29-25 of the Columbia Code.
- 3) There must be one (1) tree per fifty (50) linear feet and thirty (30) percent of those trees must be medium to large deciduous trees planted on 40-foot to 60-foot centers.

**Figure 1** on the following page shows a typical street buffer planting.

### **EXAMPLE CATEGORIES SHOWN IN FIGURE 1:**

1. Turf Grass
2. Deciduous Shrub
3. Evergreen Shrub
4. Upright Evergreen Tree
5. Ornamental Tree
6. Medium/Large Deciduous Tree

# TYPICAL STREET BUFFER PLANTING PROFILE VIEW



## PLAN VIEW

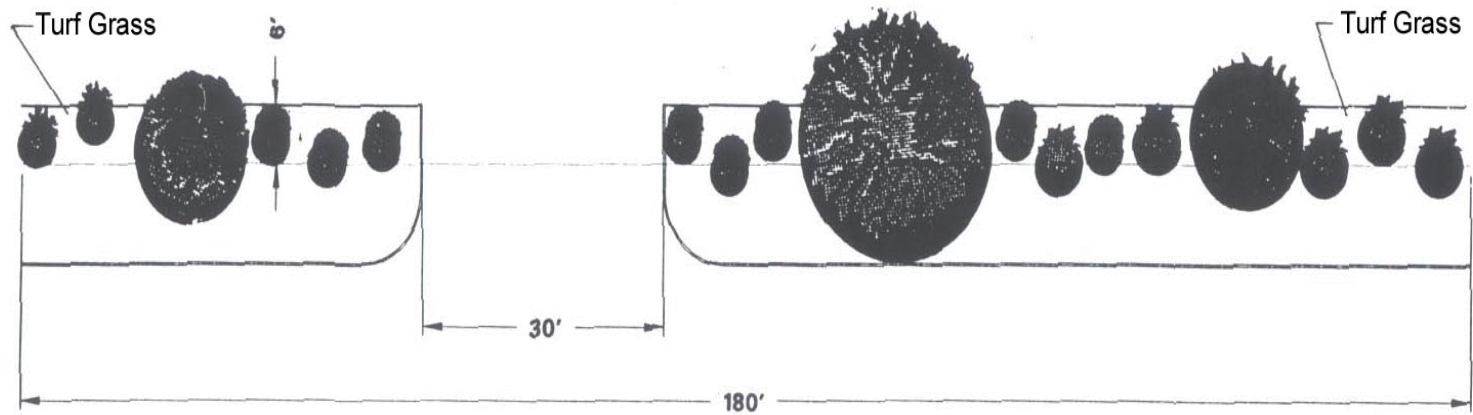


Figure 1

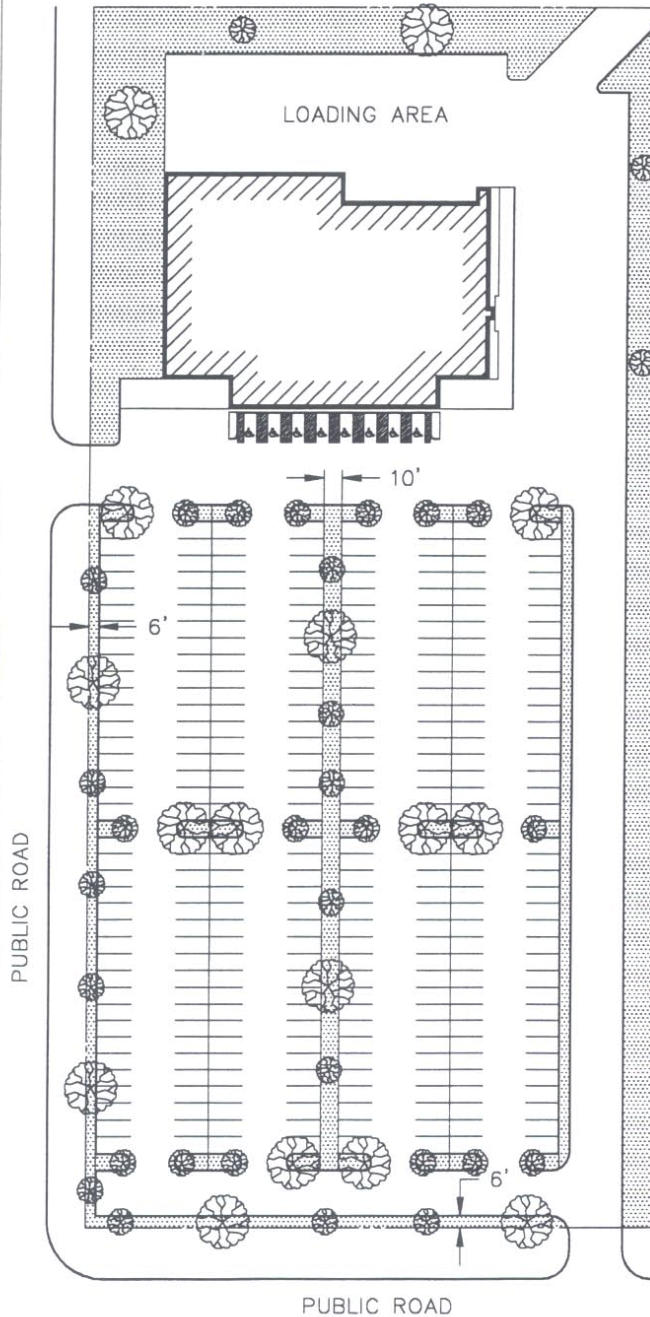
## **PARKING LOT GUIDELINES**

- 1) Parking lots to contain more than 150 spaces shall be separated by a 10-foot landscaped strip into parking areas of 150 or less spaces.
  - a) The 10-foot landscape strip shall contain four categories of plant materials.
  - b) The 10-foot landscape strip shall contain one tree per 50 linear feet.
- 2) Paved areas containing more than 4,500 square feet shall contain a minimum of one tree per 4500 square feet.
  - a) No less than 30% of the trees shall be medium to large shade trees.
  - b) All required trees planted to achieve compliance are to be distributed in a configuration which shades the paved areas within the site.
  - c) In a case where the location of trees within the site interferes with the loading and unloading of large vehicles, the required trees may be placed at the perimeter of the paved areas or in other suitable location on the site.
  - d) A minimum of 170 square feet of pervious growing area shall be provided for a medium to large shade tree and a minimum of 75 square feet of pervious growing area for an ornamental tree.
- 3) Paved areas containing more than 1,500 square feet or loading/unloading areas within 50 feet of a residential use or residential zoning district, but not separated by street right-of-way, must be screened from the view of the adjoining use or district.
  - a) The screen must maintain 80% opacity year round from one to five feet above the parking lot elevation.
  - b) The screen may contain: landscaping materials, ornamental fences and walls, properly stabilized earthen berms or a combination of these materials.
  - c) Plant materials must attain the proper coverage within four growing seasons.

# TYPICAL PARKING LOT PLANTING




(TREE REQUIREMENTS)

30% MEDIUM / LARGE DECIDUOUS TREES  
IN BUFFER STRIP AND WITHIN PARKING LOT



THIS DIAGRAM REPRESENTS A  
90° ANGULAR PARKING

## LEGEND

-  MEDIUM / LARGE TREES
-  ORNAMENTAL TREES
-  PERVIOUS AREA

## NOTE:

MIN. PERVIOUS PLANTING AREA  
75 SQ. FT. ORNAMENTAL TREES  
170 SQ. FT. MEDIUM / LARGE  
TREES

AREA OF BUILDING 45,000 SQ. FT.  
REQUIRED PARKING 300 SPACES  
REQUIRED TREES

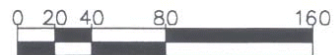
PARKING LOT - 24 TREES  
6' BUFFER STRIP - 12 TREES  
10' DIVIDER STRIP - 7 TREES  
LOADING AREA - 5 TREES

## TREE NUMBERS

14 MEDIUM / LARGE  
34 ORNAMENTAL  

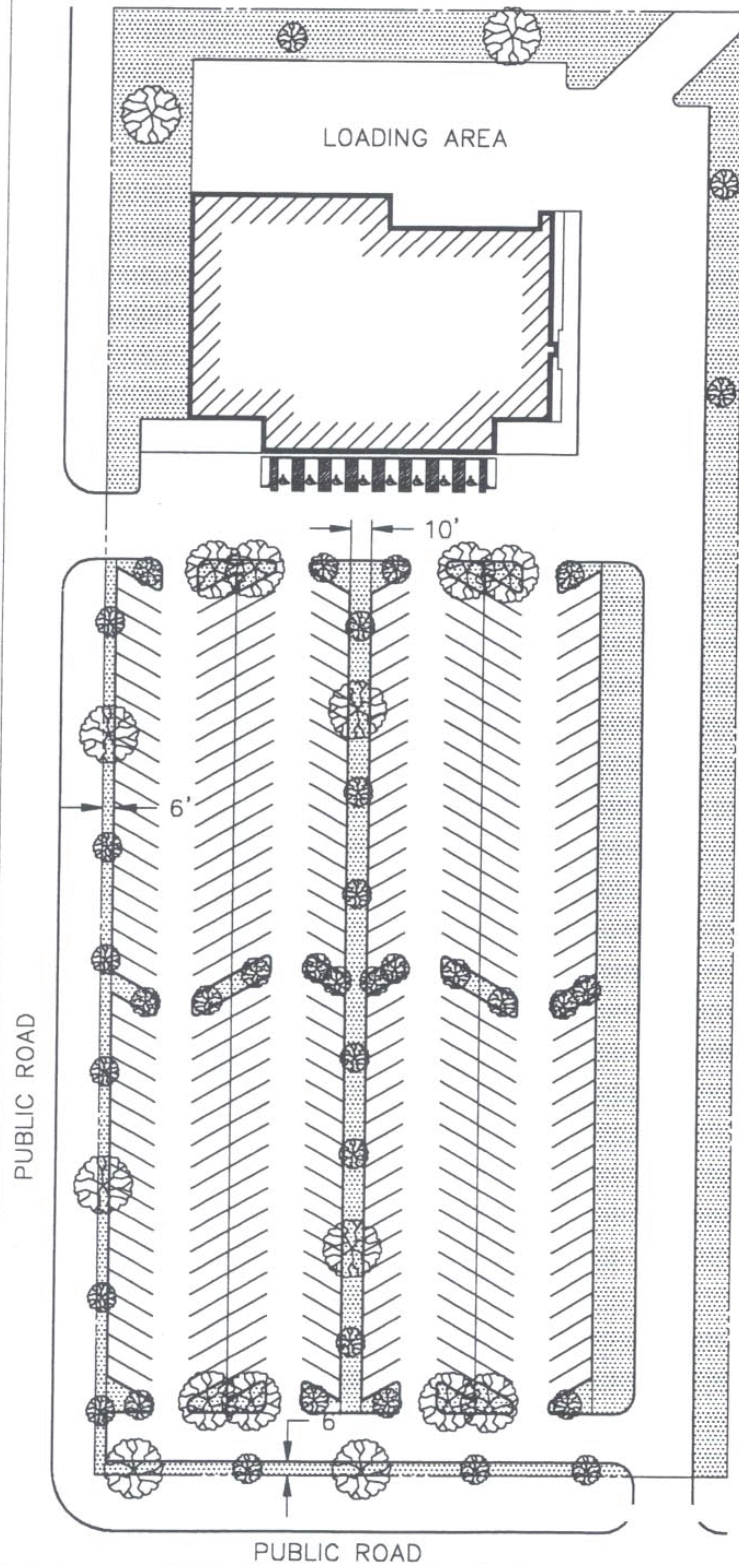
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48 TOTAL








# TYPICAL PARKING LOT PLANTING (TREE REQUIREMENTS)



30% MEDIUM / LARGE  
DECIDUOUS TREES IN  
BUFFER STRIP AND  
WITHIN PARKING LOT

THIS DIAGRAM REPRESENTS A  
60° ANGULAR PARKING

## LEGEND

-  MEDIUM / LARGE TREES
-  ORNAMENTAL TREES
-  PERVIOUS AREA

## NOTE:

MIN. PERVIOUS PLANTING AREA  
75 SQ. FT. ORNAMENTAL TREES  
170 SQ. FT. MEDIUM / LARGE  
TREES

AREA OF BUILDING 45,000 SQ. FT.  
REQUIRED PARKING 300 SPACES  
REQUIRED TREES

PARKING LOT - 27 TREES  
6' BUFFER STRIP - 13 TREES  
10' DIVIDER STRIP - 8 TREES  
LOADING AREA - 5 TREES

## TREE NUMBERS

16	MEDIUM / LARGE
37	ORNAMENTAL
<hr/>	
53	TOTAL

