
3.4 Buffers.

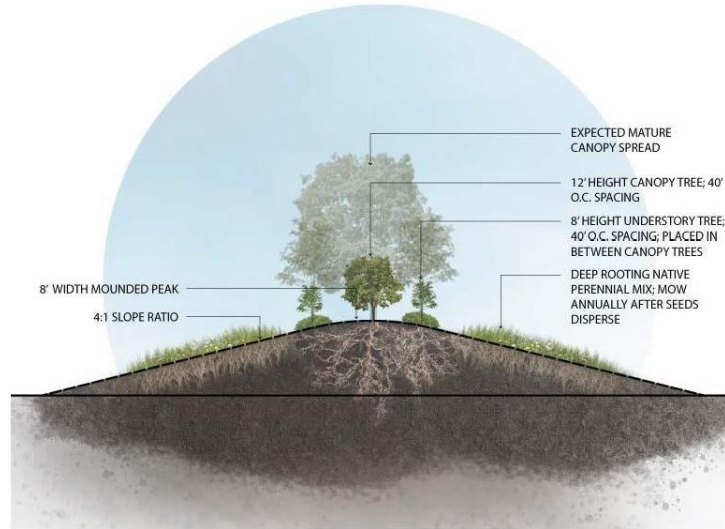
Purpose and function: To provide minimum separation and screening of different land uses. To minimize the adverse effects of commercial and industrial land uses on surrounding property and public throughfares; to act as a filtration zone for storm water; to make the environment more visually attractive; and to preserve the tree canopy in the county.

It is the intent of this ordinance that buffers be maintained and controlled so that the effects of the screening are not diminished.

3.4.1 Buffer design standards:

- A. *Plant material:* Existing plant materials including understory vegetation in buffers shall be maintained whenever possible. AH trees over six inches diameter at breast height (dbh) shall be retained. Additional planting may be required when existing plant material is inappropriate for screening. Additional landscaping may be added at the property owner's discretion.
- B. *Encroachment:* Buffer areas should remain natural. The following are the only permitted encroachments:
 - 1. Drainage ditches, utility, and service lines provided that they are approximately perpendicular to the property line.
 - 2. Sidewalks and pathways that connect multiple parcels.
 - 3. Lighting fixtures.
 - 4. Signs.
 - 5. Flagpoles.
 - 6. Structural elements: Privacy fences or walls located in a buffer shall provide a minimum of two feet from the element to the exterior property line to allow for plant material.
 - 7. Landscaping retaining wall if integrated into the buffer and subject to approval by the zoning administrator.
 - 8. Berms, subject to the following standards if encroaching within a buffer:
 - a. Minimum slope of 4:1 (see figure below).
 - b. Maximum height of the berm shall be based on the width as provided below and shall be reduced by six feet for every one foot of berm height:
 - i. For a 25 feet high berm, the buffer requirement is reduced from a 300 feet buffer to a 150 feet buffer. The 150 feet wide buffer includes 35 feet of natural and undisturbed buffer and remaining buffer is the berm. If the berm base is beyond 115 feet, the berm extends into the property and not the 35-foot undisturbed area.
 - ii. For a 16 feet high berm, the buffer requirement is reduced from a 300 feet buffer to a 200 feet buffer. The 200 feet wide buffer includes 35 feet of natural and undisturbed buffer and remaining buffer is the berm. If the berm base is beyond 165 feet, the berm extends into the property and not the 35-foot undisturbed area.
 - iii. For a 10 feet high berm, the buffer requirement is reduced from a 300 feet buffer to a 240 feet buffer. The 240 feet wide buffer includes 35 feet of natural and undisturbed buffer and remaining buffer is the berm. If the berm base is beyond 180 feet, the berm extends into the property and not the 35-foot undisturbed area.

- iv. The height of the berm is measured perpendicular off the nearest adjacent property line using the natural grade, height cannot be determined by infill grade.
- v. Major subdivisions with rear or side facing homes will install a six (6) foot tall berm with approved landscaping material at the apex of the berm. Minimum width of the berm is fifteen (15) feet at the base.



C. Required setbacks shall be inclusive of buffers areas.

Proposed Zoning													
	AR-1	AR-2	R-1	R-3	R-4	R-5	R-6	B-1	B-2	B-3	MXD	LI	HI
AR-1	15 ft	15 ft	15 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	150 ft	300 ft
AR-2	15 ft	15 ft	15 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	150 ft	300 ft
R-1	30 ft	30 ft	15 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	300 ft	300 ft
R-3	30 ft	30 ft	30 ft	15 ft	30 ft	30 ft	30 ft	20 ft	20 ft	20 ft	15 ft	150 ft	300 ft
R-4	30 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	300 ft	300 ft
R-5	30 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	300 ft	300 ft
R-6	30 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	30 ft	30 ft	30 ft	20 ft	300 ft	300 ft
B-1	30 ft	30 ft	30 ft	20 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	15 ft	50 ft	150 ft
B-2	30 ft	30 ft	30 ft	20 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	15 ft	50 ft	150 ft
B-3	30 ft	30 ft	30 ft	20 ft	30 ft	30 ft	30 ft	15 ft	15 ft	15 ft	15 ft	50 ft	150 ft
MXD	30 ft	30 ft	30 ft	15 ft	20 ft	20 ft	20 ft	15 ft	15 ft	15 ft	10 ft	150 ft	300 ft

LI	150 ft	150 ft	300 ft	150 ft	300 ft	300 ft	300 ft	50 ft	50 ft	50 ft	50 ft	50 ft	50 ft
HI	300 ft	300 ft	300 ft	300 ft	300 ft	300 ft	300 ft	150 ft	150 ft	150 ft	150 ft	25 ft	25 ft

If a privacy fence is used, the material needs approval by Development Services, the fence maximum height is seven (7) feet in height, then the adjacent buffer may be reduced by ten (10) feet-30 feet to 20 feet for residential required buffers only.

*Subdivisions of less than five lots are exempt from buffer requirements when neighboring property is under the same ownership.

- D. The constructed berm shall have vegetative cover applied immediately post construction to assist in stabilization of the berm.

Before final plat approval of a subdivision or sketch plan approval of a commercial, industrial or PD development, a bond shall be submitted to development services in the amount of ten (10) percent of the construction cost of the berm as determined by EOM.

** Adjacent commercial, institutional, and industrial developments which are designed as a single development or share parking may reduce the buffer width by up to 50 percent between these parcels. If commercial property is developed with zero lot lines, then the buffer between parcels shall be eliminated. At no time may buffers be reduced between commercial, institutional, or industrial and residential uses.

*** The required plant material portion of a buffer may be reduced by 50% when adjacent to agricultural or conservation areas if replaced by additional storm water management areas.

**** Industrial surface mines will follow the buffer requirements in section 3.17.4.

3.4.2 Adjacent public street buffers: All development excluding industrial development shall maintain a ten-foot wide landscaped buffer between any parking or loading area and an adjacent accessed public right-of-way (ROW). In single family subdivisions a ten-foot landscaped buffer must be maintained between any lot or internal street and any public collector or arterial ROW accessed from the subdivision.

- A. In cases where the adjacent public street is also the exterior boundary of the site, the buffer required in table 3.4.1 shall be inclusive of this ten-foot-wide landscaped buffer.
- B. Where parcels abut a street without access to that street the buffer on that side of the parcel shall equal the required buffer for the use on the other side of the street in the above chart.
- C. Street buffers for industrial property shall equal the required buffer for the use on the other side of the street in the above chart.
- D. Residential subdivisions shall have visual buffers consisting of either vegetative cover or fencing and shall have a minimum 50 percent opacity. If vegetation is used, it shall be projected to reach the required opacity within one year of installation and shall maintain the minimum required opacity during all seasons of the year. A visual buffer may be no higher than six feet in height, except on main or collector streets where the buffer is a maximum height of twenty (20) feet.
- E. PDs may have different buffer requirements; however, buffers are still required in all approved PDs. Please refer to PD ordinance in Article X.
- F. Where property lines run adjacent to federally designated interstate highways, regardless of zoning or proposed use, that section of the property is exempt from all buffer requirements along the property line with frontage on the interstate highway.

3.4.5 Required plant material:

- A. Where trees do not already exist they must be planted at a rate of one tree, at least two inches dbh, every 15 linear feet of buffer. The following list specifies recommended trees for this area. For buffers greater than 30 feet in depth required tree planting must come from the large tree list.
- B. Buffers in industrial zones must include understory plantings at a rate of on three (3) gallon plant every five linear feet if sufficient understory foliage does not exist.

Large Trees >50' Suitable for areas with more than 400 square feet of total planting area; in a planting strip at least 16' x 25' or 20' x 20'						
Common/Scientific Name	Height & Width	Sun/Shade	Insect & Disease Resistance	Growth Rate	Deciduous Evergreen	Remarks
Beech, American <i>Fagus grandifolia</i>	50-75' h 40-80' w	PS/FS	L	S	D	Native. Needs ample room above and below ground. Acid soil. Fruit attracts wildlife, no litter. Zones 4-9
Blackgum Nyssa <i>sylvatica</i>	65-75' h 25-35' w	PS/FS	H	S	D	Native. Soil pH below 6 best, texture tolerant, drought tolerant, wet soil tolerant. Fruit attracts wildlife, some litter. Zones 4-9
Cypress, bald <i>Taxodium distichum</i>	60-80' h 25-35' w	FS/PS	M	F	D	Native. Drought & wet tolerant. 'Knees' form in wet areas. Tolerates compaction. Zones 4-11
Cypress, pond <i>Taxodium ascendens</i>	50-60' h 50-60' w	PS/FS	H	F	D	Native. Soil adaptable below 7.5. Knobby 'knees' form in moist areas. Attracts wildlife. No litter. Zones 5-9

Hickory, pignut <i>Carya glabra</i>	50-65' h 30-40' w	PS/FS	M	M	D	Native. Soil texture adaptable. Drought tolerant. Nuts attract wildlife. Zones 4-9
Hickory, shagbark <i>Carya ovata</i>	60-80' h 25-35' w	PS/FS	H	S	D	Native. Soil texture adaptable. Abundant nuts attract wildlife. Shaggy bark attractive. Zones 4-8
Magnolia, Southern <i>Magnolia grandiflora</i>	60-80' h 30-40' w	PS/FS	M	M	E	Native. Soil adaptable. Bark is thin, protect from mechanical injury. White showy blooms in spring & summer. Good cultivars. Zones 7-9
Maple, Red Acer <i>rubrum</i>	60-75' h 25-35' w	PS/FS	H	F	D	Native. Prefers acidic soil, texture tolerant, wet tolerant. Bark is thin. Fruit attracts wildlife. Many cultivars. Zones 4-9
Oak, laurel/Darlington <i>Quercus laurifolia</i>	60-70' h 50' w	PS/FS	H	F	SE	Native. Soil adaptable. Roots will heave sidewalks. Acorns attract wildlife, creates some litter. Zones 6-10

Oak, live <i>Quercus virginiana</i>	60-80' h 60-120' w	PS/FS	H	M	E	Native. Soil adaptable. Roots will eventually heave sidewalks, wind resistance. Some litter. Zones 8-10
Oak, shumard <i>Quercus shumardii</i>	60-80' h 40-50' w	FS	M	F	D	Native. Soil texture adaptable, acidic. Urban tolerant. Acorns attract wildlife. Some litter. Zones 5-9
Oak, southern red <i>Quercus falcata</i>	60-80' h 60-70' w	FS	M	M	D	Native. Acidic soil, all textures, urban tolerant. Fruit attracts wildlife, no significant litter. Zones 7-9
Oak, scarlet <i>Quercus coccinea</i>	60-75' h 45-60' w	FS	M	M	D	Native. Acidic soil, all textures. Needs ample root space. Nuts attract wildlife. Some litter. Zones 5-8
Oak, swamp chestnut <i>Quercus michauxii</i>	60-70' h 30-50' w	PS/FS	M	M	D	Native. Acidic soil, all textures, occasional wet. Leaf litter persistent, acorns for wildlife. Zones 6-9
Oak, white <i>Quercus alba</i>	60-100' h 60-80' w	PS/FS	H	M	D	Native. Acidic soil, all textures.

						Protect roots from disturbances. Nuts attract wildlife. Some litter. Zones 3-9
Oak, willow <i>Quercus phellos</i>	60-75' h 40-60' w	FS	M	F	D	Native. Acidic soil, all textures, occasional wet, drought, urban tolerant. Nuts attract wildlife. Some litter. Zones 5-9
Pine, loblolly <i>Pinus taeda</i>	50-80' h 30' w	FS	M	F	E	Native. Soil texture adaptable, acidic. Thick bark-resistant to fire. Needle drop prolific. Zones 6-9
Pine, longleaf <i>Pinus palustris</i>	60-80' h 30-40' w	FS	M	F	E	Native. Soil texture adaptable. Beautiful bark. Needle and cone drop prolific. Drought tolerant once established. Zones 7-10
Redcedar, eastern <i>Juniperus virginiana</i>	40-50' h 8-25' w	FS	H	F	E	Native. Soil pH and texture tolerant. Blue fruit attracts wildlife. Good wind break, urban tolerant. Zones 3-9
Sweetgum <i>Liquidambar styraciflua</i>	75' h 50' w	PS/FS	H	M	D	Native. Soil pH of 7.5 or less. Surface roots. Fruit

						attract wildlife, significant litter. Cultivar 'Rotundifolia' fruitless. Zones 5-9
Sycamore, American <i>Platanus occidentalis</i>	75-90' h 60-70' w	FS	L	F	D	Native. Soil pH and texture adaptable. Prefers moist soil. Roots may heave sidewalks. Showy bark. Zones 4-9
Tulip poplar <i>Liriodendron tulipifera</i>	80-120' h 25-40' w	FS	H	F	D	Native. Acidic soil, occasional wet. Avoid drought & salt. Showy greenish-yellow blooms in spring. Some leaf drop in high heat. Zones 4-9

KEY			
Sun/shade exposure:	Growth rate:	Pest resistance:	Type:
FS = Full sun	S = Slow (less than 1' per year)	H = High	D = Deciduous
PS = Part sun	M = Medium (1-2' per year)	M = Medium	E = Evergreen
S = Shade	F = Fast (more than 2' per year)	L = Low	SE = Semi Evergreen

Medium Canopy Trees: (Count for 550 square feet of area for planting—minimum two inches caliber)

Medium Trees 30' - 50' Suitable for spaces with 100 to 200 sqft of total planting space; in a planting strip at least 4-7 feet wide; or place at least 4' from pavement or wall.						
Common Name/Scientific Name	Height & Width	Sun/Shade	Insect & Disease Resistance	Growth Rate	Deciduous Evergreen	Remarks
Birch, river <i>Betula nigra</i> 'Heritage'	40-50' h 40-50' w	PS/FS	M	F	D	Native. Acidic soil. Drought

						sensitive in confined spaces. Roots need room. Cultivars available. Zones 3B-9
Holly, East Palatka Ilex x attenuata	30-45' h 10-15' w	FS	M	M	E	Florida natural hybrid. Urban & drought tolerant once established. Red berries attract wildlife. Zones 7-9
Holly, American Ilex opaca	40-50' h 15-25' w	FS	M	S	E	Native. Salt and drought tolerant once established. Red berries attract birds, no litter. Zones 5-9
Holly, Nellie R. Stevens Ilex x	20-30' h 10-15' w	FS	H	M	E	Hybrid. Soil texture tolerant. Needs male and female plants for berries. Drought tolerant. Showy red berries & deep green leaves. Zones 6-9
Holly, Savannah Ilex x attenuata	30-45' h 6-10' w	FS	M	M	E	Hybrid. Acidic soil, urban tolerant. Red berries attract birds, no litter. Zones 6-9

Magnolia, sweetbay Magnolia virginiana	40-50' h 15-25' w	PS	M	M	D	Native. Acidic soil. Tolerates wetlands. Flood & drought tolerant. Showy, white, fragrant flowers. Zones 5-9
Magnolia, Southern Magnolia grandiflora	30-50' h 15-30' w	FS	H	M	E	Native. Soil adaptable. White showy blooms in summer & early fall. Smaller leaves than species. Zones 6-9
Oak, overcup Quercus lyrata	35-50' h 35-50' w	FS	H	M	D	Native. Soil adaptable, wet & drought tolerant once established. Urban tolerant. Acorns attract wildlife, significant litter. Zones 5-9
Palm, cabbage Sabal palmetto	40-50' h 10-12' w	PS/FS	H	S	E	Native. Soil tolerant, frond and fruit litter messy. Needs irrigation until established as all cut roots die back. Southern region only. Zones 8B-11

Redbud, eastern Cercis 'Forest Pansy'	20-30' h 15-30' w	PS	M	F	D	Native. Light, rich, moist soil, texture adaptable. Showy purple blooms in spring. Cultivar 'Texas White' good. Short lived. Zones 4-9
Silver bell, Carolina Haleiwa Carolina	20-40' h 15-30' w	PS/FS	H	M	D	Native. Acidic soil. Drought sensitive in full sun, roots need room. Showy white blooms in spring. Zones 5-8
Yellowwood, American Cladastria kentuckea	30-50' h 40-50' w	PS/FS	H	M	D	Native. Needs pruning while young. White fragrant blooms. Tolerates urban conditions. Zones 4-8

KEY			
Sun/shade exposure:	Growth rate:	Pest resistance:	Type:
FS = Full sun	S = Slow (less than 1' per year)	H = High	D = Deciduous
PS = Part sun	M = Medium (1-2' per year)	M = Medium	E = Evergreen
S = Shade	F = Fast (more than 2' per year)	L = Low	SE = Semi Evergreen

Small trees < 25' useful under utility lines; areas with < 100 sf of total planting area; a planting strip with a width of at least 4'.						
Common Name/Scientific Name	Height & Width	Sun/Shade	Insect & Disease Resistance	Growth Rate	Deciduous Evergreen	Remarks

Cherry, Okame <i>Prunusx incamp</i> 'Okame'	15-25' h 20' w	PS/FS	M	M	D	Hybrid. Soil texture and pH adaptable. Roots need room. Pink showy blooms. Fruit attracts birds. Zones 7-9
Crape myrtle, Japanese <i>Lagerstroemia fauriei</i>	35-50' h 25-35' w	FS	H	M	D	Japan. Soil adaptable. Urban tolerant. White showy flowers. Beautiful bark. May be resistant to powdery mildew. Zones 6-9
Dogwood, flowering <i>Cornus Florida</i>	20-30' h 20' w	PS	M	M	D	Native. Part shade. Drought sensitive, low salt tolerance, needs good drainage. White showy flowers. Horizontal branching pattern. Zones 5-9
Fringetree <i>Chionanthus virginicus</i>	12-15' h 10-15' w	PS/FS	M	S	D	Native. Acidic soil. Thin bark easily damaged. Urban tolerant. Showy white blooms in spring. Fruit attracts birds. Zones 4-9
Holly, yaupon <i>Ilex vomitoria</i> 'Pendula'	15-20' h 15-20' w	S/FS	M	M	E	Native. Soil & pH greatly adaptable. Urban tolerant. Thin bark. Red berries attract wildlife. Zones 7-10
Magnolia, Southern <i>Magnolia grandiflora</i> 'Little Gem'	20-25' h 10-15' w	PS/FS	M	M	E	Native. Soil adaptable. Bark is thin, protect from mechanical injury. White showy blooms in summer and early fall. Zones 7-9
Redbud, Oklahoma <i>Cercis reniformis</i> 'Oklahoma'	20-30' h 15-30' w	PS/FS	M	F	D	Native. Soil & pH adaptable, salt sensitive, showy thick leaves. Zones 5-9

Waxmyrtle <i>Myrica cerifera</i>	15-20' h 20-25' w	PS/FS	M	F	E	Native. Soil & pH adaptable, urban tolerant. Blue berries attract wildlife. Zones 8-11
----------------------------------	----------------------	-------	---	---	---	--

KEY			
Sun/shade exposure:	Growth rate:	Pest resistance:	Type:
FS = Full sun	S = Slow (less than 1' per year)	H = High	D = Deciduous
PS = Part sun	M = Medium (1-2' per year)	M = Medium	E = Evergreen
S = Shade	F = Fast (more than 2' per year)	L = Low	SE = Semi Evergreen
