

ARTICLE 17
APPENDICES

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APPENDIX 1: LIST OF ACCEPTABLE PLANT SPECIES

LARGE CANOPY TREES	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
* <i>Acer Buergeuanum</i> TRIDENT MAPLE	Deciduous	12-35 ft	15-25 ft	Medium	Full sun, well drained soils	Drought resistant	Non serious	Nice street tree for under power lines
* <i>Acer Rubrum</i> RED MAPLE	Deciduous Shade	40-60 ft	30-50 ft	Fast	Adaptable	Spring flowers fall colors	Leaf hoppers, borers	Many cultivars with brilliant fall color., Does not tolerate heavy pollution, shade tolerant
* <i>Acer Saccharum</i> SUGAR MAPLE	Deciduous Shade	65-75 ft	40-60 ft	Moderate	Well drained slightly moist	Excellent fall colors	Leaf scorch	Beautiful fall color, resents heat, shade tolerant, cultivars: "Green Mountain", "Legacy"
* <i>Betula Nigra</i> RIVER BIRCH	Deciduous	40-70 ft	40-60 ft	Fast	Moist preferred but widely adaptable	Handsome form and bark	Leaf spot	Multi or single stem, handsome bark, "heritage", excellent selection, "Duraheat", more heat tolerant
* <i>Carpinus Carolina</i> HORNBEAM, IRONWOOD	Deciduous Shade	20-50 ft	30-50 ft	Slow to Moderate	Rich, moist, slightly acid, adaptable	Fall color, smooth bark	Canker, leaf spot	Very adaptable small shade tree, unique smooth sinewy trunk, shade tolerant
<i>Cedrus Deodora</i> DEODAR CEDAR	Evergreen	40-70 ft	50-90 ft	Moderate	Well drained, somewhat dry	Foliage texture and color	Cold damage, top dieback	Excellent graceful specimen with soft blue-green color
<i>Cercidiphyllum Japonicum</i> KATURSA TREE	Deciduous Shade	40-60 ft	30-60 ft	Moderate	Rich, moist well drained, full sun	Beautiful foliage spring and fall	None serious, sun scale	Extremely handsome, but underused, beautiful spring foliage
<i>Cladrastis Lutea</i> YELLOWWOOD	Deciduous Shade	30-50 ft	40-55 ft	Moderate	Well drained, full sun	Fragrant spring flowers, bright foliage	Very few, can not take wet soils	Beautiful fragrant flowers on older trees, slow develop strong form, under used.
<i>Cryptomeria Japonica</i> JAPANESE CEDAR	Evergreen	50-60 ft	20-30 ft	Moderate	Rich, moist, acid, full sun	Soft texture, beautiful bark	Leaf blight, branches die back	Graceful, stately specimen. Excellent screen.
* <i>Fagus Grandiflora</i> AMERICAN BEECH	Deciduous Shade	50-70 ft	50-70 ft	Slow	Moist, well drained, acid	Handsome form, bark, fall foliage	None serious, surface root	Beautiful and grand native for large area, shallow roots inhibit grass.
* <i>Fraxinus Pennsylvanica</i> GREEN ASH	Deciduous Shade	50-60 ft	25-35 ft	Fast	Very adaptable, full sun	Adaptability	Bores, scale	Plant cultivars to prevent reseeding, easily transplanted, variable growth habit.
* <i>Ginkgo Biloba</i> GINKO	Deciduous Shade	50-80 ft	30-60 ft	Moderate	Adaptable full sun	Unique foliage, rich yellow fall color	None serious	Gangly when young, spectacular when mature, bright fall color, plant male only!
<i>Gymnocladus Dioicus</i> KENTUCKY COFFEETREE	Deciduous Shade	65-75 ft	40-50 ft	Slow to Moderate	Adaptable	Bold and unique form	None serious	Interesting tree for large area, bold winter habit, handsome bark, pods persistent through winter.
* <i>Iglandambar Rotundiloba</i> SWEETUM (fruitless)	Deciduous Shade	65-75 ft	40-50 ft	Moderate	Adaptable, needs large root zone	Rich fall color	Numerous pest when under stress	Fruitless variety, but some reversion possible, rich fall color.
* <i>Liriodendron Tulipifera</i> TULIP POPLAR	Deciduous Shade	70-90 ft	35-50 ft	Fast	Mostly well drained, loamy, full sun	Beautiful spring flowers, fall foliage	Numerous when poorly sited	Majestic tree only for large sites, needs well drained, loamy soil to stay healthy.
* <i>Magnolia Grandiflora</i> SOUTHERN MAGNOLIA	Evergreen	60-80 ft	30-50 ft	Moderate	Rich, well drained, shade tolerant	Beautiful fragrant flowers, handsome leaf	Messy leaves, surface roots	Formal specimen as screen or large hedge, use cultivars:" Little Gem or Margaret Davis" etc.
<i>Metasequoia Glyptostroboides</i> DAWN REDWOOD	Deciduous	70-100 ft	24-45 ft	Fast	Moist well drained, slightly acid	Bright green, fine textured leaf	None serious, Japanese beetles	Tall but somewhat narrow, makes effective screen.
<i>Nyssa Sylvatica</i> BLACK GUM	Deciduous	30-50 ft	20-30 ft	Moderate	Moist well drained acid	Fall color	None serious	Beautiful native tree but hard to find in nurseries, striking early fall colors.
* <i>Oxendrum Arboreum</i> SOURWOOD	Deciduous	25-30 ft	20-25 ft	Slow	Moist acid soil, well drained, full sun	Multiple seasons of interest	Leaf spot, twig blight, difficult to transplant	Good leaf, blooms in summer, excellent fall color, an all around performer
<i>Pinus Thumbergia</i> JAPANESE BLACK PINE	Evergreen	15-25 ft	20-30 ft	Medium	Well drained soils, full sun	Screen planting, hedge, and grouping	None serious	Interesting screening plant
* <i>Pinus Taeda</i> LOBLOLLY PINE	Evergreen	40-60 ft	20-30 ft	Fast	Adaptable to poor drained acid soils	Good fast screen, adaptability	Pine beetles	Fast screen when young, higher canopy when aged, beetles, frequent in landscape setting.
<i>Pinus Virginiana</i> VIRGINIA PINE	Evergreen	15-40 ft	10-30 ft	Medium	Poor soils to dry sites, full sun	Nice fall color	None serious	Underused, good for screens where other plants perish
* <i>Quercus Acutissima</i> SAWTOOTH OAK	Deciduous	35-45 ft	35-45 ft	Medium to fast	Acid, well drained soils, full sun	Very adaptable, glossy leaves	None serious	A nice well rounded tree that is under used
* <i>Quercus Alba</i>	Deciduous	50-80 ft	60-90 ft	Slow	Deep, moist, well	Stateliness, fall	Numerous, but tree is	Probably the most majestic of trees, slow grow,

LARGE CANOPY TREES	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
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WHITE OAK	Shade				drained, acid	color	a survivor	transplant problems make planting rare.
* <i>Quercus Coccinea</i> SCARLET OAK	Deciduous Shade	70-75 ft	40-50 ft	Moderate	Adaptable	Excellent glossy foliage, fall color	None serious	Excellent foliage, attractive form makes this oak increasingly popular.
* <i>Quercus Falcata</i> SOUTHERN RED OAK	Deciduous	70-80 ft	60-70 ft	Medium	Very adaptable, full sun	Nice large shade tree	Striped oak caterpillar, non serious	Large stately native tree
<i>Quercus Lyrata</i> OVERCUP OAK	Deciduous	30-45 ft	30-45 ft	Medium to fast	Withstand wet soils, full sun or part shade	Takes to difficult site	None serious	Smaller shade, acorn, underused
<i>Quercus Macrocarpa</i> BUR OAK	Deciduous	70-80 ft	30-40 ft	Slow	Drought Tolerant	Stately tree	None serious	Large acorns, very shady as older specimen
<i>Quercus Palustris</i> PIN OAK	Deciduous	60-70 ft	30-40 ft	Fast	Will tolerate wet sites, full sun	Bronze to red fall color	Gulls, iron chlorosis	Used extensively as a street tree in North Carolina
* <i>Quercus Phellos</i> WILLOW OAK	Deciduous Shade	40-60 ft	30-60 ft	Moderate	Adaptable	Good form, fine texture	None serious	Highly adaptable and obtainable oak tree, perhaps over used
* <i>Quercus Rubra</i> RED OAK	Deciduous	60-75 ft	40-50 ft	Fast	Well drain moist soils, full sun	Nice fall color	None serious	Withstands air pollution
* <i>Quercus Shumardii</i> SHUMARD OAK	Deciduous Shade	40-60 ft	40-60 ft	Moderate	Adaptable	Reliability, fall color	None serious	Reliable and adaptable, becoming more available in the trade
* <i>Stewartia Monodelpha</i> TALL STEWARTIA	Deciduous	20-25 ft	10-15 ft	Medium	Pt sun to shade, moist well drained soils	Good bark color, fall foliage, summer blooms	Pest free, difficult to transplant	An excellent tree for small spaces, creates an interesting specimen
<i>Styrax Japonicus</i> JAPANESE SNOWBALL	Deciduous	20-30 ft	20-25 ft	Slow to medium	Moist acid soils well drained, full sun	Excellent bark and flowers	Few problems	Excellent foliage and bark texture, fragrant yellow flowers in May
<i>Taxodium Ascendens</i> POND CYPRESS	Deciduous	70-80 ft	12-20 ft	Slow to medium	Takes to wet sites, adaptable	Nice specimen tree, burnt orange fall color	None serious	Good for parks, large areas and wet areas
<i>Taxodium Distichum</i> BALD CYPRESS	Deciduous	50-70 ft	20-30 ft	Moderate	Adaptable, full sun	Fine texture, attractive bark	Twig blight, cypress moth, mites	Stately tree with finger like textures, looks at home near water but is adaptable to most cities
* <i>Tilia Cordata</i> LITTLELEAF LINDEN	Deciduous Shade	60-70 ft	40-60 ft	Moderate	Moist well drained fertile	Good foliage, fall color, pollutant tolerant	Scale, linden mite, aphids, J. beetles	Handsome tree for large sites, not as adaptable in warm climate
<i>Tsuga Canadensis</i> CANADIAN HEMLOCK	Evergreen	40-70 ft	25-35 ft	Moderate	Moist well drained, acid, sun or shade	Fine texture, hedge, screen, groupings	Numerous if not properly located	Excellent for naturalizing, screening, or large hedge, reliable if given proper care and not allowed to dry
<i>Ulmus Crassifolia</i> CEDAR ELM	Deciduous	50-70 ft	40-60 ft	Medium	Adaptable	Medium fine texture, rough leaves	Dutch elm disease, Elm leaf, beetles	Difficult to find in many nurseries
* <i>Unus Paviflora</i> LACEBARK ELM	Deciduous Shade	40-50 ft	40-50 ft	Moderate	Adaptable	Med. Fine texture, beautiful mottled bark	None serious	Tough and durable for urban sites, easily grown and transplanted

*indicated desired species

ORNAMENTAL TREES	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
* <i>AcerGinnala</i> AMUR MAPLE	Deciduous	15-20 ft	15-20 ft	Moderate	Adaptable, sun or light shade	Fragrant flowers, fall colors, early leaves	Relatively few	Excellent small tree because of its form, can be used as a specimen, screen, background or understory tree
<i>Acre Griseum</i> PAPERBARK MAPLE	Deciduous	20-30 ft	12-20 ft	Slow	Well drained soils, adaptable	Excellent fall color	None serious	Excellent bark, cinnamon color and exfoliating, great center piece in landscaping
* <i>Acer Palmatum</i> JAPANESE MAPLE	Deciduous	15-20 ft	15-20 ft	Slow to moderate	Moist well drained soils, Sun or part shade	Excellent foliage, fall color, bark	Few, leaf scorch	Outstanding tree for formal gardens, one of the most spectacular trees, many varieties
* <i>Mmelanchier Aborea</i> SERVICEBERRY	Deciduous	15-25 ft	10-30 ft	Moderate	Moist well drained soils, Sun or part shade	Spring flowers, fall color, bark, wildlife	Numerous, rust, leaf blight, mildews	Snowflake like modified hairs cover the leaves, stems, and buds giving a silvery look, great screen
* <i>Cercis Canadensis</i> REDBUD	Deciduous	20-30 ft	25-35 ft	Moderate	Adaptable if not wet, sun part shade	Spring flowers, fall color, fruit	Canker, leaf spot, verticillium wilt	Comes in many varieties with lustrous leaf and is less susceptible to leaf rollers, has oblong seed pods
<i>Chionanthus Vitginious</i> FRING TREE	Deciduous	12-20 ft	12-20 ft	Slow	Moist well drained soils, full sun	White fingerlike bloom in spring	Leaf spot and scale, hard to transplant	Excellent specimen for small landscapes
* <i>Cornus Kousa</i> FLOWERING DOGWOOG	Deciduous	20-30 ft	20-30 ft	Moderate	Well drained, acid organic, moist	Spring flowers, fall color	Borer, Fungus, leaf spot	Long lasting flowers, bark is easily bruised, very attractive tree in the spring, good for landscaping
* <i>Cornus Mas</i> CORNELIAN CHERRY DOGWOOD	Deciduous	20-25 ft	15-20 ft	Medium	Adaptable, well drained soil, sun to partial shade	Yellow flowers in March	Non serious	Exfoliating gray bark, large round multi stemmed tree. Excellent understory tree for landscapes and parking lots
<i>Cotinus Cogggyria</i> SMOKE TREE	Deciduous	10-15 ft	10-15 ft	Medium	Well drained soil, full sun to part shade	Yellowish fingerlike blooms	Rust, leaf spot, leaf volleus, none serious	Drought resistant, well adapted to abused urban soils, will survive in infertile rocky soils
* <i>Crataegus Phaenopyrum</i> WASHINGTON HAWTHORN	Deciduous	25-30 ft	20-25 ft	Moderate	Well drained full sun	Spring flowers, fall fruit	Numerous, rust, leaf spot, mildews	Has an attractive fruit makes a good landscaping tree
* <i>Halesia Carolina</i> CAROLINA SILVER BELL	Deciduous	30-40 ft	20-35 ft	Moderate	Well drained, acid organic, moist	Spring flowers, fall fruit	Very pest resistant	A subtly beautiful native when used as a shrub or woodland border
<i>Hamamalis Hybrids</i> WITCH HAZEL	Deciduous	15-20 ft	15-20 ft	Medium	Moist well drained soil, adaptable, sun or shade	Good yellow to orange blooms	Non serious	Winter bloomer when most other trees don't
<i>Ilex Decidua</i> POSSOMHAW	Deciduous	10-15 ft	10-15 ft	Slow to medium	Well drained soil, full sun to part shade	Good red berries in winter	Leaf spot, powdery mildew, non serious	Many nice cultivars with attractive berries, good for wildlife
* <i>Ilex Opaca</i> AMERICAN HOLLY	Evergreen	20-40 ft	18-40 ft	Slow	Well drained, moist, acid, sun	Evergreen leaves, red berries	Numerous, leaf miner, scale, bud moth	Picturesque specimen, many superior cultivars available, make an excellent screen
* <i>Koelreuteria Paniculata</i> GOLDEN RAIN TREE	Deciduous	30-40 ft	30-40 ft	Moderate to fast	Adaptable, full sun	Spring leaves, fall flowers	None serious	Lawn or patio tree, unique for yellow summer flowers
* <i>Lagerstroemia Indica</i> GRAPE MYRTLE	Deciduous	18 + ft	Varies	Fast	Well drained, full sun, warm	Bark, form, showy summer flowers	Powdery mildew, black spot, sooty mold	May be grown as a shrub using dwarf cultivars, occasionally grown as a multi stemmed small tree
* <i>Magnolia Species</i> MAGNOLIA	Deciduous	20-30 ft	24-35 ft	Moderate	Well drained, acid organic, moist	Fragrant spring blooms, form	Numerous possible, but seldom	Spectacular early flowers, makes for a good screen when mature
* <i>Magnolia Soulangiana</i> SAUCER MAGNOLIA	Deciduous	20-30 ft	15-25 ft	Moderate	Well drained, acid organic, moist	Fragrant spring blooms, form	Numerous possible, but seldom	Spectacular early flowers, makes for a good screen when mature
* <i>Magnolia Virginiana</i> SWEETBAY MAGNOLIA	Semi Evergreen	20-30 ft	25-35 ft	Moderate	Adaptable, tolerant wet, shade	Fragrant summer blooms, fall fruit	None serious	Versatile tree with nice foliage, fragrant flowers, good specimen for entrances and streetscapes
* <i>Malus Hybrid</i> FLOWERING CRABAPPLE	Deciduous	Varies	Varies	Varies	Well drained, moist soil, acid, sun	Showy spring blooms, fall fruit	Numerous, use only resistant varieties	Many of the cultivars are disease resistant. Very showy in the spring. Good for interior landscaping
<i>Parrotia Persica</i>	Deciduous	20-40 ft	15-30 ft	Moderate	Well drained, sun or	Spring flowers,	None except	Exceptional specimen, accent, small lawn or

ORNAMENTAL TREES	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
PERSIAN PARROTIA					light shade	exfoliating bark	Japanese beetles	street tree
* <i>Pistachia Chinensis</i> CHINESE PISTACHE	Deciduous	30-35 ft	25-35 ft	Moderate	Adaptable, full sun	Fall color, bark	None	Highly adaptable lawn, park. Or street tree with outstanding fall color
<i>Prunus Mume</i> JAPANESE APRICOT	Deciduous	15-20 ft	15-20 ft	Medium	Adaptable, sun to part shade	Winter Bloom, pink to white	None serious	Rounded tree that blooms in February, many good cultivars, underused
* <i>Prunus Specios</i> FLOWERING CHERRY	Deciduous	Varies	Varies	Varies	Well drained, moist, sun	Spring flowers, tree form, (some weeping)	Numerous if in poor conditions	Popular ornamental despite problems,
* <i>Stewartia Pseudocamella</i> JAPANESE STEWARTIA	Deciduous	20-40 ft	15-30 ft	Moderate	Well drained, moist, organic	Excellent fall color	None serious	Magnificent specimen with camellia like flowers and beautiful bark
* <i>Styrax Japonica</i> JAPANESE SNOWBALL	Deciduous	20-30 ft	20-30 ft	Moderate	Well drained, moist, organic	Late spring flowers, fruit, form	Leaf spot, scale, none serious, difficult to transplant	Lovely graceful tree all season, cultivars are available, underused

*indicated desired species

SHRUBS	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
* <i>Abelia Grandiflora</i> GLOSSY ABELIA	Evergreen	3-6 ft	3-6 ft	Moderate to fast	Easily grown, sun, moist, well drained soils	Flowers June – frost	None Serious	For mass or hedge, "Sherwood" more dense and compact, "Edward Goucher" darker pink flower
* <i>Aesculus Parviflora</i> BOTTLEBUSH BUCKEYE	Deciduous	8-12 ft	10-15 ft	Slow	Acid, moist, well drained, full sun part shade	Excellent white flowers	None serious, drops leaves early fall	Deep taproot makes difficult to transplant, very handsome shrub for both flower and foliage
<i>Aronia Arbutifolia</i> RED CHOKEBERRY	Deciduous	6-10 ft	4-6 ft	Moderate	Adaptable, sun part shade	Spring Flowers and foliage effects	Non serious, leaf spot, powdery mold	Border, massing, groups, naturalizing, brilliant fruit, superior cultivars
* <i>Berberis Julianae</i> WINTERGREEN BARBERRY	Evergreen	6-10 ft	6-10 ft	Moderate	Adaptable, full sun	Yellow spring flowers, fall color, fruit	Thorns	Impenetrable hedge, improper pruning can ruin form, "Nana" & "Glory" good but hard to find cultivars
* <i>Berberis Thumbergii</i> JAPANESE BARBERRY	Deciduous	3-6 ft	4-7 ft	Moderate	Adaptable, sun, not too wet	Leaf color, winter fruit	Numerous possible but not prevalent	Many cultivars "Crimson Pigmy & Rose Glow" burgundy foliage, "Aurea" yellow/green foliage
* <i>Buddleia Davidii</i> BUTTERFLY BUSH	Deciduous	5-15 ft	8-12 ft	Fast	Adaptable, sun, not too wet	Foliage, color, profuse summer blooms	None serious	Many cultivars with varied sizes, foliage, bloom, and color
<i>Callicarpa</i> BEAUTYBERRY	Deciduous	3-5 ft	4-6 ft	Moderate	Adaptable, well drained, sun to part shade	Graceful form, spectacular fall berries	None Serious	Used in mass, few can compete with effect of this shrub in fruit, Purple/white fruit types available
* <i>Calycanthus Floridus</i> SWEETSHRUB	Deciduous	6-9 ft	6-10 ft	Slow	Sun to shade, well drained, organic soils	Fragrant dark red bloom in June / July	Trouble free	Can be a suckering or clumping plant, fragrant, underused
* <i>Camellia Japonica Sasanqua</i> CAMELLIA	Evergreen	6-15 ft	5-10 ft	Slow to moderate	Moist well drained, organic, partial shade	Handsome foliage, fall, winter, or spring blooms	None serious	Many cultivars, cold hardiness, bloom time and color, for accent, screening, and espalier
* <i>Caryopteris Specios</i> BLUEBEARD	Deciduous	2 ft	2 ft	Slow	Full sun, loose loamy soils	Nice small mound, blue flowers late summer	None serious	May die back to ground in winter, many cultivars,
<i>Chamaecyparis Pisifera Cultivar</i> JAPANESE FALSE CYPRESS	Evergreen	4-15	4-10	Moderate	Moist well drained soil, humid, sun	Fine texture, foliage, colors in cultivars	Leaf scorch, none serious	Accent or specimen conifer, cultivars with gold or bluish leaf.
<i>Clethra Alnifolia</i> SUMMERSWEET CLETHRA	Deciduous	3-8 ft	4-6 ft	Moderate	Acid, organic soils, tolerates wet, sun/shade	Summer blooms very fragrant, fall colors	None	Under used plant for massing, naturalizing. Extremely fragrant bloom, tolerates wet, shady sites
* <i>Cornus Sericea</i> RED OSIER DOGWOOD	Deciduous	7-9 ft	5-6 ft	Medium to fast	Moist well drained soils, full sun part	Bright red and yellow stems in winter	Canker, bagworm	A fair amount of cultivars, variegated foliage, best for winter interest

SHRUBS	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
					shade			
<i>Cyrill Racimiflora</i> LEATHERWOOD	Semi evergreen	10-15 ft	8-10 ft	Medium	Moist, acid soils, tolerant to moisture	White flowers June & July	None serious	Underused native shrub from coastal plain and nice evergreen for hedge or screen
* <i>Cytisus Scoparius</i> SCOTCH BROOM	Evergreen	5-6 ft	6-8 ft	Medium	Well drained soil, full sun	Yellow and red flowers	None serious	Good for poor dry sites, quite adaptable
<i>Deutzia Gucillis</i> SMOOTH DEUTZA	Deciduous	2-4 ft	3-4 ft	Slow to moderate	Full sun to light shade, adaptable	Nice white flowers in spring	Problem free	Used best in hedge border or in masses
<i>Exochorda Racemosa</i> PEARLBUSH	Deciduous	10-15 ft	10-15 ft	Medium	Moist well drained acidic soils full sun	Nice white flowers in March-April	None serious	Underused for shrub border, attractive bark colors range from brown to brown orange, very adaptable
<i>Forsythia Intermedia</i> BORDER FORSYTHIA	Deciduous	8-12 ft	10-12 ft	Fast	Adaptable, Sun or part shade	Early spring flowers	Several but none serious	Accent groups, all species showy flower, color varies, "Oak Leaf" has good form & fall color
<i>Hydrangea Species</i> HYDRANGAEA	Deciduous	4-15 ft	4-15 ft	Fast	Moist well drained, salt tolerant	Large summer blooms, fall color, Oak Leaf	Several possible, none serious	Accent groups, all species have showy flower, color varies, fall color and winter form
<i>Hypericum Frondosum</i> ST. JOHNS WORT	Deciduous	3-4 ft	3-4 ft	Slow	Does well in dry sites, full sun to part shade	Nice foliage and yellow flowers in summer	None serious possible snow/ice damage	Good for borders, handsome blue/green foliage, brilliant yellow flowers in June, underused native
<i>Illicium Parviflorum</i> SMALL ANISE TREE	Evergreen	8-15 ft	10-15 ft	Moderate	Adaptable, wet or dry, sun or shade	Handsome olive green foliage	None serious	Large foliage mass or screen, prune for specimen small tree. Nice color contrast
* <i>Ilex Crenata Cultivars</i> JAPANESE HOLLY	Evergreen	4-12 ft	4-12 ft	Moderate	Adaptable, sun, drought tolerant	Broad glossy leaf, berries on some	Numerous possible, scale, varies w/ cultivars	Accent, foundation, screen, hedge, many cultivars, widely used
* <i>Ilex Glabra</i> INKBERRY HOLLY	Evergreen	5-10 ft	5-10 ft	Moderate	Moist acid, sun or shade	Lustrous leaves, adaptability	None serious	Accent, foundation, screen, hedge, mass, select named cultivars for size and form
* <i>Ilex Vomitoria</i> YAUPON HOLLY	Evergreen	3-20 ft	5-15 ft	Moderate to fast	Adaptable, wet or dry, salt tolerant	Great adaptability, varied forms, bark	None serious	Accent, foundation, screen, hedge, mass, some small trees, some dwarf & compact, some weeping
* <i>Ilex Verticillata</i> WINTERBERRY HOLLY	Deciduous	6-10 ft	6-10 ft	Slow to moderate	Adaptable, tolerates wet, sun/partial shade	Red fall, winter fruit	None serious	Mass border bank planting, wet soils, needs male to set fruit, spectacular in winter
<i>Itea Virginica</i> VIRGINIA SWEETSPIRE	Deciduous	3-7 ft	5-10 ft	Moderate	Adaptable, prefers moist, sun or shade	Fragrant, May blooms, good foliage	None serious	Massive, banks, naturalizing, highly adaptable native
<i>Lespedeza Thunbergii</i> SHRUB LESPEDEZA	Deciduous	4-8 ft	4-8 ft	Fast	Full sun, very adaptable	Nice flower and foliage	None serious	Very handsome fountain like effect, rosy purple blossom, blooms in September
* <i>Juniperus Cultivars</i> JUNIPER	Evergreen	Varies	Varies	Moderate	Tolerant of poor soils, no wet soils	Consistent needle like foliage, fine texture	Twig blight, rust, wilt, bagworm, mites	Ground cover, foundation, bank, hedge, screen, specimen, sizes, shapes, colors vary w/ cultivar
<i>Mahonia Bealei</i> LEATHERLEAF MAHONIA	Evergreen	4-6 ft	3-4 ft	Slow to medium	Shade to part sun	Fragrant yellow flowers in winter	None serious	Coarsely clumped shrub with growth habit similar to nandina
* <i>Myrica Cerifera</i> WAX MYRTLE	Evergreen	2-8 ft	2-8 ft	Fast	Adaptable, sun/shade, salt tolerant	Adaptability, fragrant stems & leaves	Anthraco-nose, none serious	Versatile as a screen, mass, hedge, small tree specimen, ice may break limbs
* <i>Nandina Domestica</i> NANDINA	Evergreen	2-8 ft	3-8 ft	Moderate	Adaptable, sun / shade	Spectacular fruit & winter color	None serious	Species are effective in groups as a hedge, cultivars are mostly dwarf types
* <i>Osmanthus Fortunei</i> "ZABEL" SKIP LAUREL	Evergreen	15-20 ft	15-20 ft	Slow to moderate	Moist, well drained, sun or shade	Fragrant flowers, handsome foliage	None serious	Border, screen, hedge, formal specimen, fall fragrance
* <i>Osmanthus Species</i> FRAGRANT TEA OLIVER	Evergreen	6-20 ft	6-20 ft	Slow to medium	Moist well drained soils, full sun part shade	Fragrant flowers in fall	Problem free	Dense upright oval shrub for layer plantings, very fragrant flower in fall
<i>Philadelphus Species</i> MOCK ORANGE	Deciduous	12-12 ft	8-10 ft	Fast	Full sun to light shade, moist rich soil	Fragrant spring blooms	Powdery mildew, leaf spot, canker, not serious	Used mostly as hedge, some cultivars have more fragrant bloom

SHRUBS	Tree Type	* At Maturity		Growth Rate	Site Conditions	Benefits	Possible Problems	Remarks
		Height	Spread					
<i>Pieris Japonica</i> JAPANESE ANDROMEDIA	Evergreen	6-8 ft	4-6 ft	Slow	Part shade to shade, rich organic acidic soils	White flowers in spring, good color in shade	Lace bug, leaf spot, root rot	Good evergreen for shade area, foundation, hedges
* <i>Prunus Lauroceracus</i> "Zabel" "ZABEB" SKIP LAUREL	Evergreen	3-6 ft	5-10 ft	Moderate	Moist, well drained, organic, sun / shade	Lustrous evergreen foliage	Root rot, bacterium and insect damage	Foundation, hedge, accent, ground cover in shade, Elegant plant
* <i>Pseudocyclonia Sinensis</i> Quince	Deciduous	8-10 ft	10-15 ft	Slow to medium	Full sun, moist well drained soil	Nice red to pink flowers	Fire blight, none serious	Good in the shrub border, excellent flowers in early spring
* <i>Pyacantha Species</i> FIRETHORN	Evergreen	8-12 ft	8-12 ft	Fast	Full sun well drained soils	Excellent winter fruit	Fire blight, mites, lace bugs, scales	Used for hedges, foundation plantings, screens, masses, good for large scale landscaping
* <i>Rosmarinus Officinalis</i> ROSEMARY	Evergreen	2-4 ft	3-4 ft	Slow to medium	Full sun, moist well drained soils	Fine texture, small evergreen, fragrant	None serious	Nice evergreen for sun, fragrant foliage,
* <i>Rhododendron Species</i> RHODODENDRON & AZALEA	Evergreen	2-20 ft	3-20 ft	Slow to medium	Shade to part shade	Excellent flowers	Lace bug, root rot, mites,	Many cultivars and varieties, should not be put in sun as a lot of problems with poor sighting
* <i>Sacococca Hookavana</i> SWEET BOX	Evergreen	2-20 ft	3-20 ft	Slow to medium	Shade to part shade, rich well drained soils	Fragrant flower in late winter	None serious	Nice evergreen for shade, does not tolerate wet sites
* <i>Spiea Species</i> SPIREA	Deciduous	2-8 ft	3-8 ft	Moderate to fast	Adaptable, not too wet, sun	Spring to summer flowers	Numerous possible, but very resilient	Filler or massing, bank cover, Many species / cultivars
* <i>Viburnum Species</i> VIBURNUM	Deciduous	5-20 ft	5-20 ft	Slow to moderate	Moist well drained, sun to part shade	Flowers, fragrance, fall color, fruit	Numerous possible but relatively few	Many species and cultivars
<i>Loropetalum Chinese</i> LORPETALUM	Evergreen	6-10 ft	12-15 ft	Medium to fast	Prefers moist acidic soil, sun to shade	Nice spring flowers white to pink	None serious	Borders, screens, foundation and specimen planting, many new cultivars have nicer foliage and flowers

*indicated desired species

a) Large canopy trees serve the following functions:

- a) Create green space in the community.
- b) Establish a unifying element in the streetscape.
- c) Soften architectural elements.
- d) Provide tall buffers between incompatible uses.
- e) Mitigate urban micro-climates by providing shade and windbreaks and by filtering pollution.
- f) Reduce soil erosion and excessive storm water runoff.
- g) Contribute a living legacy to the community.

b) Ornamental Trees

- a) Provide an understory to the overhead canopy trees
- b) Create a screen or buffer for less desirable visual elements.
- c) Define or accent a focal space such as an entry area to a building, park, or plaza
- d) Add dynamic visual interest to the environment in ways such as attractive bark, flowers, fragrance, and sculptural form.

- e) Mitigate urban micro-climates by providing shade and windbreaks, and by filtering sound and pollution.
- f) Reduce soil erosion and excessive storm run-off.

APPENDIX 2 – UNION COUNTY STANDARDIZED ZONING REGULATIONS

1. UCPS staff will involve local municipal staff early in the site selection process. The local municipal staff will make recommendations regarding target sites or areas within their respective jurisdictions that are suitable for school uses. Pursuant to state statute, final decisions regarding the selection of school sites are made by the Union County Board of Education.
2. Allow all new schools, additions, or renovation uses by right with supplemental standards. This will eliminate the costly and time-consuming discretionary (CUP/SUP) zoning process and site-by-site negotiations. All local government entities benefit by having expectations regarding school design and construction identified in advance.
3. Jurisdictions may consider an optional CUP/SUP review process if unique conditions exist as determined by the zoning/planning administrator. The administrator shall consider if the proposed project poses a negative impact on the public health and safety.
4. Supplemental standards shall include:

4.1. Exterior of buildings

4.1.1 Exterior building materials shall be limited to masonry brick (brick or pre-finished block), natural or synthetic stucco, pre-finished insulated or non-insulated metal panel system, pre-finished metal fascia and wall coping, standing seam metal roof (for sloped roof only), painted hollow metal and/or pre-finished aluminum door and window frames, glass, painted or pre-finished steel.

4.1.2 Union County Public School (UCPS) staff will work with municipality staff to follow any requirements of municipality “special overlay districts” as it relates to the exterior design of the facility.

4.1.3 Exterior of buildings will be articulated to enhance the area of the site.

4.2. Mobile classrooms (MCR)

4.2.1 MCR’s shall be located in rear yard if possible. If rear yard cannot accommodate the MCR’s then they can be placed in the side yard. MCR’s can be placed in the front yard only if the MCR’s cannot be accommodated in the rear or side yards.

4.2.2 MCR underpinning and crawl spaces shall be screened.

4.2.3 Landscaping/planting shall be provided between the MCR and any adjacent roads from which the MCR’s are visible.

4.3. Sidewalks

4.3.1 Sidewalks on the school property that connect to an existing sidewalk infrastructure will be provide by UCPS.

4.3.2 UCPS will dedicate appropriate easement or road right of way needed for sidewalks if requested by municipality.

- 4.3.3** UCPS will grade areas for sidewalks if requested by municipality.
- 4.4. Exterior Illumination**
- 4.4.1** Driveway and parking area lighting shall be no more than 10 foot candles. Spill over to adjacent properties shall not exceed 1 foot candle. Lighting fixtures shall be shielding type.
- 4.4.2** Lighting fixtures located on the building exterior shall not emit more than 5 foot candles and shall be shielding type.
- 4.4.3** Lighting for athletic fields shall follow the current standards as set forth by the North Carolina High School Athletic Association Lighting Standard. A lighting control package shall be included and lights shall be shut-off no later than one hour after the end of the event.
- 4.5. Signs**
- 4.5.1** Materials for sign base and structure shall match the primary building materials.
- 4.5.2** Sign face shall not exceed 40 square feet and does not include the sign support structure. The bottom of the sign face shall be no less than 24" above nor more than 72" above the ground surface. The sign support structure can include columns and walls on either side of and below the sign face and shall not be more than 16" taller than the sign face.
- 4.5.3** One sign shall be permitted per school. Alternatively, if multiple schools use the same driveway access, then the allowable square footage may be increased by 10 square feet for each additional school.
- 4.5.4** Exterior illumination is allowed.
- 4.6. Parking**
- 4.6.1** At elementary and middle schools provide 1 space per staff member plus 1.6 spaces per classroom or 1 space for each 3 seats used for assembly purposes whichever is greater.
- 4.6.2** At high schools provide 5 spaces per instructional classroom or 1 space for each 3 seats used for assembly purposes whichever is greater.
- 4.6.3** No more than 20% of the required spaces can be compact spaces.
- 4.6.4** Minimum size of spaces shall be 9' wide by 19' long for regular, 7.5' wide by 15' long for compact, and accessible spaces shall meet current accessibility codes.

4.7. Student Drop Off Stacking

4.7.1 On-site vehicle stacking for student drop-off shall be based on NCDOT requirements using the NCDOT required calculator.

4.8. Landscaping and Screening/Buffering

4.8.1 Trees and shrubs shall be as indicated within the municipality species list.

4.8.2 Parking Area: 1 large or 2 small trees shall be provided for each 12 parking spaces. Each parking space shall be located within 65' of a tree. Rows of parking spaces shall be terminated with a landscaped island and shall be the same size as a parking space.

4.8.3 Parking areas shall be screened from adjacent public roads with shrubs based on the municipality's species list.

4.8.4 Storm Detention Basins shall be screened with fencing and/or shrubs as determined by the administrator and shall be dependant upon the size, location, and use of the basin.

4.8.5 Land berms will not be permitted between school facilities and roads.

4.8.6 Land berms can be used in conjunction with required screening/buffering to adjacent uses as determined by the local regulations.

4.8.7 Screening/buffering from adjacent uses will be opaque and shall consist of:

4.8.7.1 Small trees planted at a rate of 3 per 100' and 6' high evergreen shrubs planted at a rate of 25 per 100', or

4.8.7.2 Large trees planted at a rate of 2.5 per 100' and a 6' high solid wood fence, or

4.8.7.3 Tall evergreen trees with branches touching the ground planted in a stagger.

4.8.8 If the adjoining property is of similar or compatible use the Administrator may reduce or eliminate the screening/buffer.

4.8.9 Screening/buffering requirements may be waived when screening/buffering is already provided. There may be cases where the unusual topography or elevation of a site, or the size of the parcel involved, or the presence of screening on adjacent property would make the strict adherence to the regulation serve no useful purpose.

In those cases, the Administrator is empowered to waive the requirements for screening so long as the spirit and intent of this section and the general provisions of this section pertaining to screening are adhered to. This section does not negate the necessity for establishing screening for uses adjacent to vacant property.

- 4.8.10** UCPS shall adhere to all Tree Preservation ordinances of the municipalities and shall preserve natural buffers between the school facility and adjacent properties as much as practical.
 - 4.8.11** UCPS shall retain as much existing trees and vegetation on school sites as practical and will re-introduce common local species into the project as possible.
- 4.9.** In the event any provisions of the supplemental regulations conflict with any other provisions of this ordinance, then the provisions of these supplemental regulations shall control. Other ordinance provisions not in conflict with these supplemental regulations remain in effect.