

# RECREATION AND LANDSCAPE MANUAL

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# CHAPTER ONE | INTRODUCTION

## 1.00 OVERVIEW

This manual is designed to guide land use management together with land division and development decisions in the City of Richmond, Kentucky as a means of implementing the city's Comprehensive Plan. It is the desire of the City of Richmond and the Richmond Planning Commission that the use of this document will facilitate the orderly development of the city in the future.

The sequence of development in the city usually begins with a determination of how the land is to be used. Following this decision, the land may need to be divided into additional tracts or parcels (subdivided) prior to the final step involving the physical development of the land. This manual consists of two primary elements: (1) The Determination of Required Landscaping and Buffers and 2) The Development of Land with the Recreational & Common Space Requirements.

The manual has been written in such a way as to provide a degree of flexibility in the use and development of land while being careful to protect the health, safety, and general welfare of citizens. The goal of this manual is to preserve and recognize the particular qualities of Richmond that are distinctive and need to be recognized in the overall development process.

This manual is to be used in conjunction with the City of Richmond's Development Ordinance.

## 1.20 SUSTAINABILITY

A park is a place to play, relax, explore, and socialize. Parks act as a connection between our human environment and the natural environment. Parks can also educate through sustainable design and construction methods. Park design and construction should build connections with the natural environment. Design and construction of parks should incorporate such sustainable techniques as detailed below:

- a. Preserve and incorporate existing natural areas into park site planning;
- b. Reduce impervious cover;
- c. Integrate habitat and active space;
- d. Preserve or enhance soil permeability;
- e. Utilize appropriate BMPs for effective storm water treatment;
- f. Use native drought-tolerant plants;
- g. Use organic mulch to retain water and suppress weeds;
- h. Use recycled materials and certified wood;
- i. Pervious pavers or pervious pavement; and
- j. Use of Rain Gardens.

### **1.30 REVIEW PROCESS**

The recreation and common open space plan shall be reviewed and approved in conjunction with the associated preliminary subdivision, site development plan, or land development application. The Planning and Zoning Commission shall review the recreational space plan for final approval. Any changes or additions to the approved recreational space plan shall be submitted to the Planning and Zoning Commission for approval with all meeting fees being applicable.

The Planning & Zoning Commission reserves the right to have local emergency first responders review and provide comments to Pedestrian and Bikeway facilities.

## **CHAPTER TWO | RECREATIONAL SPACE REQUIREMENTS**

### **2.00 PURPOSE**

The purpose of the recreation and common space requirements is to provide standards for the creation and maintenance of recreational and common space areas and trails in conjunction with new development that will protect the health, safety, and general welfare of the public, enhance property values, improve quality of life and the appearance of the community, facilitate pedestrian and bicycle mobility, and preserve natural areas. The requirements will be applied to all new development containing a residential land use classification and designations component of five (5) or more units.

All development applications containing a residential component of five (5) or more units and/or lots, including, but not limited to, single-family/two family, multiple-family, binding site plans, mixed-use building and site plans, or other development which includes residential units, shall provide recreational space as set forth in this chapter.

## **2.10 GENERAL REQUIREMENTS**

1. Regulations for recreation and common space in single-family/two family and multi-family.
  - a. The front, side, and rear yard setback area required by the applicable zoning district shall not qualify as recreational space;
  - b. No more than fifty (50) percent of the recreational space requirement may be located on slopes greater than three (3) horizontal units to one (1) vertical unit (3:1) slope;
  - c. No required recreational space shall be less than one-eighth (0.125) of an acre in size;
  - d. Developments with recreational space required that is less than one-eighth (0.125) of an acre in size shall meet requirements with the installation of walking and/or bike lanes and trails;
  - e. The recreational space shall not be used as a material or construction staging area during development;
  - f. Minimum feature requirements include; benches, picnic areas, picnic tables, bicycle racks, and gazebos;
  - g. Additional features are at the discretion of the home owners association and/or landowners;
  - h. Signage for features is the responsibility of the home owners association and/or landowners; and
  - i. Lighting is not required; however any proposed lighting shall be at a neighborhood scale and energy efficient. Street lighting and security lighting may be placed in a way to provide lighting.

## **2.20 SINGLE FAMILY/TWO FAMILY**

1. Single-Family/Two Family residential recreation space shall be provided as follows:
  - a. The total net area of any proposed single-family/two family residential subdivision, which includes single-family residential units/lots shall provide for active recreational space, passive recreational space, and/or trails by means of on-site recreational space. Critical areas and their buffers shall not be included in the required calculations, unless utilized in conjunction with a trail system, do not interfere with environmental protection as set in the City of Richmond's Development Ordinance, and as approved by the Planning and Zoning Board.
  - b. An applicant may choose to satisfy all or a portion of the required recreation and common space requirements for a development in a single phase of the overall plan or divide the requirements over the project for greater accessibility throughout the development. The required recreational space may be dispersed in multiple locations throughout the development, but no required recreational space shall be less than one-eighth (0.125) of an acre in size with a minimum street frontage of 40 feet including zone setbacks;

- c. All single-family/two family residential recreational space shall be located adjacent to a public street or proposed public street.
- d. It will be the responsibility of the Home Owners Association to maintain recreational space. When the development is not deeded or conveyed to a Home Owners Association, the recreational space tract shall remain maintenance responsibility of the developer and/or owner of the development.
- e. Landscape buffer, sidewalk or walking trail, or fencing/screening shall be provided along adjoining residential lots.

## 2. Size and Ratio Requirements

- a. For each single-family/two family residential subdivision or other development application containing less than four (4) acres or less than 20 units the applicant shall provide and construct a minimum of walking trails and/or bike lanes.

<b>ZONE</b>	<b>R-1A</b>	<b>R-1B</b>	<b>R-1C</b>	<b>R-2</b>	<b>RE</b>	<b>MP</b>
<b>Ratio per Gross Acre</b>	<b>1.5%</b>	<b>2%</b>	<b>2.5%</b>	<b>3.0%</b>	<b>N/A</b> Bike or Trail feature	<b>4%</b>
Note: PUD requirements will be based on a percentage of each use.						

## 2.30 EQUATION

Gross Acres (X) Percent Recreation requirement (=) Required Recreation area

Gross Acres (-) Required Recreation area (=) Net Acres

Net Acres (÷) Density (=) Allowable Units

## DIMENSIONAL REQUIREMENTS

Dimensions shall be square or rectangular in nature with a minimum width of forty feet. The Planning & Zoning Board may grant a waiver to dimensional requirements based on land topography.

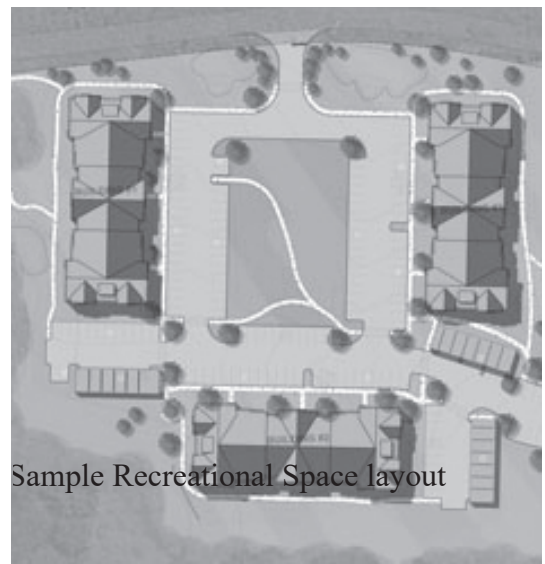
## 2.40 R-3, MULTIPLE FAMILY DEVELOPMENTS

Any proposed multi-family structure, complex, developments, or lots consisting of five (5) or more bedrooms shall provide recreational space on site for the use of the occupants, subject to the following requirements:

1. R-3, Multi-Family residential recreation space shall be provided as follows:
  - a. No required recreational space shall be less than twelve-hundred (1200) square feet in size;
  - b. Indoor recreational space or covered space such as gyms, fitness centers, indoor swimming pools, or similar facilities cannot be calculated as a percentage of the recreational space requirements;
  - c. No more than fifty (50) percent of the total required recreational space may be used for any single purpose such as outdoor swimming pools, tennis courts, or similar facilities; and
  - d. To the extent feasible, all multi-family residential recreational space shall be centrally located within the development.

### 2. Size and Ratio Requirements

- a. Any proposed multi-family structure, complex, developments, or lots consisting of three (3) or more units consisting of ten (10) bedrooms shall provide a minimum of twelve-hundred (1200) square feet of recreational space and shall provide a minimum of one-hundred (100) square feet per each additional bedroom
- b. Typical recreational space for a multi-family development illustrated at right.



## DIMENSIONAL REQUIREMENTS

Dimensions shall be square or rectangular in nature with a minimum of thirty feet by forty feet and for each fraction thereof above the minimum requirement shall increase dimensionally. The Planning & Zoning Board may grant a waiver to dimensional requirements based on land topography.

## CHAPTER THREE PEDESTRIAN & BICYCLE FACILITIES

### 3.00 PEDESTRIAN WALKWAYS

**3.01 Purpose-** Pedestrian walkways (sidewalks) are designed to provide for pedestrian safety and circulation. They also serve as important elements in the recreational system by providing space for walkers, hikers, and joggers.

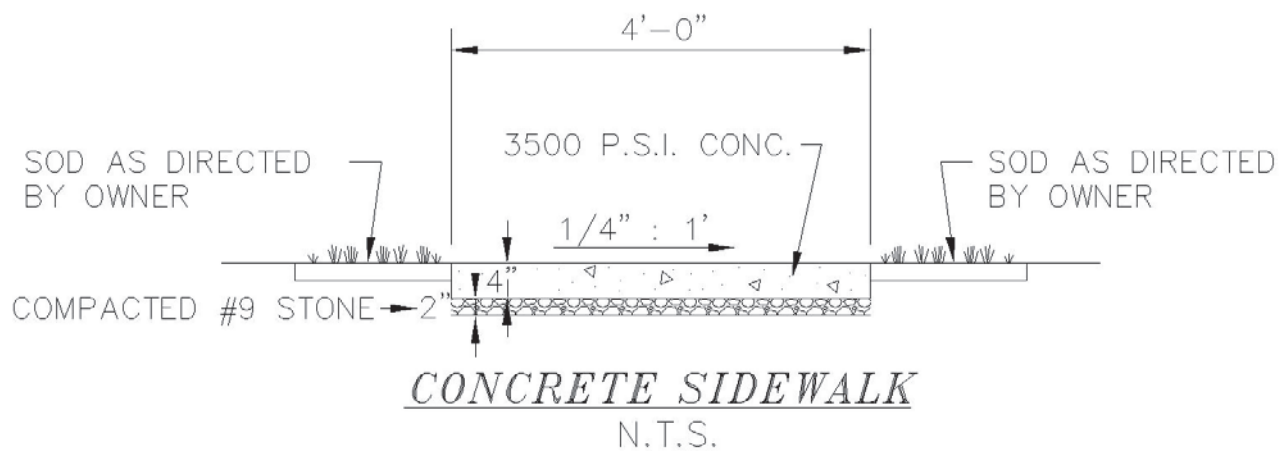
**3.02 Responsibility-** Sidewalks are the responsibility of the developer and are to be provided in all residential subdivisions and commercial developments on both sides of the street. Pedestrian walkways for industrial development shall be required as determined by the Planning Commission. Sidewalks shall be installed during the development of lots and before a construction guarantee is released for vacant lots. Repair and maintenance is the responsibility of the property owner for which the pedestrian access is located or adjoins.

**3.03 Standards-** Sidewalks shall be constructed of concrete at least four (4) inches thick (3,500 psi), poured over a compacted two (2) inches of # nine (9) gravel sub-base, and shall be a minimum of four (4) feet in width. Sidewalks shall meet the requirements of the American Disabilities Act as follows:

- (3) Curb ramps with tactile warnings shall be provided wherever an accessible route crosses a curb. Transitions from ramps to walks, gutters, or streets shall be flush and free from abrupt changes.
- (4) If a curb ramp is located where pedestrians must walk across the ramp or where it is not protected by handrails or guardrails, then it shall have flared sides.
- (5) Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes. Curb ramps shall be located or protected so as to prevent their obstruction by parked vehicles.
- (6) Interior sidewalks of a commercial or multifamily development shall be connected to perimeter pedestrian access by a minimum of one accessible point per street frontage.

## DETAIL OF SIDEWALK STANDARD

NOTE: SIDEWALK IS TO BE  
SLOPED TOWARD THE  
STREET.





### 3.10 TRAILS

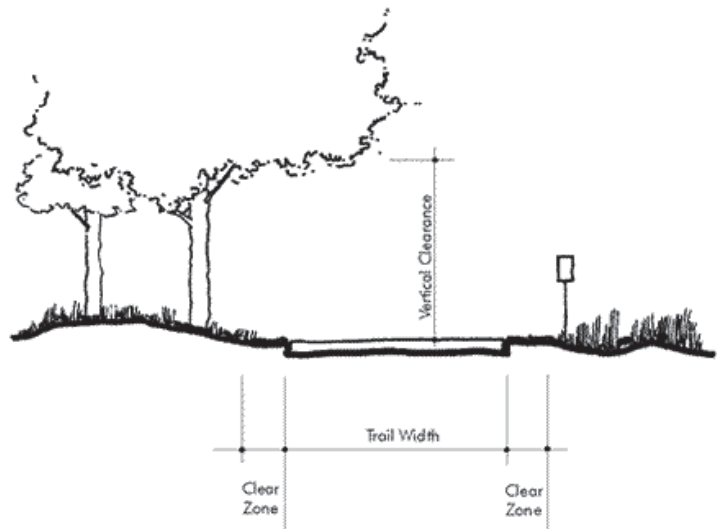
Trail requirements apply to all development applications containing a residential component of five (5) or more units and/or lots, including, but not limited to, single-family, multiple-family, binding site plans, mixed-use building and site plans, or other development which includes residential units.

#### 3.04 Walking Trail Features

Walking trails are considered to be areas that are not adjacent to any public right-of-way.

##### A. Walking Trail Construction Standards

- 1) The trail shall be a minimum of four (4) feet in width and shall be provided with a corridor a minimum of twelve (12) feet in width and maintained clear of brush, debris, or other visual obstructions; with the exceptions of significant trees and other existing obstructions per the discretion of the community and Planning and Zoning Board.
- 2) The trail surface shall be constructed of crushed stone at a minimum of four (4) inches in depth. Soft surface materials may be utilized in place of crushed stone depending on the site, trail characteristics and anticipated usage as approved by the community and Planning and Zoning Board. Hard surfaces such as concrete, asphalt, pavers, or pervious pavement may be utilized. Trails with slopes that have erosion or deemed to have the possibility of erosion may be required to be paved at the discretion of the developer and Planning and Zoning Board.
- 3) Any trails constructed within critical areas or their buffers shall be constructed in a way to not interfere with the integrity of the buffer or critical area requirement.



### 3.05 BIKEWAYS

A bikeway may be used in conjunction with a sidewalk in areas where schools, parks, or other public facilities exist and may cause a high volume of bicycle traffic, in order to insure the safety of cyclists and encourage greater use of the bicycle as an alternate means of transportation.

3. There are three different types of bikeway facilities:

- a. **Bicycle Paths-** Shall include only those bicycle facilities whereby a separate right-of-way is set aside for the specific use of cyclists to the exclusion of motor vehicles and pedestrians. One-way bike paths shall be at least four (4) feet wide and paved with concrete or bituminous paving material. Two-way bike Paths shall be at least eight (8) feet wide.
- b. **Bicycle Lanes-** Shall include those bicycle facilities where a portion of a street is designated by a raised curb or painted lane stripe, for the exclusive use of cyclists. Bike lanes shall be prominently marked as such and shall be one-way in direction on each side of the street. Bike lanes shall be a minimum of four (4) feet in width.
- c. **Bicycle Routes-** Shall include those existing or proposed streets that are determined by specific analysis to be suitable for the safe operation of bicycles. Bike routes do not provide for the exclusive use of bicycles but require sharing the street with other vehicles, and are designated by an official "Bike Route" sign.

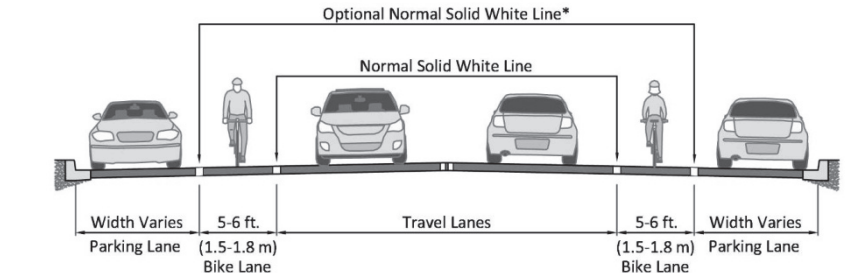
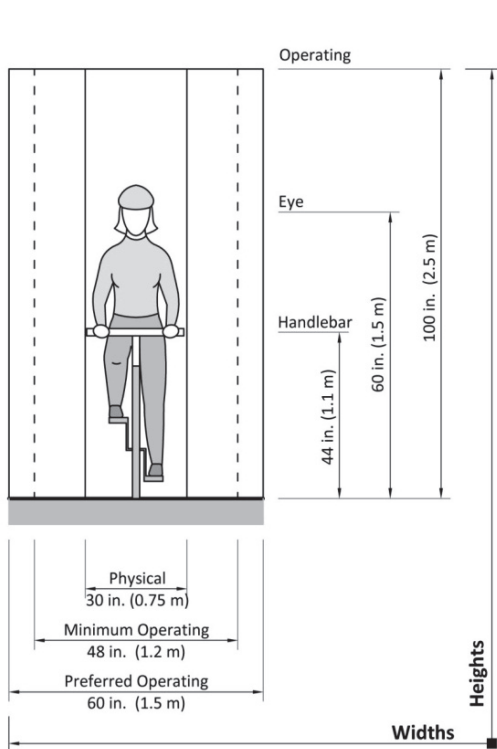


### 3.06 BICYCLE LANES AND TRAILS FEATURES

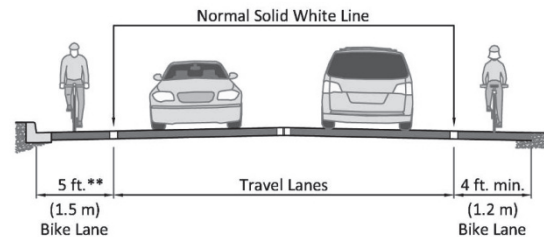
A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement makings for the preferential and exclusive use of bicyclists. Bicycle trails can be used in conjunction with walking trails.

#### 3.07 Bicycle Lane Construction Standards

- Lanes shall be part of the street/road design.
- Lanes shall be installed on both sides of the street/road a minimum of four (4) feet in width and striped according to current city or state roadway standards.
- No utility feature that may contain a grate, lid, or access panel can be installed in a bicycle lane.
- Required sidewalks may be modified to six (6) feet in width, striped, and have required signage.
- Roadway curb and gutter cannot be counted as bike lane width.
- Bike Lanes shall conform to AASHTO Bicycle Facilities Guideline, 2012 edition or current version, if newer.



**On Street Parking**



**Parking Prohibited**

\* The optional normal (4 in--6 in/100-150 mm) solid white line may be helpful even when no stalls are marked (because parking is light), to make the presence of a bicycle lane more evident. Parking stall markings may also be used.

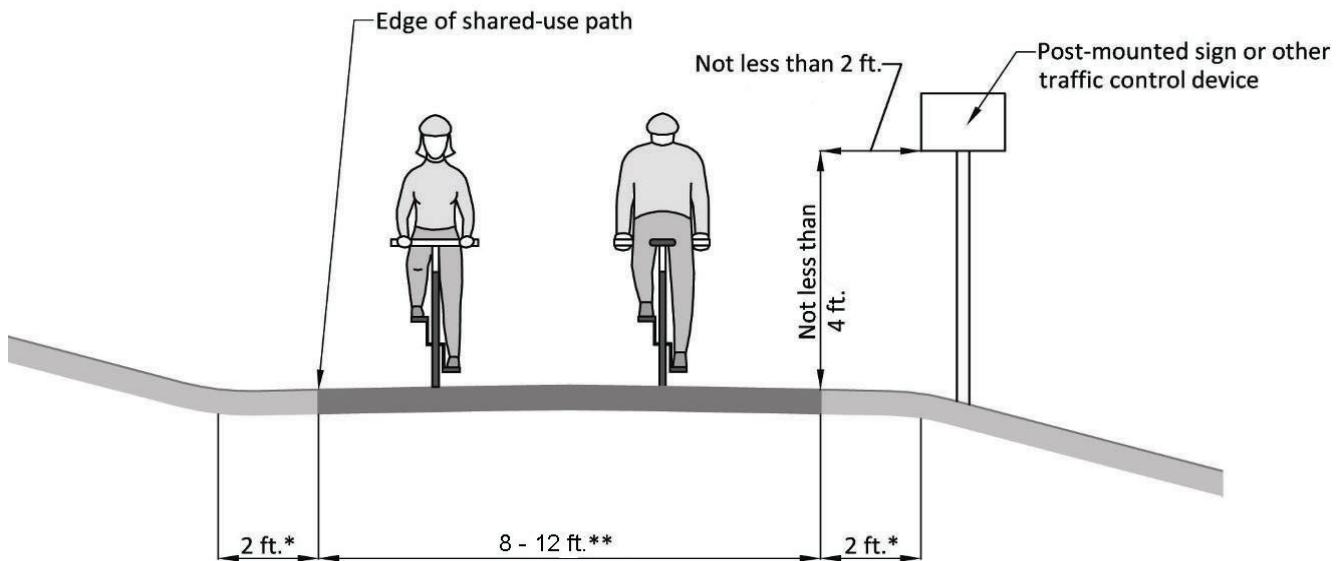
\*\* On extremely constrained, low-speed roadways with curbs but no gutter (e.g. in locations with stone curbs), where the preferred bike lane width cannot be achieved despite narrowing all other travel lanes to their minimum widths, a 4-foot (1.2 m) wide bike lane can be used.

#### 3.08 Bicycle Trail construction standards

- The trail shall be a minimum of eight (8) feet in width and shall be provided with a corridor a minimum of twelve (12) feet in width and maintained clear of brush, debris, or other visual

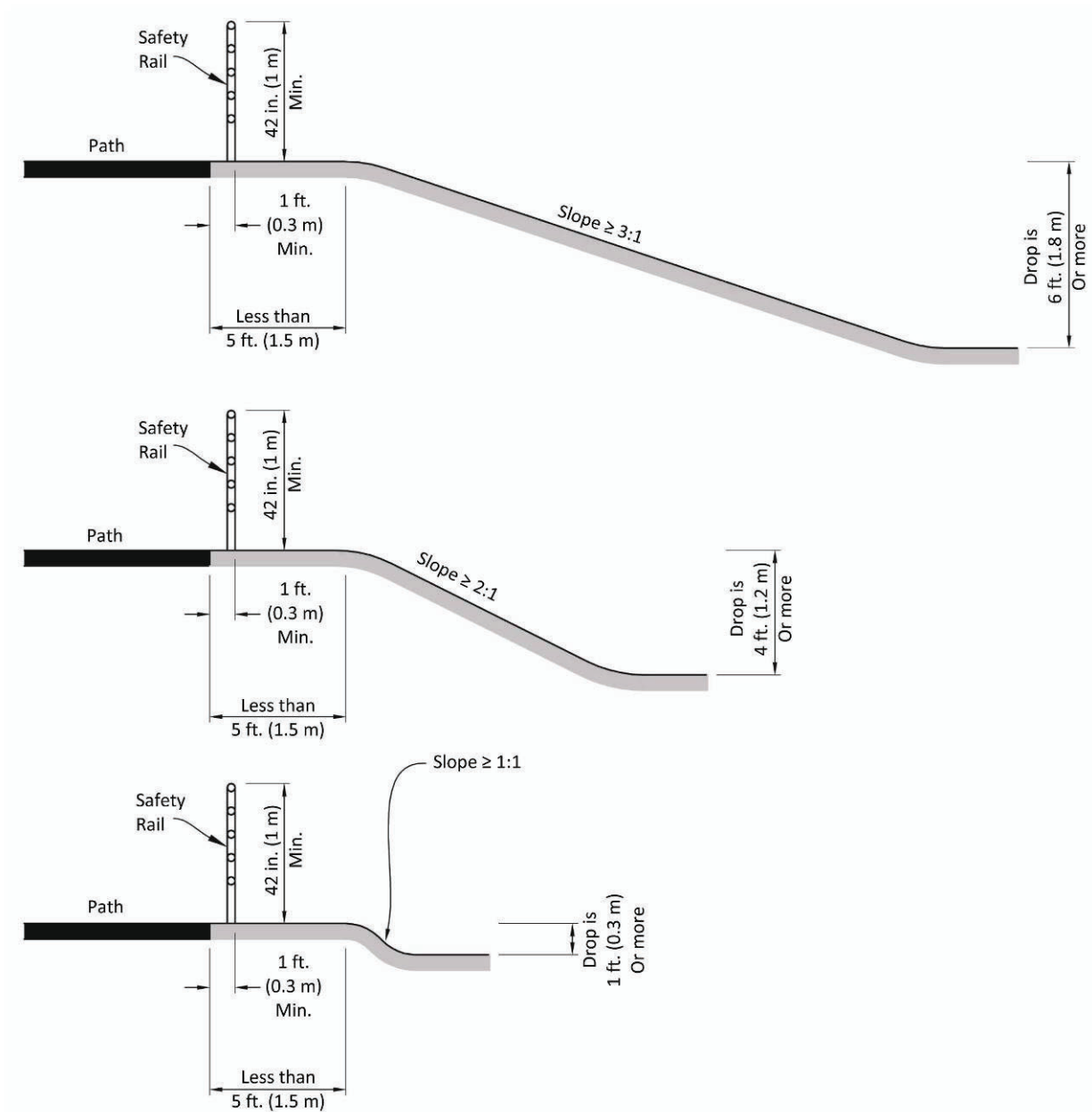
obstructions; with the exceptions of significant trees and other existing obstructions per the discretion of the community and Planning and Zoning Board.

- b. The trail surface shall be constructed of pervious pavement, concrete, or pavers. Other surface materials may be utilized depending on the site, trail characteristics and anticipated usage as approved by the community and Planning and Zoning Board.
- c. Any trails constructed within critical areas or their buffers shall be constructed in a way to not interfere with the integrity of the buffer or critical area requirement.
- d. No utility feature that may contain a grate, lid, or access panel can be installed in a bicycle trail or corridor.
- e. Additional information concerning Bike Trails can be found in the AASHTO Bicycle Facilities Guideline, 2012 edition or current version, if newer.



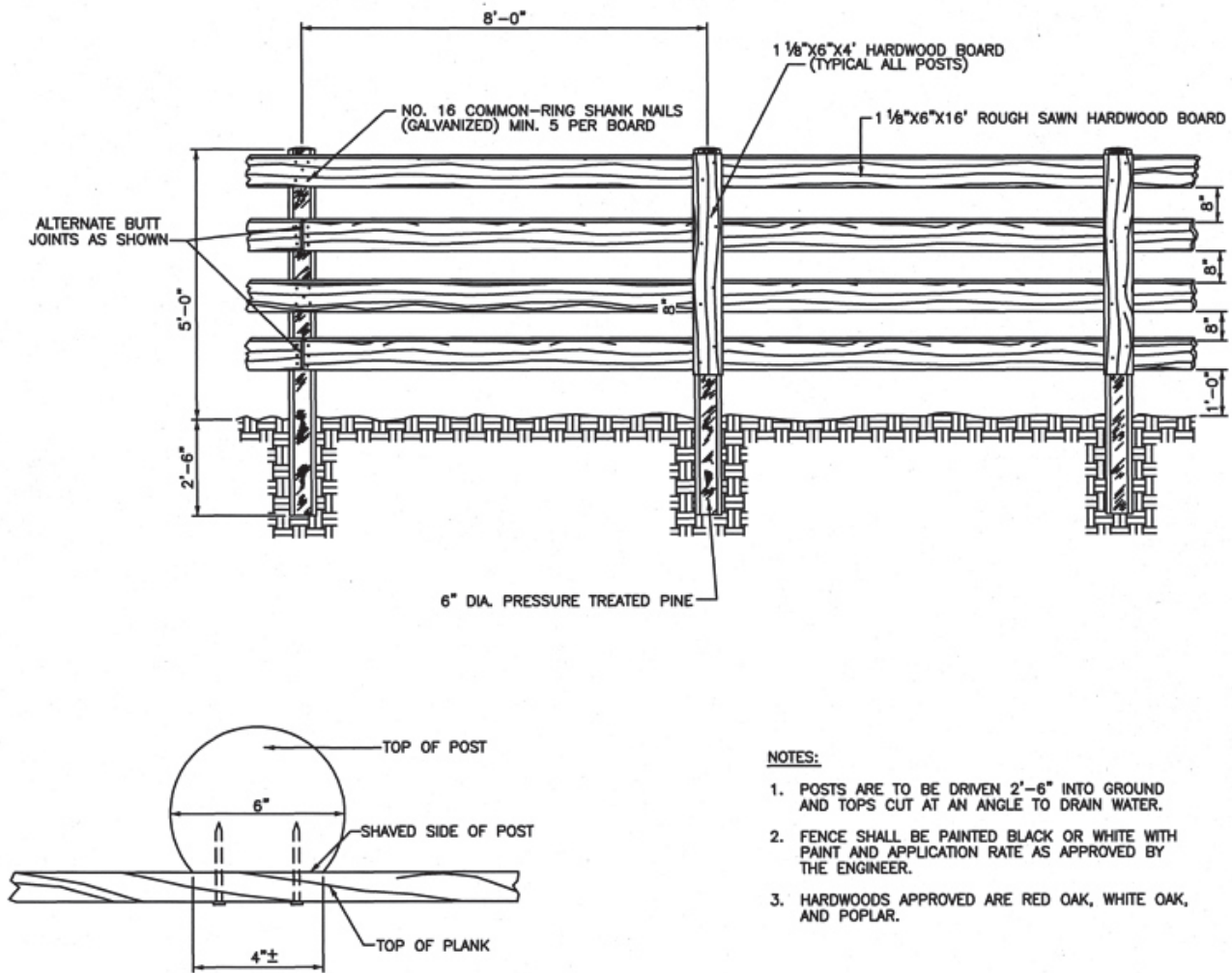
\*6:1 Maximum Slope (typ.)

\*\* More if necessary to meet anticipated volumes and mix of users



Safety Rail between Path and Adjacent Slope

Safety Rail shall be constructed as a 4-board fence and painted black or white.



## CHAPTER FOUR | LANDSCAPE MANUAL

### 4.00 LANDSCAPING

In the City of Richmond, a separate landscape plan shall be submitted with subdivision plats or development plans or the building permit applications (as appropriate), for review and approval by the Landscape Committee.

#### 4.01 Purpose

The purpose of these landscape requirements is to enhance the aesthetic qualities of development and to minimize the friction that might occur between different land uses. In addition, the planting of trees, shrubs, and ground cover, and use of fences, walls, and earthen mounds help to retard erosion, channel vehicular and pedestrian circulation, protect surrounding property values, reduce the effects of air, odor, visual, and noise pollution, and reduce glare from outdoor lighting.

#### 4.02 Developer's Responsibility

The landscape requirements set forth in this section shall be provided as a condition of development by the developer or owner of the property being developed. An owner securing a change in land use classification which creates a different situation shall be the one deemed responsible for creating the different situation, and shall provide the required landscape buffer as a condition of such land use change. If the different situation already exists or is created by a general land use change not sponsored by the property owner, the landscape buffer shall be provided as a condition of the approval of any subdivision of the affected land.

#### 4.03 Compliance

The Planning and Zoning Director shall be responsible for insuring compliance with this section of the ordinance as part of the subdivision plat or development plan review. The Planning and Zoning Director shall inspect the premises prior to the issuance of a certificate of occupancy to insure that the landscape buffer is in place. If, due to seasonal variance, planting is not practical at the time required for the issuance of the certificate of occupancy, the developer shall post a bond to cover cost of the landscape buffer, shall plant the landscape buffer as soon as reasonably possible, and shall notify the Planning and Zoning Director who will inspect the landscape buffer to insure that it is in compliance with these regulations.

#### **4.04 Exceptions**

In a situation where by reason of exceptional topographic, dimensional, shape, or other special conditions, the enforcement of this section would create an undue hardship on the applicant, the applicant may request a variance or waiver of such requirements.

#### **4.05 Relationship to Yard Requirements**

The landscape buffer areas set forth in this section shall be included in the minimum yard required by the land use district in which the development is taking place. If the buffer area is greater than the yard requirement, the yard requirement shall be extended to accommodate the buffer.

- 1) **Buffer Area Conflicts:** Where landscape buffers are required in the same location as utility easements, the two may be combined providing that the total width and screening requirements are met and it is not in violation of any required utility easements.
- 2) **Provisions of Planting Materials and Barriers:** Such trees, shrubs, ground covers, and barriers as required shall be provided by the developer by the developer or owner and considered as any other site improvement.
- 3) **Inclusion on Subdivision Plats and Development Plans:** Areas to be set aside for landscape buffer areas shall be shown on the subdivision plat or development plan. A landscape legend to include the name, scientific name, plant size when mature, and plant form. Landscape plans shall make reference to acceptable seasonal plantings, care and maintenance.
- 4) **Maintenance of Landscape Buffer:** Landscape buffers and trees shall be maintained by the property owner.
- 5) **Minimum Landscape Buffer Requirements:** The landscape buffers as described below shall apply to all common boundaries between different "land uses". The buffer effect may be accomplished by trees or shrubs and barriers in any combination that accomplishes the objectives of these requirements. In addition, ground cover shall be provided in the form of grass, low shrubs, or mulch. Plants shall be those that are acclimated to the local environment.

#### **4.06 Buffer Requirements.**

Landscape buffers are required parallel to the rights-of-way on properties within the Transportation Corridor. Buffers shall be a minimum of 20 feet in width. In determining the need for additional buffer widths, the Planning Commission shall consider the topography of the area, the existing and proposed land uses, the size of adjacent parcels, the traffic volumes of the corridor, and any additional factors the Commission deems reasonable in carrying out the purpose of this ordinance. District buffer requirements are described in Section 409 J, 10. Landscape buffers shall be free and clear of utility easements and infrastructure. Existing landscaping or shrubbery located in a fence or on a property line cannot be considered as part of the landscape buffer requirement.

#### **4.07 Setbacks**

The location of off-street parking facilities and access drives for more than five (5) vehicles, excluding single and two household dwellings, may be located in the required yards unless otherwise specified elsewhere in this ordinance. In no case however, shall the parking area or access drives be located



closer than five (5) feet from any right-of-way, five (5) feet from any non-residential property line and fifteen (15) feet from any residential property line.

#### **4.08                    Landscaping and Screening**

In addition to the setback requirements specified in this chapter for off-street parking for more than five (5) vehicles, screening shall be provided on each side of the parking area that abuts any residential district or use

#### **4.09                    Fences, Walls, and Hedges**

Fences, walls, and hedges serve to enclose similar land uses and to separate different land uses. They also serve as buffers to screen activities that might be inharmonious. There are two types of these devices; 1) those that do not impede visibility by more than twenty (20) percent and 2) those that do impede visibility by more than twenty (20) percent. Type 1) includes but is not limited to chain link, woven wire, split rail, and other similar fences, and low density vegetative screens. These devices shall be permitted in any rear or side yard in any district, in the front yard of an agricultural district, and in the front yard of a residential district provided they do not exceed four (4) feet in height, and do not interfere with visibility for vehicular movement. Type 2) includes but is not limited to masonry walls, board and stockade fences, and chain link fences with inserts. These devices shall be permitted in the rear yard in any district provided it shall not exceed six feet in height.

\* No improvements shall be placed on the drainage or utility easements unless approved by the planning and zoning office.

Barbed wire, electrified fences or other similar protection devices shall not be permitted in any residential district or adjacent to any residential use in the City of Richmond. These devices shall be permitted in agricultural districts, in conjunction with agricultural uses.

#### **4.10                    Visibility at Intersections.**

On a corner lot, nothing shall be placed, erected, planted, or allowed to grow in such a manner as to materially impede vision in the area bounded by the street lines of such corner and a line joining points along said street lines fifty (50) feet from the center point of the intersection. Corner lots shall be graded to proper elevations in order to comply with this provision. The clear zone shall be a minimum of six feet from ground level. Trees shall be planted outside of the utility stripe and behind the sidewalk.

#### 4.11 LANDSCAPE BUFFER REQUIREMENTS

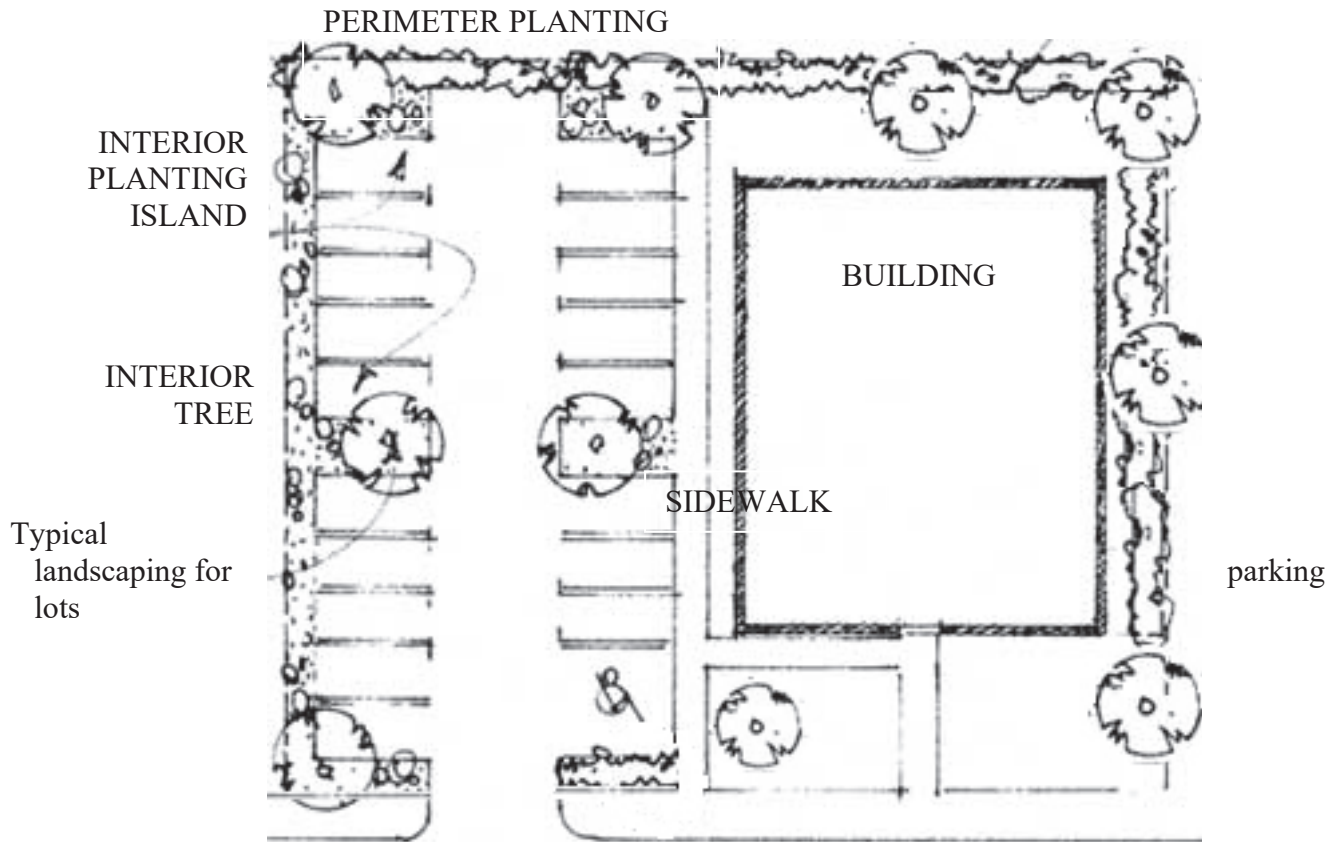
Adjoining Land Uses	Buffer Width	Trees	Shrubs or Barriers
Single and Two-family Residential	10 feet	1 small or medium tree @ 25 foot intervals	6 foot continuous hedge or 4 foot wall/fence
Single-Two-family and Multi-family/Mfg. Home Park/Community	10 feet	1 small or medium tree @ 25 foot intervals	6 foot continuous hedge or 4 foot wall/fence
Multi-family and Mfg. Home Park/Community	10 feet	1 medium or large tree @ 25 foot intervals	continuous hedge or at 10 intervals with wall/fence
Single/Two family and Commercial/Industrial	15 feet	1 medium or large tree @ 25 foot intervals	6 foot continuous hedge or intermittent planting w/wall
Multi-family/ Mfg. Home Park/Community and Commercial/Industrial	10 feet	1 medium or large tree @ 30 foot intervals	6 foot continuous hedge or intermittent planting w/wall
Commercial and Industrial	10 feet	1 medium or large tree @ 40 foot intervals	4 foot continuous hedge or trees at 10 foot intervals
All Land Uses and Freeways/Principle Arterial/Roads with 45MPH or higher /RRs	20 feet outside of utilities	1 medium or large tree @ 30 foot intervals	6 foot hedge with 6 foot continuous soil berm or 6 foot hedge with sound deadening wall
All Land Uses and Utility stations, landfills, salvage yards, etc	15 feet	1 medium or large tree @ 30 foot intervals	6 foot continuous hedge or 6 foot wall/fence
All Land Uses and Agricultural district	10 feet	1 medium or large tree @ 30 foot intervals	6 foot continuous hedge or 6 foot wall/fence

#### 4.12 Screening Fence or Wall

If a fence or wall is used to provide screening, it shall be constructed such that visibility through any portion of the fence or wall is not greater than 80%. The fence or wall shall be of sufficient height to accomplish the purpose for which it is designed but shall not be greater than eight feet, nor less than four feet in height. The fence or wall may be constructed of wood, masonry, metal provided it is aesthetically pleasing.

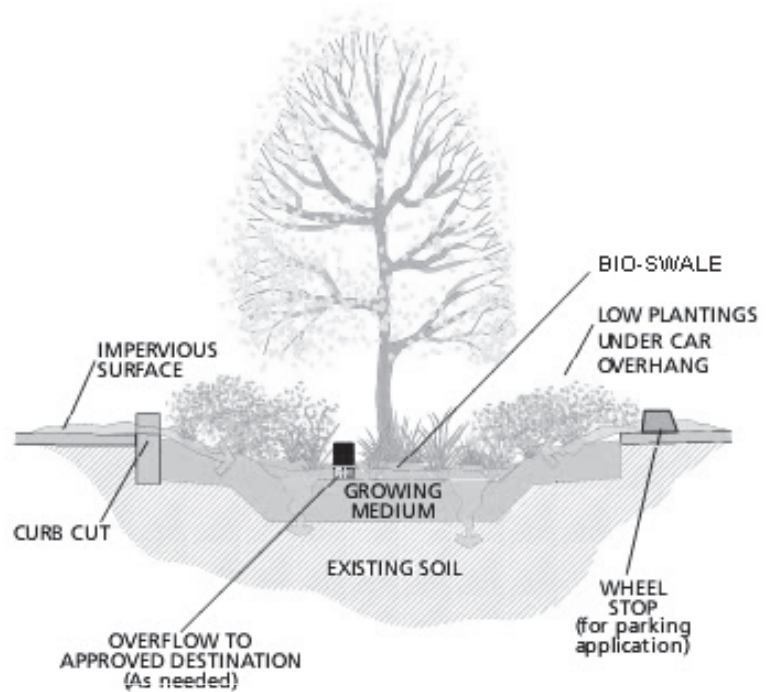
#### 4.13 Landscaping or Screen Planting

If trees or shrubs are to be used to provide screening, a species shall be used such that visibility through the screening is blocked by at least 80% throughout the year. The effective screening height of the trees or shrubs shall be at least four feet in height at the time of planting.



#### 4.14 Landscaping in Parking Lots

A landscape plan is required for all commercial, industrial, and multi-family residential development. For every one hundred (100) square feet of vehicular use area (or fraction thereof), five (5) square feet of landscaped area shall be provided, in addition to landscaping around the perimeter of adjacent buildings or parking areas. For every two hundred fifty (250) square feet of landscaping required one (1) tree shall be provided. The minimum size for a landscaped area shall be one hundred and eighty (180) square feet, with at least a dimension of eight (8) feet. The spacing of landscape areas shall be in such a manner as to provide coverage throughout the extent of the area in question. Interior planting islands shall be spaced at minimum of 1 per every 25 spaces in row. Planting shall include a combination of trees, shrubs, and ground cover as determined appropriate by the landscape review committee.



Typical Interior Landscape Island Detail

#### 4.15 Landscape Review

Landscape review shall be performed by Planning and Zoning staff and by an appointed Planning and Zoning Board Member that has landscape or horticultural training. The landscape official shall review the proposed landscape plan and submit its recommendations to the Planning Commission. Planning and Zoning shall inspect the landscape planting prior to issuance of a certificate of occupancy.

#### 4.16 Landscaping Required for Residential Lots

Residential lots are required to have a minimum of two (2) trees per lot in R1-B and R1-C zones and a minimum of three (3) trees per lot in R1-A zones with a minimum diameter of two and a half (2 ½) inches.

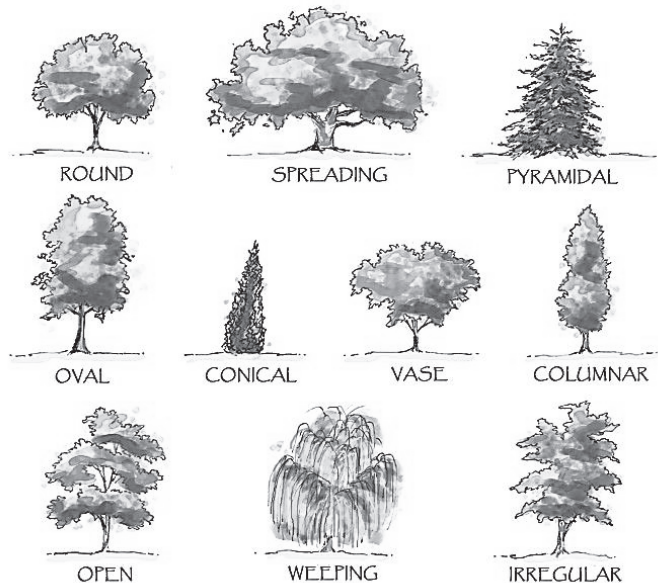
#### 4.17

### PLANT CHARACTERISTICS

1. **PLANT TYPE:** Each acceptable plant material is designated as either deciduous (D) or evergreen (E). This is essential since only specific plant types can meet ordinance requirements such as winter opacity or triangle visibility.
2. **HEIGHT:** Height of plant materials is given in ranges because dimensions vary depending on site conditions, climate, temperature, and how well plants adapt to these conditions. For example, under ideal conditions, a plant may reach a height of up to 20 feet, but because of conditions at a specific site, the same tree may be limited to a height of just 10 feet. Limited room for root growth also restricts maximum height. Such areas include raised planters, parking lots, streets or areas where there is considerable competition between plants. Plants that tolerate pruning may be kept to a smaller size.
3. **SPREAD:** Spread refers to the width of a tree's mature crown. Plants with wide, spreading crowns emphasize horizontal features. In contrast, plants with narrow crowns emphasize the vertical lines. Spread partially determines the suitability of a plant for a particular site. Plants with wide- spreading forms require a large area to develop. Upright forms are used effectively where space is limited. All plants shall be allowed ample room to develop. Spread shall be measured in feet, with the average mature spread of the plant indicated. Spread is normally listed as a range because of its variability.

4. **FORM:** Form is generally referred to as the outline of the crown, but includes much more. Form shall be determined by the line, direction, and arrangement of branches and twigs. Form has mass and volume since trees project in all direction: upward, downward, and sideways. The form of a plant shall be typical of the species at the time of installation, but may be altered to create a desired effect as long as the plant still meets ordinance requirements.

#### TREE FORMS



5. **URBAN TOLERANCE:** A plant tolerant of urban conditions must be able to withstand a variety of adverse conditions, including air pollution, poor and infertile soils, compacted soils, heat and drought, and other similar conditions. Plants that have relatively few problems shall be considered to be urban tolerant.

6. **DISEASE AND INSECT TOLERANCE:** Disease and insect problems affect all trees to some extent. Some problems are barely noticeable and exert little effect on a tree's health. Disorders can restrict the tree's growth, cause gradual decline in health, and eventually lead to the tree's death. The severity of a problem depends on the type of tree, condition of the tree, type of disorder, time of year, immediate weather conditions, along with many other factors. Disorders that are frequent, widespread, or highly destructive should greatly limit the use of a particularly susceptible tree species, i.e. tip blight on Austrian pines.
7. **DENSITY:** Density refers to quantity of foliage and branching and is measured by comparing positive space to negative space. Positive space includes all tree characteristics perceived when the tree is viewed as two-dimensional silhouette with dense branching and foliage. Negative space is space that appears between branching and foliage. It is the open area through which the sky and background can be seen. The greater the amount of negative space, the less the apparent density.

#### **4.18 PLANTING SPECIFICATIONS**

1. **PLANT SELECTION:** Choose species that provide desirable benefits and thrive in an urban environment. There are many conditions which dictate the plant's ability to survive and care should be taken in making sure the right tree is planted in the right place. Environmental conditions play a big part in the ability of a plant to grow. Some examples of the conditions to assess include whether the site has sun or shade, north facing or south facing aspect, shallow or deep soils, wet areas or is well drained, pH of soil, soil texture and structure, high salt, compacted soil, etc. It is not enough to simply plant a tree anywhere, care must be taken to ensure that conditions are right for that species if long term viability of the plant is to occur. If habitat is a consideration, species may be targeted to accentuate the desired habitat attempted. Consult appropriate professional assistance before attempting any species selection
2. **PLANT QUALITY:** All plant materials shall conform to the standards set forth in the current edition of American Standards for Nursery Stock. Plants shall be typical of their species and variety and have normal, well-developed branching structure and a vigorous fibrous root system. Branches shall diverge from the trunk at a wide angle except in varieties that normally grow upright (columnar forms). Plants shall be healthy, vigorous and free from insects and diseases. Trunk and stems shall be firm with no indication of fungal cankers, galls, insect borers, die back, frost cracks, sun scald, or other defects.

All plants shall be commercially grown and no plants from the wild shall be acceptable except for open space plantings with the approval of Planning and Zoning. Plants shall be grown under climatic conditions similar to those of Madison County, Kentucky (Hardiness Zones 5-6).

Trees shall not be acceptable if their central leader has been cut. Hedges shall not be pruned prior to installation. Any necessary pruning to form a hedge shall begin immediately after installation. Trees to be planted shall not have any recent pruning cuts over  $\frac{3}{4}$  inch in diameter. Multiple branches, one over the top of another, shall not have been removed within the same growing season.



3. **PLANT SIZE:** All plants shall equal or exceed the minimum acceptable size as required. Plant height shall be measured before pruning with branches in a normal position. No plant shall be pruned back to such an extent that it no longer meets the required size specifications. All measurements shall be taken at the time of planting.

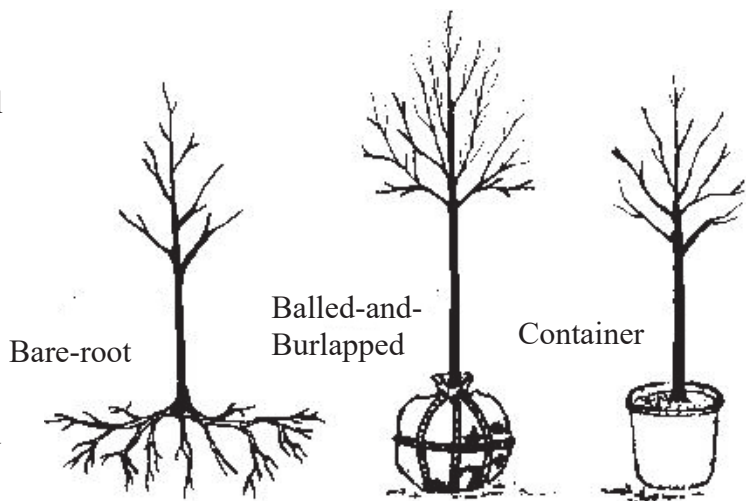
All deciduous trees shall have a minimum height of 10 feet and a minimum caliper of 1-3/4 inches as measured 6 inches above the root ball. They shall have a minimum clearance of 5 feet from the ground to the first branch. Evergreen conifers shall be a minimum of 5 feet in height with a minimum caliper of 1-1/2 inches as measured 6 inches above the root ball. All shrubs shall have a minimum height of 24 inches with other height requirements for specific ordinance uses. All vines shall be a minimum of 12 inches in length. Groundcovers have no minimum height requirement, but all plants shall be at least 1 year old and of sufficient size to have 75% complete coverage after two complete growing seasons.

4. **ROOT SYSTEM:** All deciduous and evergreen trees shall be balled and burlapped (B&B) or container grown. No bare root trees shall be acceptable with the exception of certain open space plantings and with the approval of Planning and Zoning. Each root ball shall be firm and compact and wrapped with natural burlap and bound securely with non-synthetic twine, or cord, or wire mesh. Wire baskets are acceptable but baskets must be removed from all rootballs 24 inches in diameter or less. Larger rootballs must have the upper two rows of wire removed after being placed in the planting hole.

Evergreen and deciduous shrubs shall be balled and burlapped or container grown for smaller shrubs, no bare rooted shrubs shall be acceptable.

Ground covers and vines shall be container grown and shall be well balanced, well established plants. Bare root groundcovers shall be acceptable, but only with specific approval of the landscape examiner.

The minimum sizes of balls, ball depths, and ball diameter shall be in accordance with recommended balling and burlapping specifications as set forth in the current edition of American Standards of Nursery Stock. All containers shall meet the standards set forth in the same publication, and shall be sufficiently rigid to hold the ball shape protecting the rooting mass.



5. **ROOTING SYSTEMS SHALL MEET NURSERY STANDARDS:** All balled and burlapped plants which cannot be planted immediately shall be upright and heeled in and protected with mulch or other accepted material. All container grown plants and bare-root

ground covers shall be protected from drying winds and sun. All plants shall be properly watered and maintained as necessary until time of installation. No plants shall be bound or tied with wire or rope unless necessary to facilitate handling. Any plants damaged prior to installation for any reason shall be rejected.

#### **4.19 Time of Planting**

The most satisfactory time for transplanting is from October 1 to December 15 for fall planting, and from March 1 to May 15 for spring planting. Deciduous trees generally need to be in their dormant season (either after leaf fall or just before leaf flush) for successful transplanting. Exact dates vary according to location and environmental conditions and change from one year to the next.

Fall planting should be done after leaf drop but early enough to allow the roots to regenerate so they can support the plant during winter. Planting must be done before the soil freezes, and while warm enough to permit new root growth. Fall planting has the advantage of favorable soil temperature, normally adequate moisture, and time for some root regeneration before the following spring. Planting in areas with excessive winds should be delayed until spring to avoid critical winter damage. Some trees do not adapt well to fall planting. These include: oak, poplar, blackgum, and magnolia. The appropriate planting season for a specific plant species depends on the growth stage of the plant, hardiness, the inherent nature of the species, and the microclimate of a site.



## TREE TRANSPLANTING

The following is a list of approved plantings for landscape requirements.

Spring	Fall
Bald-Cypress	Arborvitae
Beech	Basswood
Birch	Black Locust
Blackgum	Buckeye
Catalpa	Corktree
Cherry	Crabapple
Dogwood	Elm
Fir	Ginkgo
Golden Raintree	Hackberry
Hawthorn	Honey Locust
Hemlock	Japanese Pagoda Tree
Hickory	Juniper
Hophornbeam	Katsura
Hornbeam	Kentucky Coffeetree
Larch	Linden
Magnolia	Maple
Oak	Mulberry
Planetree	Osage Orange
Poplar	Pine
Sassafras	Redbud
Sourwood	Serviceberry
Sweetgum	Spruce
Walnut	
Yellowwood	
Zelkova	

## UNACCEPTABLE TREES

The following list is not recommended for local planting.

SCIENTIFIC NAME	COMMON NAME 'CULTIVAR'
<b>Acer saccharinum</b>	<b>Silver Maple</b>
<b>Aesculus hippocastanum</b>	<b>Horse Chestnut</b>
<b>Betula papyrifera</b>	<b>Paper Birch</b>
<b>Betula pendula</b>	<b>European White Birch</b>
<b>Castanea dentata</b>	<b>American Chestnut</b>
<b>Castanea mollissima</b>	<b>Chinese Chestnut</b>
<b>Ginkgo biloba (female)</b>	<b>Ginkgo</b>
<b>Fraxinus americana</b>	<b>White Ash</b>
<b>Fraxinus pennsylvanica</b>	<b>Green Ash</b>
<b>Fraxinus quadrangulata</b>	<b>Blue Ash</b>
<b>Gleditsia triacanthos</b>	<b>Common Honey Locust</b>
<b>Kalopanax pictus</b>	<b>Castor Aralia</b>
<b>Morus alba</b>	<b>Common Mulberry</b>
<b>Morus rubra</b>	<b>Red Mulberry</b>
<b>Pinus nigra</b>	<b>Austrian Pine</b>
<b>Pinus sylvestris</b>	<b>Scotch Pine</b>
<b>Populus (all)</b>	<b>Poplars (all)</b> <b>'White Poplar'</b> <b>'Easton Lombards'</b>
<b>Pseudotsuga menziesii</b>	<b>Douglas Fir</b>
<b>Quercus palustris</b>	<b>Pin Oak</b>
<b>Ulmus americana</b>	<b>American Elm</b> <b>Smoothleaf Elm</b> <b>Red Elm</b>
<b>Ulmus carpiniflora</b>	<b>Siberian Elm</b>
<b>Albizzia julibrissin</b>	<b>Mimosa Tree</b>
<b>Catalpa bignonioides</b>	<b>Southern Catalpa</b>
<b>Malus pumila</b>	<b>Common Apple</b>
<b>Paulownia tomentosa</b>	<b>Royal Paulownia</b>
<b>Pyrus calleryana (cultivars)</b>	<b>Callery Pear (cultivar)</b>
<b>Pyrus calleryana</b>	<b>Callery Pear</b> <b>'Bradford'</b>
<b>Pyrus communis</b>	<b>Common Pear</b>
<b>Salix babylonica</b>	<b>Weeping Willow</b>
<b>Sorbus (species)</b>	<b>Mountain Ash (species)</b>