

ARTICLE 7 LANDSCAPING, BUFFERING, AND LIGHTING STANDARDS

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7.1. GENERAL STANDARDS FOR LANDSCAPING AND BUFFERING.

7.1.1. PURPOSE.

The purpose of these landscaping, screening, and buffer requirements is to provide standards that will protect the health, safety and general welfare of the public, enhance property values, improve the appearance of the community, and preserve natural resources, trees, and native plants. Planting yard regulations are established herein to minimize potential conflicts between abutting developments, enhance the appearance of buildings and parking lots, and create a unified and attractive streetscape. These requirements will be applied to all new development, redevelopment or building expansion projects including streetscaping of rights-of-ways. These minimum requirements will:

- Reduce soil erosion and increase infiltration in permeable land areas essential to storm water management and aquifer recharge;
- Mitigate air, dust, noise, heat and chemical pollution;
- Reduce the “heat island” effect of impervious surfaces, such as parking lots, by cooling and shading the surface area and breaking up large expanses of pavement;
- Establish a landscape theme including street trees and streetscape designs to be used throughout the Town to promote the overall character and identity of the community;
- Address the design of entryways into the Town to express the community’s values;
- Establish a streetscape program;
- Preserve existing native vegetation as an integral part of the wildlife habitats, and incorporate native plants and ecosystems into landscape design;
- Promote innovative and cost-conscious approaches to the design, installation, and maintenance of landscaping while encouraging water and energy conservation;
- Promote planting techniques that ensures long term health of plant materials;
- Screen unsightly equipment or materials from the view of persons on public streets or adjoining properties and buffering from uncomplementary land uses;
- Maintain and increase property values by requiring site appropriate landscaping to be incorporated into development that is designed and installed by a qualified landscape professional.
- Promote walkable pedestrian-scale streetscapes, traditional neighborhoods, and compact centers by exempting uses which relate to each other functionally and visually from certain requirements of this Section.

7.1.2.

GENERAL STANDARDS.

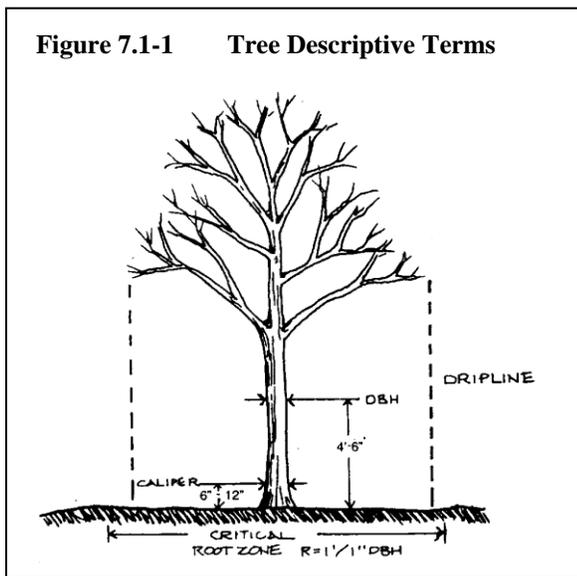
7.1.2.1. Retention of Existing Vegetation. Existing trees, shrubs and ground cover shall be retained and incorporated into the landscape plan to the extent possible.

7.1.2.2. Qualified Designer and Installer Required. Landscape materials shall be installed in conformance with the approved landscape plan prepared by in accordance with § 7.2.

7.1.3. INTERPRETATION OF LANDSCAPING TERMS.

Where necessary to interpret the precise meaning of technical landscaping terms used in this Section, reference shall be made to American Nursery and Landscape Association (“ANLA”)(formerly the American Association of Nurserymen), *The American Standard For Nursery Stock*, (1996), which document is hereby incorporated by reference.

7.1.3.1. Definitions. In addition to the definitions set forth in Appendix A to this Ordinance, the following definitions shall apply to the regulation and control of landscaping within this Section.



ARBORIST: A qualified professional who has studied the science or art of cultivating trees especially for ornamental use.

CALIPER: A standard trunk diameter measurement for trees taken six inches above ground for up to and including four-inch caliper size and twelve inches above ground for larger sizes.

CRITICAL ROOT ZONE (CRZ): A circular region measured outward from a tree trunk representing the essential area of the roots that must be maintained in order for the tree’s survival. The critical root zone is one foot of radial distance for every inch of tree DBH with a minimum of eight feet.

CROWN: The upper mass or head of a tree, shrub, or vine, including branches with foliage. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York: Van Nostrand Reinhold & Co., 1988), at 790).

DBH: Diameter-at-breast-height is the tree trunk diameter measured in inches at a height of 4.5 feet above ground level.

DECIDUOUS: Plants that lose their leaves annually.

DECIDUOUS TREE: A tree which sheds or loses foliage at the end of the growing season. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York: Van Nostrand Reinhold & Co., 1988), at 790).

DRIP LINE: A vertical line from a tree canopy or shrub branch extending from the outermost edge to the ground.

EVERGREEN: Plants that retain their foliage throughout the year.

EVERGREEN SCREEN: A dense vegetative screen that grows to a minimum of 8 feet in height at maturity and retains foliage year round used for purposes of visual mitigation between zoning districts and/or uses.

EVERGREEN TREE: A tree which holds green leaves, either broadleaf or needle-shaped, throughout the year. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York; Van Nostrand Reinhold & Co., 1988) at 791).

GABION: A wire basket containing primarily stones deposited to provide protection against erosion.

GROUND COVER: A prostrate plant growing less than 2 feet in height at maturity that is used for: a) ornamental purposes, b) alternatives to grasses, and c) erosion control on slopes.

HORTICULTURIST: A qualified professional who has studied the science or art of cultivating plants especially for ornamental use.

LANDSCAPE ARCHITECT: A landscape architect licensed pursuant to the North Carolina General Statutes.

LANDSCAPE CONTRACTOR: A landscape contractor, or nurseryman, certified pursuant to the NC Landscape Contractors Registration Board.

LANDSCAPING: The process or product of site development including grading, installation of plant materials and seeding of turf or ground cover.

NON-LIVING MATERIALS: Landscaping materials used to complement plants such as river rock, stone, bark, and similar materials.

NUISANCE: Any tree or shrub or part thereof that grows upon private or public property which 1) interferes with the use of any public area; 2) is infected with an infectious plant disease or insects; 3) is invasive and damaging to other plants; or 4) which endangers the life, health, or safety of persons or property.

PLANTING YARDS: The required installation of landscaping and/or screening material between zoning districts and certain individual uses. The four Planting Yards are as follows:

- **BUFFER YARD:** A planting yard comprised of a strip of land containing landscaping and/or screening materials, having a varying minimum width, located along side and rear property lines between zoning districts and/or between certain individual uses, as specified in this Article.

- **BUILDING YARD:** A planting yard comprised of a strip of land containing landscaping materials located along the front and/or sides of a building and having a varying minimum width, as specified in this Article.
- **PARKING LOT YARD:** A planting yard comprised of a strip, or strips of land containing landscaping materials located around and within a parking lot and having a varying width, as specified in this Article.
- **STREET YARD:** A planting yard comprised of a strip of land containing landscaping materials located along and parallel to a public street, or streets and having a varying minimum width, as specified in this Article.

SCREEN: Vegetation, fence, wall, berm or a combination of any or all of these which partially or completely blocks the view of and provides spatial separation of a portion or all of a site from an adjacent property or right-of-way.

SHRUB, LARGE: An upright plant growing to a mature height of more than 8 feet for use as natural ornamentation or screening.

SHRUB, MEDIUM: An upright plant growing to a mature height of 4 to 8 feet.

SHRUB, SMALL: An upright plant growing to a mature height of less than 4 feet.

SIGNIFICANT STANDS OF TREES OR SHRUBS: A massing or group of trees or shrubs which are (1) in good condition and are established on the site, or (2) which may be among the earliest grown species of the area, or (3) which have been identified by the community with a particular area.

STREET TREE: A tree planted along a public street or roadway behind or within the right-of-way.

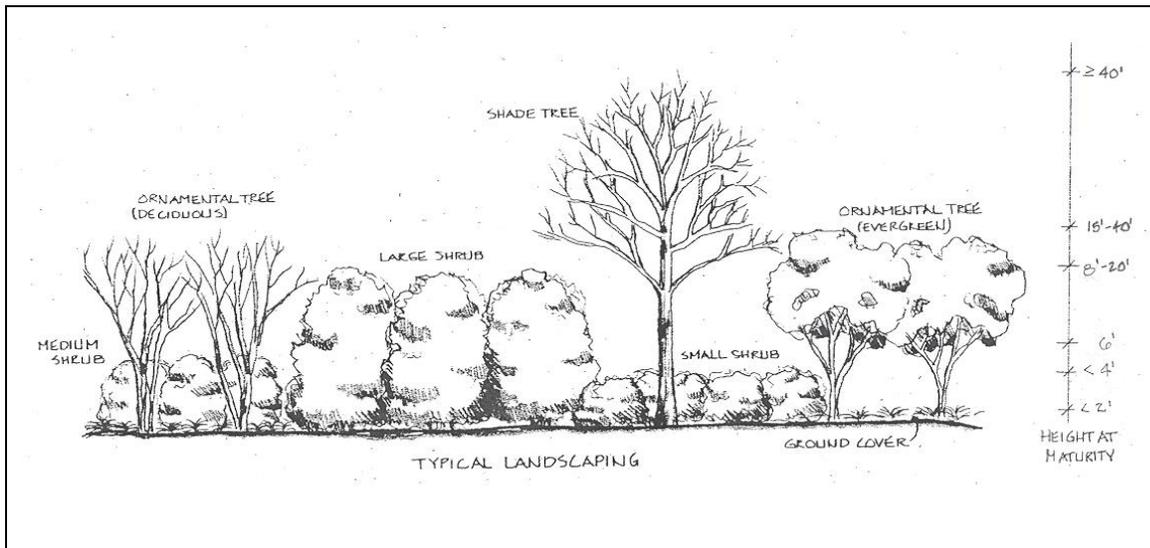
TREE, ORNAMENTAL: A small to medium tree, growing to a mature height of 15 to 40 feet and characterized by specific aesthetic qualities, such as colorful flowering, interesting bark or brilliant fall foliage.

TREE, SHADE: A large tree growing to a height of 40 feet or more at maturity, usually deciduous, and characterized by its ability to provide canopy cover shade.

VINES: A woody plant that spreads as it grows over the ground, walls or trellises.

XERISCAPE: Landscaping with native plants that utilizes the existing environmental conditions to the best advantage, conserving water and protecting the native environment.

Figure 7.1.-2 Landscape Plants Typical Sizes



7.2. LANDSCAPE PLAN.

7.2.1. PLAN REQUIRED.

Landscape plans shall accompany any application for site plan approval. Such plans shall be submitted in conformance with the requirements of Table B-2, Appendix B to this Ordinance.

7.2.2. PERMITS REQUIRED.

All required landscaping materials shall be in place prior to the time of issuance of a final Certificate of Compliance (as required in Article 3).

7.2.2.1. Performance Guarantee. Subject to the conditions as specified in § 3.2.5.2.7 of this Ordinance, a temporary Certificate of Compliance may be issued for occupancy of a structure or initiation of a use prior to the completion of installation of all required planting yards.

7.2.3. VIOLATIONS.

Failure to maintain required landscaping or to adhere to an approved landscaping plan shall constitute a zoning violation, subject to any and all remedies set forth in § 1.6 of this Ordinance.

7.3. PLANTING YARDS.

7.3.1. PURPOSE.

Planting yards are intended to aesthetically enhance and separate different land uses and zoning districts from each other, as well as to beautify individual sites, the roadside or streetscape, and are intended to eliminate or minimize potential nuisances such as dirt, litter, glare of lights, and unsightly buildings or parking areas. Planting yards shall include the following:

- Buffer Yards (see § 7.4)
- Building Yards (see § 7.5)
- Parking Lot Yards (see § 7.6)
- Street Yards (see § 7.7)

7.3.2. APPLICABILITY. Planting yards shall be required for all uses except:

- single-family detached homes;
- two-family homes (duplex);
- agricultural uses as listed in Table 4.6-1 of this Ordinance;
- any use, building or structure for which only a change of use is requested, and which requires no structural modifications which would increase its volume, scale or intensity;
- developments in the CC District (except that the Parking Lot yard requirements of § 7.6 shall apply);
- developments in a TND or PUD District that provide a Master Plan showing proposed landscaping in the development (Submitted at the time of rezoning) which meets the intent of this Section 7.3 “Planting Yards”;
- sites containing unoccupied public utility equipment that are less than 1,000 square feet in area, except that all electrical substations shall install a minimum Type B buffer per § 7.4.

7.3.2.1. Expansion of Uses. The expansion of an existing use, structure or parking lot shall be required to comply with this Section only for the expansion area. Applicants are encouraged, but not required, to landscape existing areas in conformance with this Section.

7.3.2.2. Different uses shall require different planting yards. Minimum dimensions shall apply and

be measured horizontally. Plant quantities, in most cases, shall be based upon a point system.

7.3.2.3. For the purpose of this section, building setbacks (as listed in § 4.7-1) shall supersede planting yard requirements.

7.3.2.4. Landscaping as required within a planting yard shall be counted for only that planting yard and shall not be used in calculating the minimum quantity for any other planting yard.

7.3.2.5. The point system, as partially illustrated in Table 7.3-1, is established to ensure that a minimum level of landscaping is achieved during development. It sets forth the points attributable to the five different plant types that are required in the three planting yards subject to the point system. Table 7.3-1 is to be used in conjunction with the other tables in this Article to determine total landscaping required. This table is applicable to planting yards, as well as in determining credits for tree preservation.

7.3.2.6. When calculating points, or quantities of plants, fractions shall be rounded upward to the higher whole number for decimals of .5 and higher. Decimals below .5 shall be rounded downward to the lower whole number.

Table 7.3-1: Points for Individual Plant Types

Type of Plant	Points
Shade Tree	12
Ornamental Tree	6
Large Shrub	3
Medium Shrub	2
Small Shrub	1

Total landscaping required for buffer yards, building yards and street yards is determined by multiplying the length of the respective planting yard by the minimum required points per linear foot shown in the landscaping requirements tables for each of the three planting yards subject to the point system. The resultant total point figure determines the total amount of landscaping required for the respective planting yard. In some cases, the tables which set forth the planting yard landscaping requirements

include a minimum required number of individual plant types, such as shade trees, or large shrubs. In those instances, the minimum number of individual plants types required shall be considered included as part of the total landscaping required. (See Figure 7.7-3)

7.4. BUFFER YARDS.

7.4.1. PURPOSE. The purpose of buffer yards is to:

- provide a transitional buffer between uses that may differ in development intensity and density; or
- provide a minimum buffer between uses of similar intensity and density.

These landscaped planting yards are intended to ensure that a natural area of appropriate size and density of plantings is planted or preserved between zoning districts and/or uses. Buffer yards shall be of different types, based upon the relationship between the two adjacent land uses between which the buffer yard is to be located. The width of the buffer yard and the density of plantings shall increase as the difference between adjacent land uses increases. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective property line, except where buffer yards are permitted to straddle property lines, as set forth in § 7.4.4.7. Where buffer yards turn at property corners, the length measurements determining plant quantities shall not be required to overlap.

7.4.2. YARD TYPES.

There shall be five different classes of land uses for purposes of determining the buffer yard type. Land use classes shall be based upon the specific land use to be developed, which is permitted either by right or conditionally, in the following groupings of zoning districts or *land use groupings* as listed in the Use Matrix of Table 4.6-1 of this Ordinance:

Class 1

AG Agricultural
 RE Rural Estate
 RL Residential Low Density
 RM-1 Residential Medium Density
 RM-2 Residential Medium Density

Residential uses – single-family detached homes and duplex only

Class 2

RV Residential Village
 RC Residential Compact
Residential uses – other than Class 1

Class 3

B-1 Neighborhood Commercial/Office
 O-I Office-Institutional
 C-1 Light Commercial and Office
Institutional and Civic uses
Professional Office/Business Services uses

Class 4

C-2 General Commercial
 CD Campus Development
 PID Public Interest District
Retail Trade uses
Wholesale Trade uses

Class 5

I-1 Light Industrial
 I-2 Heavy Industrial
Manufacturing and Industrial uses
Transportation, Warehousing and Utilities uses

7.4.2.1. Table 7.4-1 identifies the buffer yard type required for a given development, based on the relationship between the adjacent land uses. If an adjoining parcel is undeveloped, the minimum buffer shall be determined based on the zoning of the adjoining property. Table 7.4-2 contains the required plantings and dimensions of the respective buffer yard types. The width of the buffer yard and the density of plantings increase as the difference in the nature and intensity of development in the respective adjacent land uses increases.

Table 7.4-1: Buffer Yard Chart

Buffer Yard Types For Adjacent Land Use Classes					
Land Use Class	1 EXISTING	2 EXISTING	3 EXISTING	4 EXISTING	5 EXISTING
1 PROPOSED	N/A	N/A	N/A (B ²)	N/A (C ²)	N/A (D ²)
2 PROPOSED	A	A	B	C	D
3 PROPOSED	B ¹	B ¹	A	A	C
4 PROPOSED	C ¹	C ¹	B ¹	A	B
5 PROPOSED	D ¹	D ¹	C ¹	B ¹	N/A

¹ Complete visual separation is required through the use of densely planted landscaping that would provide complete visual separation within three (3) years of planting. See Section 7.4.4.8 for definition of “Visual Separation”.

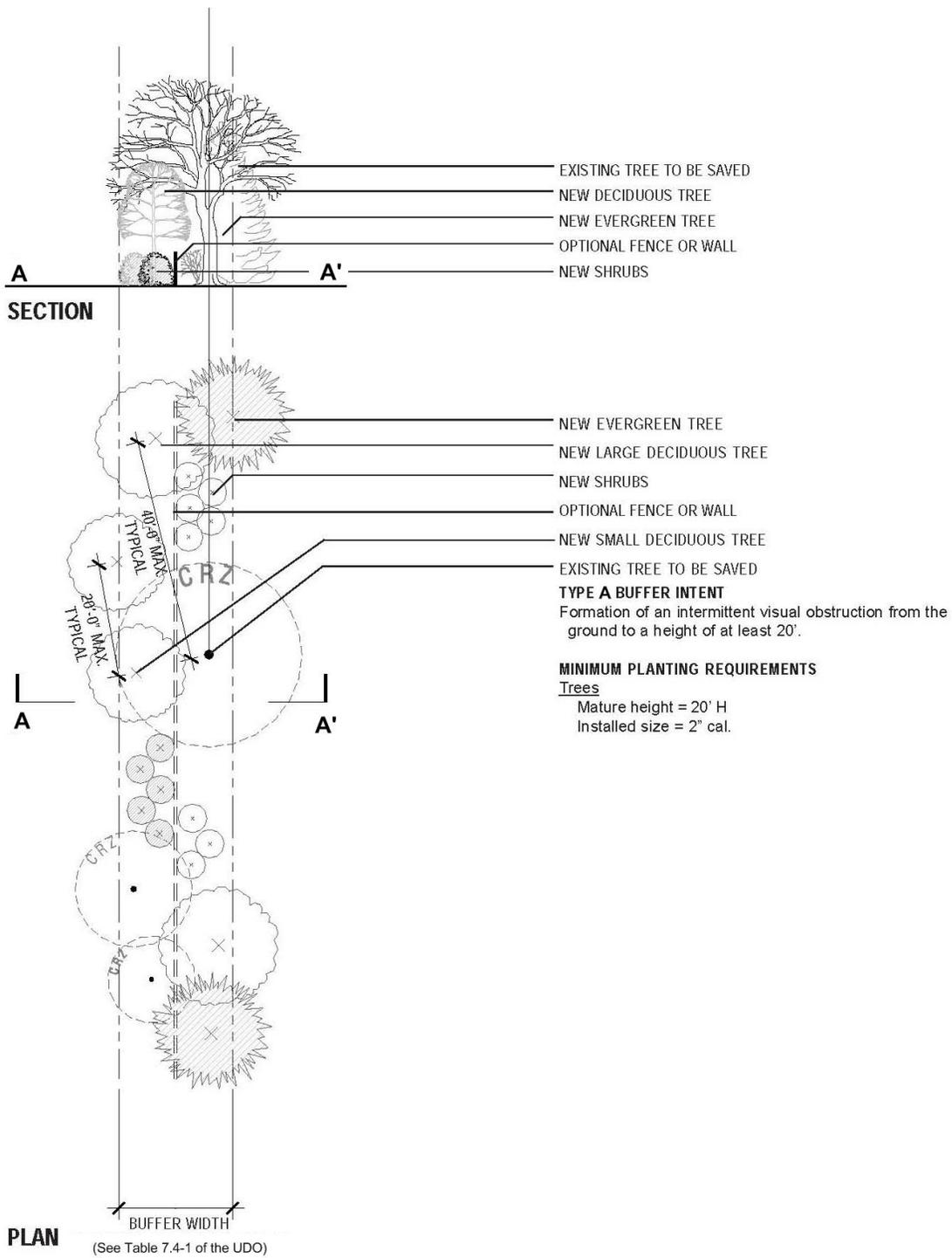
- 2 New single-family subdivisions shall provide the required buffer yard, if they abut existing non-residential developments which were constructed before the adoption of this Ordinance and lack the required buffer yard. If an adjacent non-residential development includes the required buffer yard, none shall be required of the residential subdivision.
- 3 All approved development projects consisting of a primary structure/user and outparcels shall maintain that the primary user shall provide the buffer yards for all external boundaries. All outparcels shall be required to maintain a buffer yard between it and the primary user. The primary user is not responsible for an additional buffer yard between it and outparcels.

Table 7.4-2: Buffer Yard Landscaping Requirements

Buffer Yard Type	Minimum Width	Min. Required Shade Trees	Min. Required Ornamental Trees	Percent of Trees Required to be Evergreen*	Min. Required Large Evergreen Shrubs	Min. Required Points per Linear Foot
A	8'	1/100'	Optional	25%	1/50'	0.4
B	15'	1/75'	1/100'	25%	1/30'	0.9
C	20'	1/50'	1/50'	50%	1/20'	1.2
D	50' or 25' w/ 6' high berm	1/50'	1/50'	50%	1/20'	1.4 or 0.9 w/ 6' high berm

*Evergreen trees shall be interspersed with other required plantings on a regular interval

Figure 7.4-1: Type A Buffer Planting Standards



- Lot or parcels, under common ownership, on which the uses or buildings demonstrate compatible design elements and are linked to adjacent lots or buildings by a common system of sidewalks or other pedestrian walkways across property lines;
- Lots or parcels separated by a public street right-of-way greater than 30 feet in width;
- Lots or parcels separated by a railroad right-of-way.

- the adjoining property owners have provided a written agreement restricting the use of the dedicated buffer yard to uses provided for in this Section
- maintenance of the existing buffer yard consistent with the requirements of this Section, the Administrator may approve a reduction in the required buffer yard for the property to be developed
- the “net” buffer yard satisfies the minimum buffer yard requirements of this Section. The net buffer shall include the cumulative total for both required buffers.

7.4.4. STANDARDS FOR BUFFER YARD DEVELOPMENT.

7.4.4.1. Prohibited Uses. The construction of any building or the placement of any mechanical equipment within the landscape buffer yard is not permitted except for equipment necessary for the provision of utilities. Signs may be placed within the buffer yard consistent with the Sign Regulations of this Ordinance. Active recreational uses, such as play fields, swimming pools, racquetball and tennis courts or other active, structured recreational uses, or circulation drives and parking lots, shall not be permitted in the buffer yard.

7.4.4.4. Existing Vegetation. Existing healthy vegetation may be counted toward required landscaping. In order to do so, the landscape plan shall indicate the type, number and size of existing plants which are sufficient to comply with the respective buffer yard. It shall not be necessary to indicate the total inventory of existing plants. Only plants required to meet the provisions of this Ordinance shall be required to be listed.

7.4.4.2. Permitted Uses. The following other uses may be permitted in a buffer yard provided that none of the required plant material is eliminated, the intended screening is accomplished, the total width of the buffer yard is maintained, and all other requirements of this Section are met:

7.4.4.5. Application Toward Setback Requirement. Buffer yard areas shall be counted towards required building setbacks.

- passive recreation;
- sculpture, outdoor furniture, picnic areas; pedestrian, bike or equestrian trails; golf courses,
- storm water retention basins;
- parks and open space .

7.4.4.6. Designation of Buffer Yard as Landscaped Area. Buffer yards shall be designated as landscaped areas on the application for development approval and as landscape easements when shown on a subdivision plat. The buffer yard shall be recorded with the title of the property as a landscape buffer yard easement.

7.4.4.3. Reduction in Required Buffer Yard Permitted. Where a dedicated buffer yard exists on an abutting property, a reduction or elimination in a buffer yard for a property to be developed may be allowed subject to the following:

7.4.4.7. Buffer Yard On Property Line. When platting abutting lots, the applicant may dedicate a buffer yard that straddles the property line, provided the cumulative buffer width is maintained for both yards.

7.4.4.8. Visual Separation. Where complete visual separation is required, it shall be accomplished through the use of landscaping which provides year-round opaque screening. In addition, to provide complete visual separation within three (3) years of planting, when and if needed, landscaping may be combined with earth berms or masonry walls to accomplish the required visual separation.

7.4.4.9. Maintenance of Buffer. It is the intent of the Town that all buffers will be maintained in their natural state and will not be excessively pruned or trimmed except as necessary to maintain compliance with all other town regulations, such as those prohibiting obstruction of roadway sight distances or obstruction to the free use of public sidewalks or streets. Infectious, invasive, exotic, dead, and damaged trees may be removed if no damage is done to other vegetation.

7.5. BUILDING YARDS.

7.5.1. PURPOSE AND APPLICABILITY. The purpose of building yards is to aesthetically and visually enhance the appearance of buildings. Building yards shall be provided along the portion(s) of the building facing any adjacent off-street parking area, excluding loading/unloading areas. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective building front wall. Where building yards turn at building corners, the length measurements determining plant quantities shall not be required to overlap. Building yards shall be of different types, based upon the size of the structure around which the building yard is to be located. The width of the building yard and the density of plantings shall increase as the size of the structure around which the building yard is to be located increases. Entrance walkways to buildings may cross building yards. The width of the entrance walkway shall not be calculated as part of the length of the building yard for purposes of determining the total required landscaping, provided, however, that the width deducted for the entrance walkway shall not exceed the width of the entrance to the building.

7.5.2. YARD TYPES.

There shall be four different categories of building size for purposes of determining the building yard type:

Category 1

Less than 2,500 Square Feet GFA (Gross Floor Area)

Category 2

2,500 Square Feet to 9,999 Square Feet GFA

Category 3

10,000 Square Feet to 99,999 Square Feet GFA

Category 4

100,000 Square Feet GFA and over

7.5.2.1. Table 7.5-1 identifies the building yard required for a given development, based on the size of the structure around which the building yard is to be located, and specifies the required plantings and dimensions of the respective building yard.

Table 7.5-1: Building Yard Landscaping Requirements

Building Yard Category	Minimum Width	Min. Required Shade Trees	Min. Required Ornamental Trees	Min. Required Small or Medium Evergreen Shrubs	Min. Required Points per Linear Foot
1	4 feet	N/A	1 per 30 lin. feet	8 per 30 lin. feet	0.4
2	6 feet	N/A	1 per 30 lin. feet	8 per 30 lin. feet	0.5
3	8 feet	1 per 50 lin. feet	1 per 50 lin. feet	12 per 30 lin. feet	0.8
4	12 feet	1 per 50 lin. feet	1 per 50 lin. feet	16 per 30 lin. feet	1.0

7.6. PARKING LOT YARDS

7.6.1. PURPOSE AND APPLICABILITY.

The purpose of parking lot yards is to aesthetically and visually enhance the appearance of parking lots. Parking lot yards shall be located around and within parking lots and shall be of different sizes, based upon the size of the respective parking lot. The size of the parking lot yard shall increase as the size of the respective parking lot increases. Minimum dimensions shall apply, and be measured, horizontally. The requirements of this section shall apply to all new and expanded (10 or more added spaces) parking lots and parking lots of land uses that have substantially changed. If an existing parking lot (paved or unpaved) is expanded or improved to add 10 or more spaces, it shall comply with the parking lot landscaping requirements within the expanded or improved portion. If a parking lot is expanded or developed, then street yard, buffer yard and parking lot yard landscaping requirements shall be applicable.

7.6.2. DESIGN CRITERIA.

7.6.2.1. Minimum Net Area of Landscaping.

Parking lots shall provide a minimum 10% net area of landscaping on the interior or exterior of parking lots.

7.6.2.2. Minimum Quantity of Landscape Plantings. Landscaped planting areas and islands for parking lot yards shall have one (1) shade tree, or two (2) ornamental trees, and eight (8) small shrubs per each ten (10) parking spaces. Furthermore, the perimeter of all vehicular use areas shall be screened per the requirements of Figure 7.6-2 of the UDO.

7.6.2.3. Minimum Planting Area Dimensional Requirements.

Planting areas and islands shall be not less than nine (9) feet in width and shall include a minimum of 150 square feet of open planting area for ornamental trees and 300 square feet for canopy trees. Shrubs, or ground covers may be planted within the required open planting area for trees without increasing the area. Planting areas and islands shall have a minimum prepared depth of 18 inches. All landscaped areas shall be protected from vehicular encroachment by concrete curb and gutter. Landscaped areas shall be covered with mulch, ground cover or grass between shrub and tree plantings.

7.6.2.4. Location of Trees.

Required trees shall be located within or adjacent to parking lots as tree islands, medians, at the end of parking bays, traffic delineators, or between rows or parking spaces in a manner such that no parking space is located more than 60 feet from a parking lot tree.

7.6.3. EXCEPTIONS.

In instances where the strict interpretation of this Section will seriously limit the function of the parking area, increase stormwater runoff, or create ponding or pooling of water so as to impair the habitability of buildings or interfere with traffic circulation, the Administrator may permit a portion of the required landscaping to be located near the perimeter of the lot.

Figure 7.6-1: Examples of Parking Lot Layouts

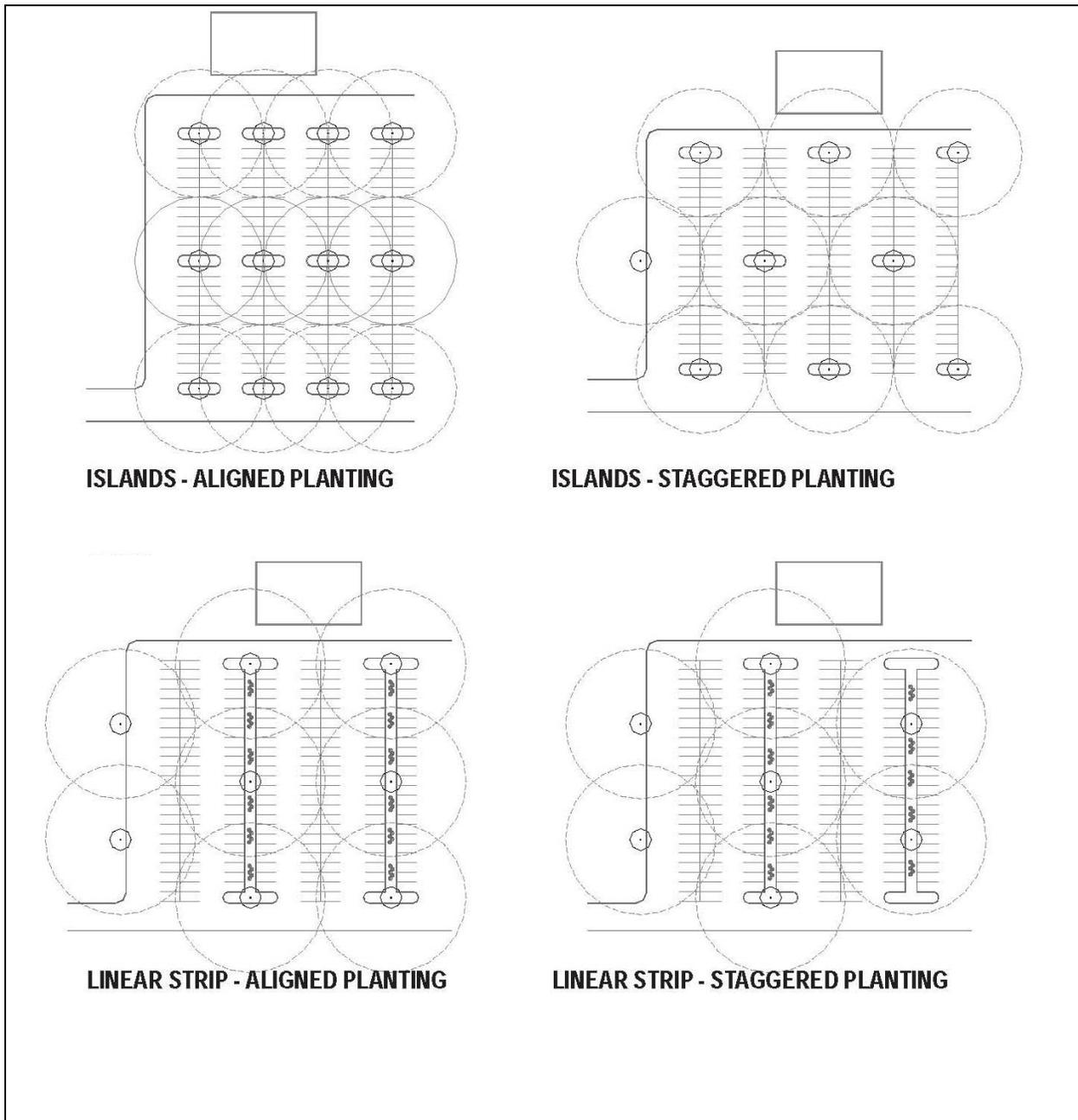


Figure 7.6-2: Vehicular Use Area Planting Standards

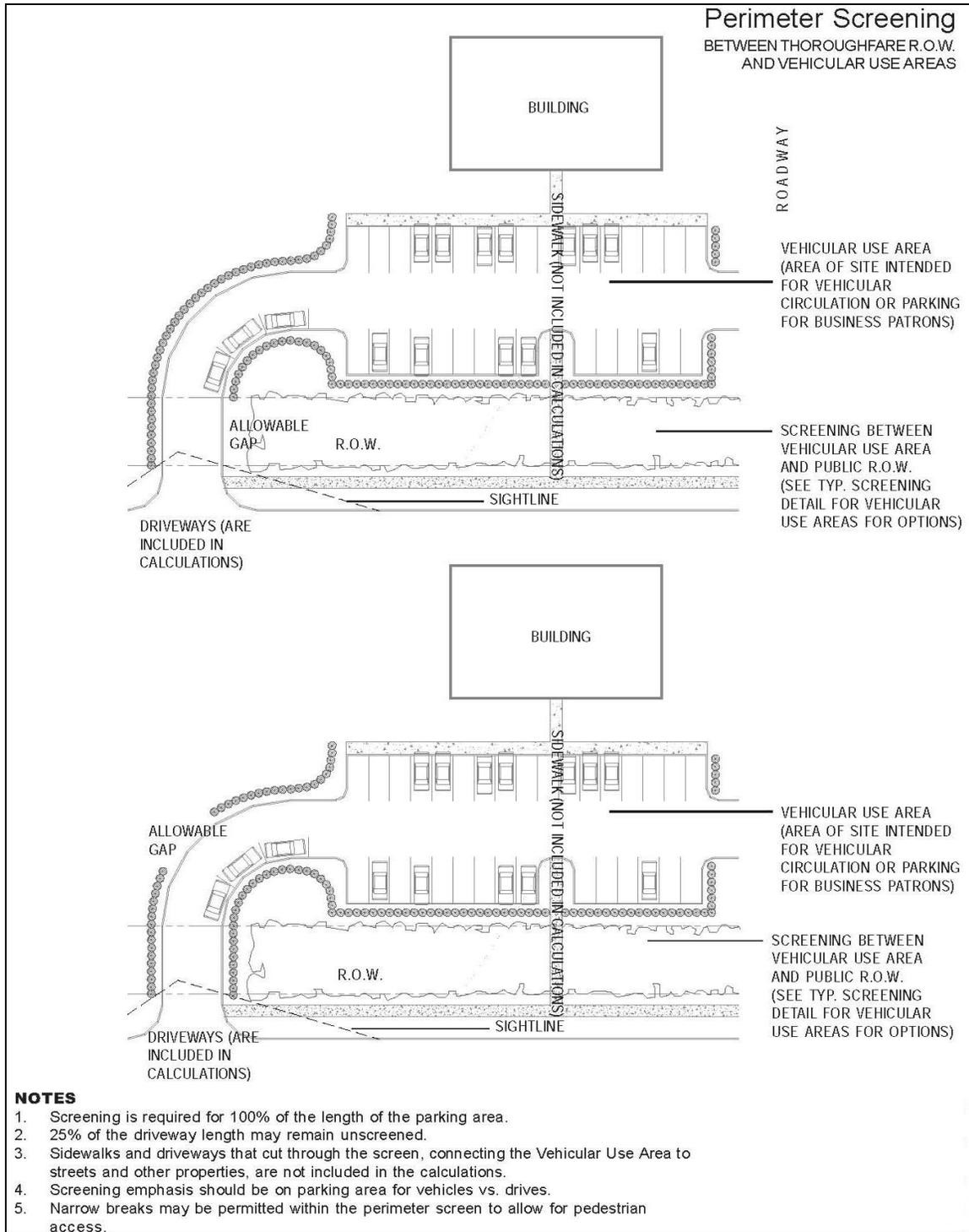


Figure 7.6-3: Parking Area Screening Techniques

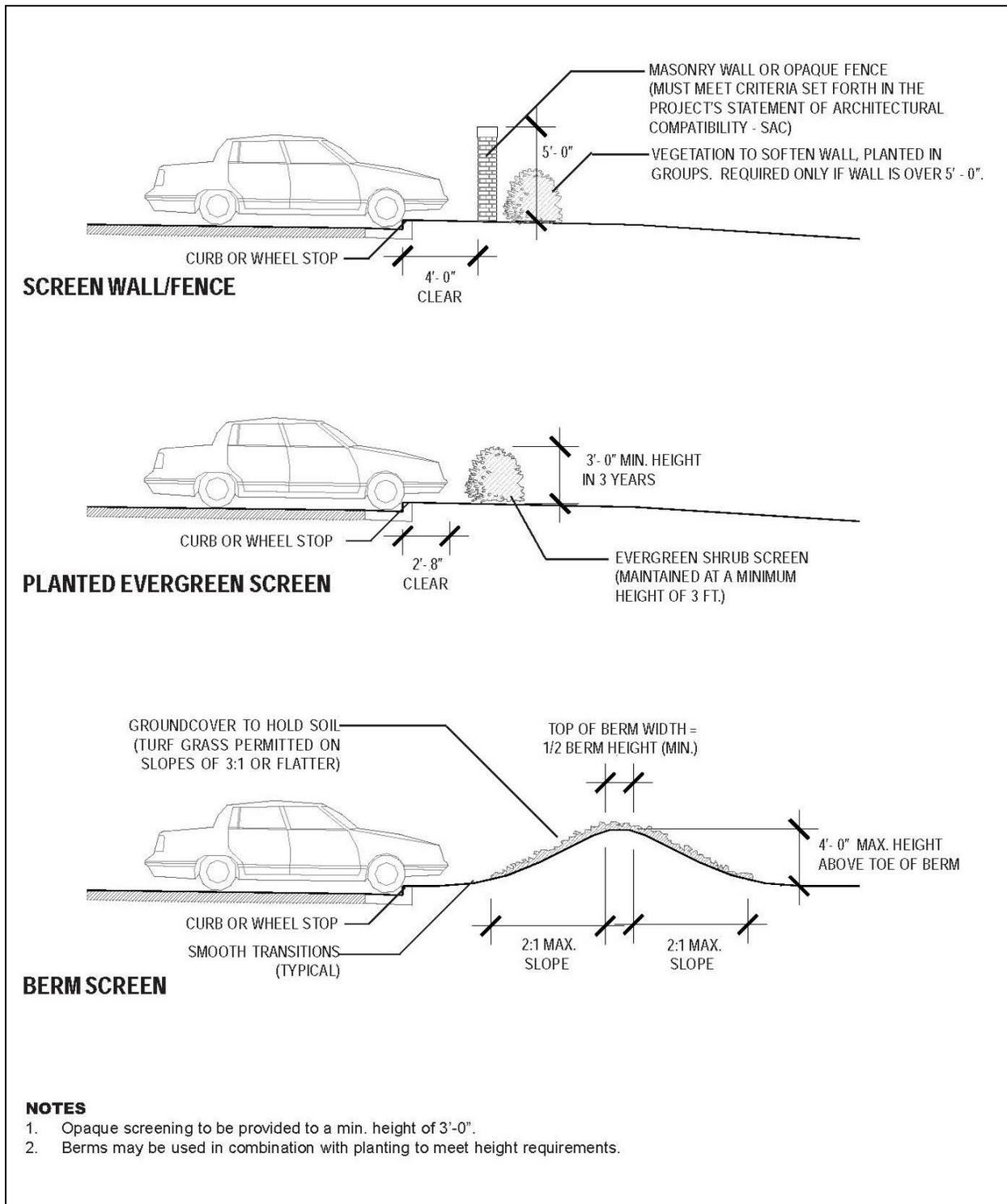
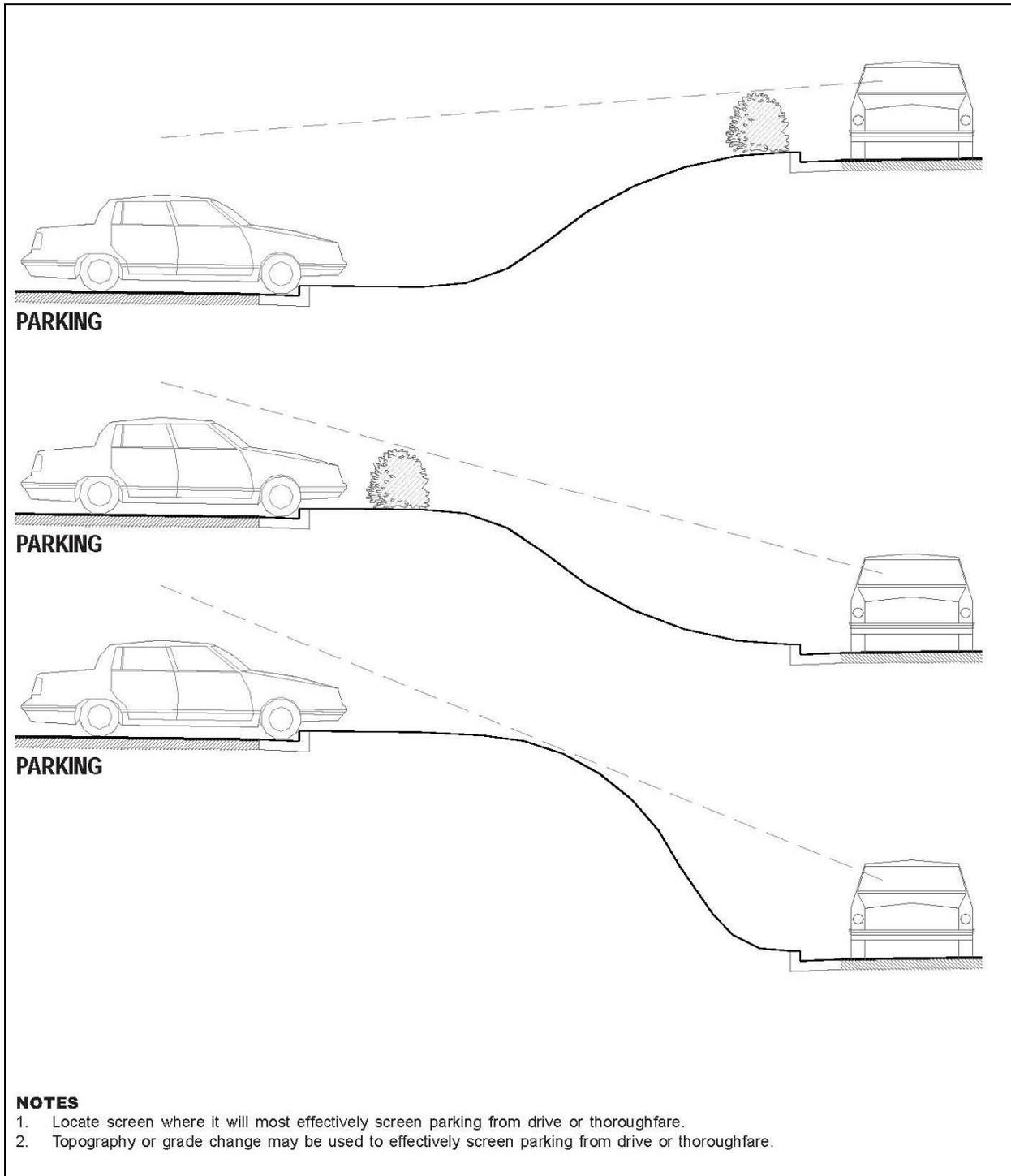


Figure 7.6-4: Perimeter Buffering Techniques



7.7. STREET YARDS.

7.7.1. PURPOSE AND APPLICABILITY. The purpose of street yards is to provide continuity of vegetation along the street right-of-way, creating a pleasing view from the road, and establishing a transition from vehicular thoroughfares, pedestrian areas or the built environment. New single-family home subdivisions shall require street yards, provided, however, that the street yard may be located in the right-of-way in the required planting strip between the curb and the sidewalk in accordance with the design specifications in Appendix B of this Ordinance. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective right-of-way/property line. Where street yards turn at street corners, the length measurements determining plant quantities shall not be required to overlap. Street yards shall be of different types, based upon the zoning of the property. The width of the street yard and the density of plantings shall increase as the intensity of the development increases.

7.7.2. YARD TYPE.

There shall be four different classes of land use for purposes of determining the street yard type. Land use classes shall be based upon the specific land use to be developed, which is permitted either by right or conditionally, in the following groupings of zoning districts or *land use groupings* as listed in the Use Matrix of Table 4.6-1 of this Ordinance:

Class 1

AG Agricultural
RE Rural Estate
RL Residential Low Density
RM-1 Residential Medium Density
RM-2 Residential Medium Density
Residential uses

Class 2

RV Residential Village
RC Residential Compact
Multi-Family Residential uses

Class 3

B-1 Neighborhood Commercial/Office
O-I Office-Institutional
C-1 Light Commercial and Office
Institutional and Civic uses
Professional Office/Business Services uses

Class 4

C-2 General Commercial
CD Campus Development
PID Public Interest District
Retail Trade uses
Wholesale Trade uses

Class 5

I-1 Light Industrial
I-2 Heavy Industrial
Manufacturing and Industrial uses
Transportation, Warehousing and Utilities uses

7.7.2.1. Table 7.7-1 contains the required plantings and dimensions of the respective street yard types.

Table 7.7-1: Street Yard Landscaping Requirements

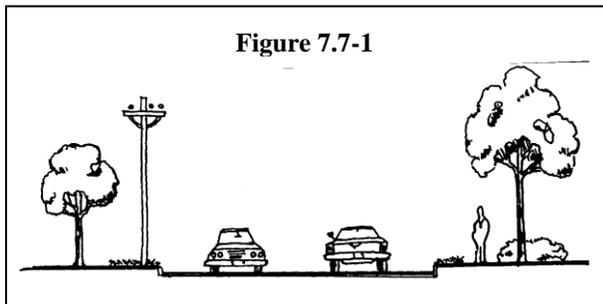
Street Yard Level	Minimum Width	Min. Required Shade* Trees	Min. Required Ornamental Trees	Min. Required Points per Linear Foot
1**	6'	1 per 100'	1 per 100'	---
2	8'	1 per 75'	1 per 100'	0.2
3	8'	1 per 75'	1 per 75'	0.4
4	8'	1 per 50'	1 per 50'	0.5
5	12'	1 per 50'	2 per 50'	0.6

* Shade trees may not be planted under over-head power lines; ornamental tree requirements must be doubled in cases where shade trees may not be planted.

** This standard shall only apply to new subdivision streets and along existing streets with curb and gutter that provides access to the subdivision.

7.7.3. DESIGN CONSIDERATIONS.

7.7.3.1. Overhead Power Lines. The presence of overhead power lines requires street yard trees to be ornamental trees. Larger shade tree varieties are encouraged where overhead power lines are not present. (see Fig. 7.7-1, below)



7.7.3.2. Site Triangles. Corner lots, and in situations where driveways and alleys intersect with street rights-of-way, shall be kept free of landscaping and plant materials that interfere with the vision of a motorist or pedestrian. The triangular area (sight triangle) of corner lots, driveways and alley areas abutting rights-of-way shall conform to Appendix C of this Ordinance.

Figure 7.7-2: Streetyard Typical for Nonresidential and Multi-family

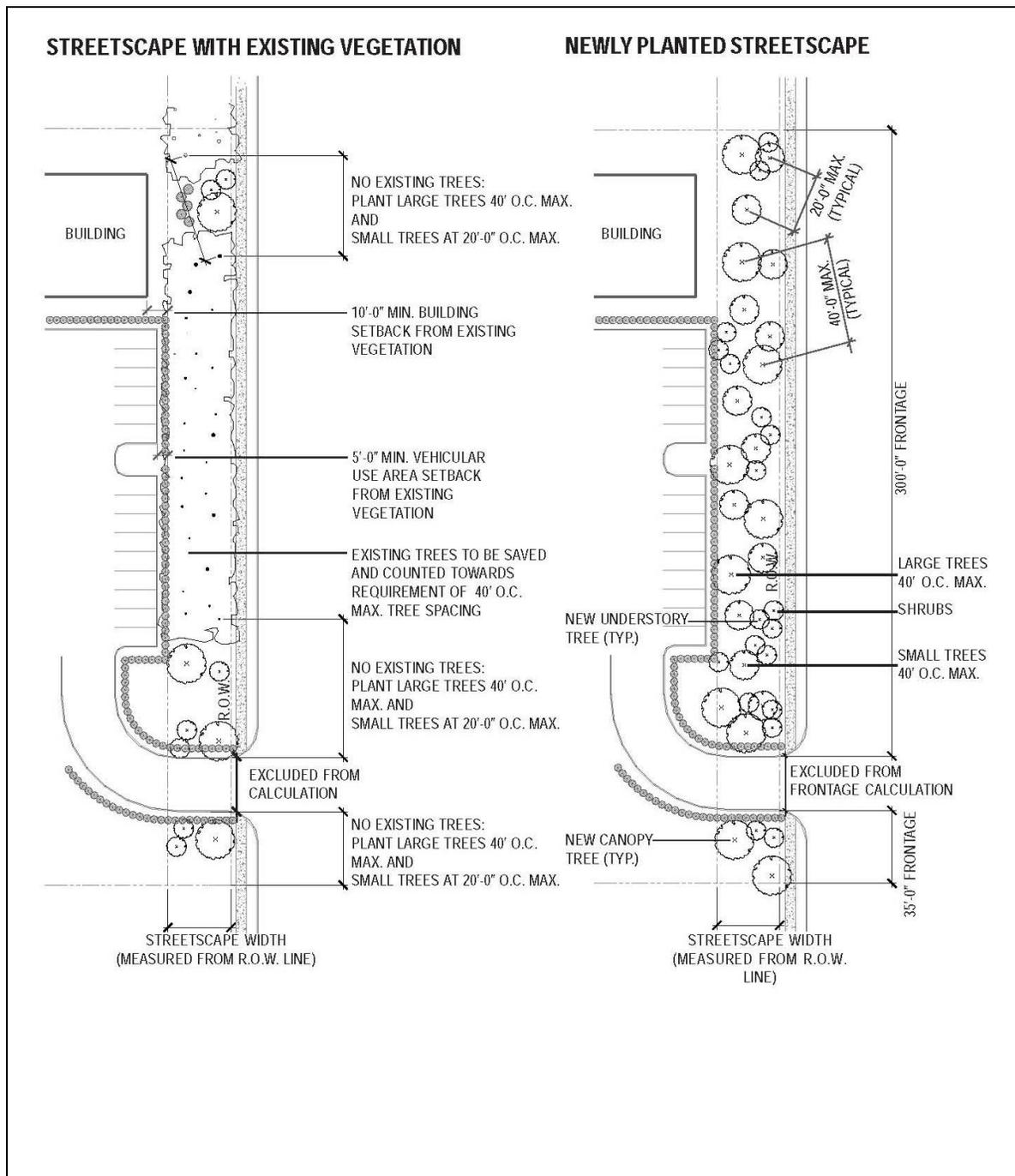
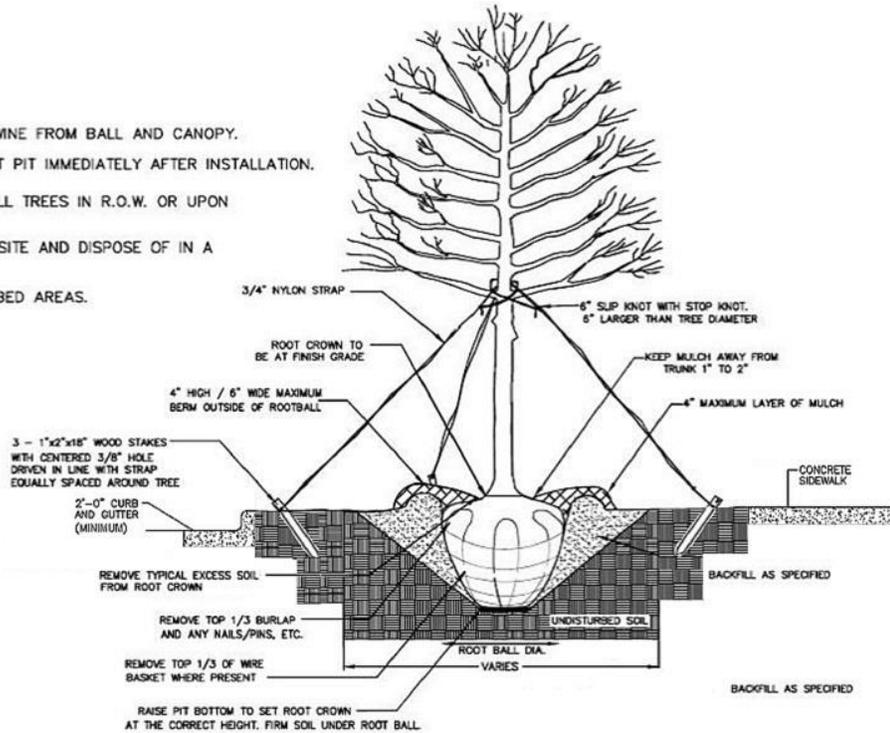


Figure 7.7-3: Street Tree Typical for Single-Family Residential

NOTES:

1. REMOVE WIRE AND NYLON TWINE FROM BALL AND CANOPY.
2. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.
3. STAKING IS REQUIRED FOR ALL TREES IN R.O.W. OR UPON REQUEST OF ARBORIST.
4. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
5. RESEED UNMULCHED, DISTURBED AREAS.



ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004)

FOR EXAMPLE:

CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
2"	12-14'	16'	24"	16"
3"	14-16'	18'	32"	21"

TREE PLANTING

(FOR SINGLE AND MULTI-STEM TREES)

N.T.S.

7.8. SPECIFICATIONS FOR PLANT MATERIALS AND INSTALLATION.

7.8.1. SIZE STANDARDS.

The minimum allowable plant size for new installations shall be as set forth herein. Due to the variation between genus and species, the caliper or height necessary for newly installed plant materials may vary. As a general rule, the caliper or diameter of trees shall be measured 6 inches from the ground level up to a 4-inch caliper diameter and at 12 inches for 4-inch caliper diameter or greater. The height of shrubs shall be a minimum of 24 inches as measured at ground level to the top of the densest portion of the top of the shrub or hedge.

7.8.1.1. Shade Trees. Shade trees shall measure a minimum 2 to 2.5-inches in caliper, and 10 to 12 feet in height at the time of planting.

7.8.1.2. Ornamental Trees. Ornamental trees shall measure a minimum 1.5 to 2-inches in caliper for single-stem trees or 1 to 1.5-inches in caliper for multi-stem trees, or 6 to 8 feet in height at the time of planting.

7.8.1.3. Large Shrubs. Large shrubs, normally planted for screening, shall measure a minimum of 3 to 3½ feet in height at the time of planting. Shrubs planted for screening purposes shall form the required density to block visibility within three (3) years from the date of installation.

7.8.1.4. Small Shrubs. Small shrubs shall measure a minimum of 18 to 24 inches in spread and/or height at the time of planting. A mix of deciduous and evergreen shrubs is encouraged in order to obtain a variety of color and texture throughout the year.

7.8.1.5. Ground Cover (Organic). Organic ground covers shall provide 100 percent coverage on the ground within three (3) years of installation. Except for seeding, grass or turf shall provide 100 percent coverage upon installation. Organic mulch may be used around plantings to maintain soil moisture and prevent the growth of weeds.

7.8.1.6. Ground Cover (Inorganic). Inorganic ground covers consisting of river rock or similar materials may be used provided they do not exceed

20 percent coverage of the required landscape planting area.

7.8.2. SELECTION OF PLANT MATERIALS.

All plant material, except Ground Covers, shall be selected from Table 7.1-1 Acceptable Plant Species. Consideration shall be given to the environmental conditions of the site, such as soil, topography, climate, microclimate, pattern of sun movement, prevailing winds and precipitation, and air movement to ensure that plant materials will be established successfully. Tree selection for street yards, or other locations within utility rights-of-way, shall consider the presence or planned addition of overhead utility lines. Such trees shall be small and medium trees that are pest- and disease-resistant and are slow growing.

7.8.2.1. Substitution of Plant Materials. The Administrator shall have the authority to approve the installation of comparable substitution plant materials to satisfy the requirements of the approved landscape plan when the approved plants and landscape materials are not available at the time that installations are to occur, or when other unforeseen conditions prevent the use of the exact materials shown on the approved landscape plan. Significant changes that require the replacement and relocation of more than 25 percent of the plant materials shall require a new landscape plan and approval through the plan review process.

7.8.2.2. Mix of Genus and Species Encouraged. Except for Street Yard trees (§ 7.7), a mix of genus and species of trees, shrubs, ground covering, perennials and annuals is encouraged in order to avoid potential loss due to infectious disease, blight, or insect infestation. Street Yard Trees should retained a reasonably uniform pattern along both sides of a street within the same block or corridor.

7.8.3. STANDARDS FOR INSTALLATION OF LANDSCAPING MATERIALS.

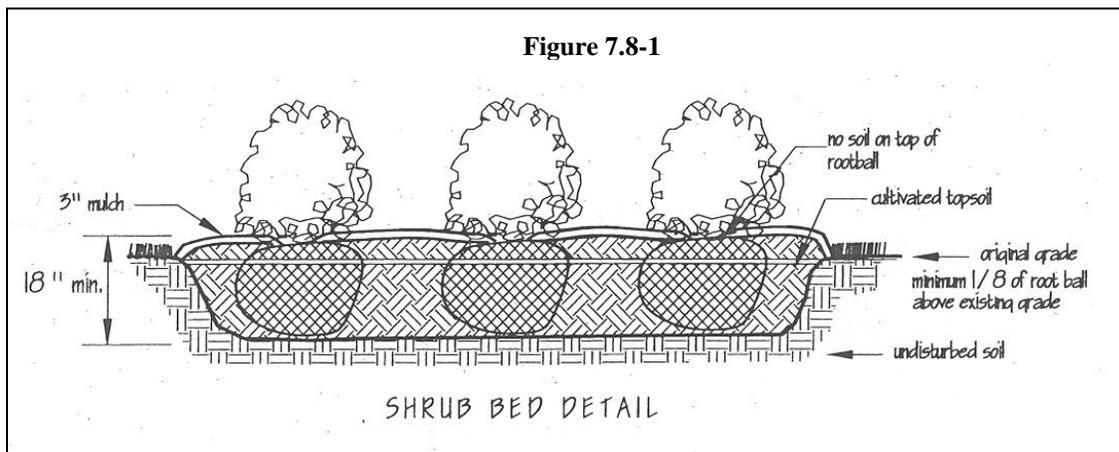
7.8.3.1. Plant Pit, Hedge Trench and Shrub Bed Preparation. Preparation of plant pits, hedge trenches and shrub beds shall be done in

conformance with Leaflet No: 601, *Planting Techniques for Trees and Shrubs*, North Carolina Cooperative Extension Service, (1997), which is incorporated by reference hereto and the following procedures:

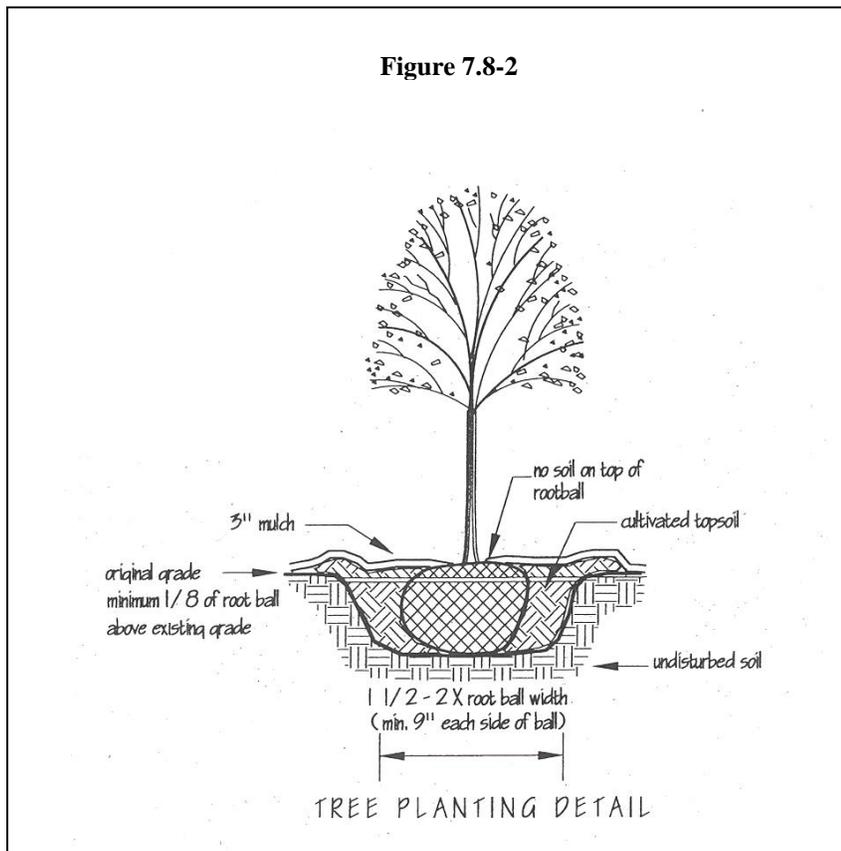
spilled in the area of any plant materials. Washing of concrete mixers shall not be done near the site.

7.8.3.2. Site Maintenance During Construction.

Equipment, wood and similar objects shall not be stored or laid upon the critical root zone area during or after construction. Chemicals and liquid construction wastes shall not be dumped, poured or



- Excavate pits with vertical sides approximately the depth of the rootball and with a circular outline which shall be approximately 2 to 3 times wider than the rootball. For planting pits, beds or trenches which are to be developed where paving existed previously, all paving and base stone shall be removed as part of the excavation.
- Remove rock, debris, inorganic compositions and chemical residues from soil in planting pits.
- Cultivate shrub planting pits to a minimum depth of 18 inches. Ground cover and vine planting pits shall be cultivated to a minimum depth of 12 inches.
- Install root ball on a flat, compact surface of undisturbed soil and remove any inorganic ties on top of the rootball. Remove the top 1/3 of wire baskets.
- Leave the top of the tree root ball exposed, to be covered by mulch only.
- Finish the planting with a minimum 3-inch layer of mulch of pine needles, tree bark or similar materials distributed around the tree trunk.
- Prepare soil, plant, fertilize, mulch, and control insects and disease in conformance with the North Carolina Cooperative Extension Service, *Landscape Management Calendar*, which is incorporated by reference hereto.
- Re-establish native plants salvaged from the site or relocated as a result of grading in conformance with the recommendations of the North Carolina Cooperative Extension Service.
- Support trees and shrubs adequately when planted in order to avoid interference with their typical growing patterns.
- **Street trees shall not be planted within 10 feet of a street light**



7.8.4. GENERAL MAINTENANCE OF LANDSCAPING AND SITE.

7.8.4.1. The applicant, property owner, and/or subsequent or successor owner, and their agents, including tenants, shall be jointly and severally responsible for maintenance of landscaping on the property on a continuing basis for the life of the development as specified in this Section. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include, but not be limited to, mowing, edging, pruning, fertilizing, watering, weeding and other activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other materials or plants not a part of the landscaping.

7.8.4.2. Required landscaping shall be maintained in perpetuity, in accordance with § 7.8.4.1. After initial installation, it shall be the responsibility of the

owner and/or tenant of the property upon which the landscaping is installed to maintain all required plantings in a healthy, vigorous and attractive state, or replace dead, diseased or deteriorated plants. Within residential subdivisions, the maintenance of street trees in planting strips between curbs and sidewalks which are within the street right-of-way shall be the responsibility of the respective homeowners association, or the abutting homeowner, in the absence of a homeowners association.

7.8.4.3. If after three (3) years following installation of required screening plant materials, the plants have not formed an effective screen, or if an effective screen is not maintained, the Administrator may require that another type of screen be added or additional plantings be installed. Landscaped areas shall require protection from vehicular encroachment. The Administrator shall inspect all landscaping and no Certificate of Occupancy or similar authorization will be issued unless the

landscaping meets the requirements of this Ordinance.

7.8.4.4. All required plant material shall be maintained in a healthy, growing condition as is appropriate for the season. Plant materials which exhibit evidence of insect pests, disease and/or damage shall be appropriately treated. Dead plants shall be promptly removed and replaced within the next planting season after removal. If replacement is necessary, all plants and other non-living landscape materials shall be equal in size, density and appearance as originally required at the time of the approval of the development permit.

7.8.5. UTILITY RIGHT-OF-WAY TREE TRIMMING.

Utility crews and companies are encouraged to do directional pruning of branches interfering with utility lines to prevent damage, disfigurement and heavy suckering and reduce future pruning needs. Utility tree trimmers are encouraged to remove branches to laterals (drop-crotching) in order to direct tree growth away from utility lines. Directional pruning includes top trimming, side trimming, under trimming and through trimming.

Table 7.8-1 Acceptable Plant Species.

The following list of plant species includes shade trees, ornamental trees and shrubs which are acceptable for landscaping in this area of North Carolina. A few species are labeled as “discouraged” due to marginal hardiness in this zone, to disease susceptibility, or to overuse.

Shade Trees

<u>Botanical Name</u>	<u>Common Name</u>
Acer rubrum	Red maple
Acer saccharum	Sugar maple
Amelanchier canadensis	Serviceberry
Betula nigra	River birch
Carya illinoensis	Pecan
Carya ovate	Shagbark hickory
Carya glabra	Pignut hickory
Carya cordiformis	Bitternut hickory
Cedrus deodara	Deodar cedar
Celtis occidentalis	Hackberry
Cupressocyparis leylandii	Leyland cypress (discouraged)
Diospyros virginiana	Persimmon
Fagus grandiflora	American beech
Ginkgo biloba	Ginkgo
Juniperus virginiana	Eastern red cedar
Liquidambar styraciflua	Sweetgum
Liriodendron tulipifera	Tulip poplar
Magnolia grandiflora	Southern magnolia
Nyssa sylvatica	Black gum
Pinus echinata	Short leaf pine
Pinus nigra	Austrian pine
Pinus thunbergi	Japanese black pine
Pinus taeda	Loblolly pine
Pinus virginiana	Virginia pine
Platanus acerifolia	London planetree
Quercus acutissima	Sawtooth oak
Quercus alba	White oak

Quercus bicolor	Swamp white oak
Quercus coccinea	Scarlet oak
Quercus falcata	Southern red oak
Quercus laurifolia	Laurel oak
Quercus nigra	Water oak
Quercus phellos	Willow oak
Quercus borealis	Northern red oak
Quercus shumardi	Shumard oak
Quercus velutina	Black oak
Quercus virginiana	Live oak
Taxodium distichum	Bald cypress
Ulmus parvifolia	Lacebark elm
Ulmus alata	Winged elm

Ornamental Trees

<u>Botanical Name</u>	<u>Common Name</u>
Acer buergeranum	Trident maple
Acer campestre	Hedge maple
Acer palmatum	Japanese maple
Carpinus betulus	European hornbeam
Carpinus caroliniana	American hornbeam
Cercis canadensis	Eastern redbud
Cornus florida	Flowering dogwood
Cornus kousa	Kousa dogwood
Crataegus phaenopyrum	Washington hawthorne
Halesia carolina	Carolina silverbell
Hammamelis mollis	Chinese witch-hazel
Ilex fosteri	Foster holly
Ilex opaca	American holly
Ilex opaca hume	Hume holly
Ilex x attenuata savannah	Savannah holly
Koelreutaria paniculata	Golden rain-tree
Lagerstroemia indica	Crapemyrtle
Magnolia soulangeana	Saucer magnolia
Magnolia stellata	Star magnolia
Malus hybrids	Flowering crabapple
Ostrya virginiana	Ironwood
Oxydendrum arboreum	Sourwood
Prunus cerasifera pissardii	Purpleleaf plum
Prunus serrulata kwanzan	Kwanzan cherry
Prunus subhirtella pendula	Weeping cherry
Prunus yedoensis	Yoshino cherry
Prunus caroliniana	Carolina cherry laurel

Shrubs

<u>Botanical Name</u>	<u>Common Name</u>
Abelia grandiflora	Glossy abelia
Aucuba japonica	Japanese aucuba
Azalea hybrida	Glenn dale azalea
Azalea indica	Indian azalea

Azalea obtusum Kaempferi	Kaempferi azalea
Camellia japonica	Camellia
Camellia sasanqua	Sasanqua Camellia
Chaenomeles speciosa	Flowering quince
Cleyera japonica	Cleyera
Euonymus alatus	Winged euonymus
Euonymus japonicus	Evergreen euonymus
Forsythia intermedia	Forsythia
Hammamelis virginiana	Witch-hazel
Hydrangea quercifolia	Oakleaf hydrangea
Ilex aquifolium	English holly
Ilex cornuta	Chinese holly
Ilex cornuta burfordi	Burford holly
Ilex cornuta burfordi nana	Dward burford holy
Ilex crenata 'convexa'	Convex japanese holly
Ilex crenata 'hetzi'	Hetzi japanese holly
Ilex crenata 'rotundifolis'	Roundleaf japanese holly
Ilex "Emily Brunner"	Emily brunner holly
Ilex glabra	Inkberry holly
Ilex latifolia	Lusterleaf holly
Ilex pernyi	Perny holly
Ilex vomitoria	Yaupon holly
Juniperus chinensis pfitzeriana	Pfitzer juniper
Juniperus chinensis hetzi	Hetzi juniper
Laurus nobilis	Laurel
Loropetalum chinense	Lotopetalum
Mahonia bealei	Leatherleaf mahonia
Myrica cerifera	Wax myrtle
Osmanthus fortunei	Fortune tea olive
Osmanthus fragrans	Fragrant tea olive
Osmanthus heterophyllus	Holly osmanthus
Osmanthus heterophyllus rotundifolius	Curly leaf tea olive
Pieris floribunda	Mountain andromeda
Pieris japonica	Japanese andromeda
Prunus laurocerasus	English laurel
Prunus laurocerasus "Zabel"	"Zabel" Skip laurel
Prunus laurocerasus angustifolia	Narrow leafed english laurel
Pyracantha coccinea	Scarlet firethorn
Raphiolepis umbellata	Yeddo-hawthorn
Raphiolepis indica	India hawthorn
Spirea cantoniensis	Reves spirea
Spirea thunbergi	Thunberg spirea
Spirea prunifolia plena	Bridalwreath spirea
Spirea vanhouttei	Vanhoutte spirea
Taxus cuspidata	Japanese yew
Viburnum rhytidophyllum	Leatherleaf viburnum
Viburnum tinus	Laurestinus viburnum

7.9. LIGHTING STANDARDS

7.9.1. PURPOSE

The purpose of these lighting standards is to provide direction in controlling light spillage and glare so as not to adversely affect motorists, pedestrians, and land uses of adjacent properties. Lighting intensities should be controlled and assure that excessive light spillage and glare are not directed at adjacent properties, neighboring areas, and motorists.

Exterior lighting should be architecturally integrated with the architectural character of the building. Downcast or cutoff type lighting fixtures should be generally used to illuminate pedestrian or traffic circulation corridors. Upcast or cutoff type lighting fixtures are generally suited for pedestrian applications such as for pedestrian circulation or transitional areas.

Determination of light fixtures and levels of illumination to achieve a certain function or desired effect should also reduce or eliminate the hazardous aspects and nuisance of glare and light spillover. All exterior lighting, with the exception of street lighting, that is used in and around buildings, recreation areas, parking lots, and signs, shall be designed to protect against the spillover of light to adjacent properties.

Lighting may be characterized by the kind of fixtures to be installed (such as incandescent, fluorescent, etc.); by use or activity being served (i.e. sports activities, utility lighting, lot lighting, or security lighting); or by desired effect, (i.e. spot lighting). Lighting design, location, and fixture selection should be planned to serve the primary lighting objective.

7.9.2. PROCESS

The Town of Harrisburg Planning and Zoning Department requires that a Lighting Plan that meets the requirements of Appendix B of this Unified Development Ordinance be submitted as part of all development plan approval process.

7.9.3. APPLICABILITY

These standards shall apply to both nonresidential and multi-family residential uses.

7.9.4. OUTDOOR LIGHTING STANDARDS

All outdoor lighting shall conform to the following standards:

7.9.4.1. Outdoor lighting shall be designed, located, and mounted at heights no greater than eighteen (18) feet above grade for non-cutoff lights, or thirty five (35) feet above grade for cutoff lights; and located at least 10 feet from property lines defining rear and side yards or required perimeter buffer areas as required by this Ordinance.

7.9.4.2. All outdoor lighting shall be designed and located such that the maximum illumination shall not exceed 1.5 maintained horizontal footcandles (FC) at the property line for cutoff lights and 0.4 for non-cutoff lights. The average intensity illumination for outdoor lighting shall not exceed 6 footcandles in intensity as measured at grade. Fixtures should be placed to provide uniform distribution of light and to avoid intense lighting that produces excessive glare.

7.9.4.3. Lighting fixtures in scale with pedestrian activities shall provide for uniform distribution of light to produce minimal shadows.

7.9.5. DESIGN PROCEDURES

The maximum permitted illumination shall be measured in average footcandles from ground level in accordance to the standards expressed in this Section. The following standards are required of all exterior lighting with the exception of public street lighting. Proposed uses have the option of providing a lower light post with a non-cutoff type of luminary or a higher pole with a luminary that totally cuts off spillover at an angle smaller than 90°.

The quality of fixtures to be provided shall be based upon the desired level of uniform illumination as established by the current standards of the Illuminating Engineering Society. Fixture location should be chosen to minimize the hazards of glare.

7.9.6. OUTDOOR RECREATIONAL LIGHTING

Because of their unique requirements for nighttime visibility and limited hours of operation, the lighting of active recreation areas, such as for ball fields and tennis courts are not considered in this Section. Lighting conditions for such uses shall be approved by the Administrator in accordance with approved standards and specifications.

7.9.7. ADDITIONAL LIGHTING PROVISIONS

7.9.7.1. No flickering or flashing lights shall be permitted. Light sources should not be located within any buffer yard areas except on pedestrian walkways.

7.9.7.2. Lighting levels are to be measured in footcandles with a direct-reading, portable light meter. The meter sensor shall be mounted not more than six (6) inches above ground level in a horizontal position. The Administrator or their designee takes readings only after the cell has been exposed long enough to provide a constant reading. Measurements are made after dark with the light source in question on, then with the same source off. The difference between the two readings shall be compared to the maximum permitted illumination and at the property line at ground level.

Figure 7.9-1 Fixture Types

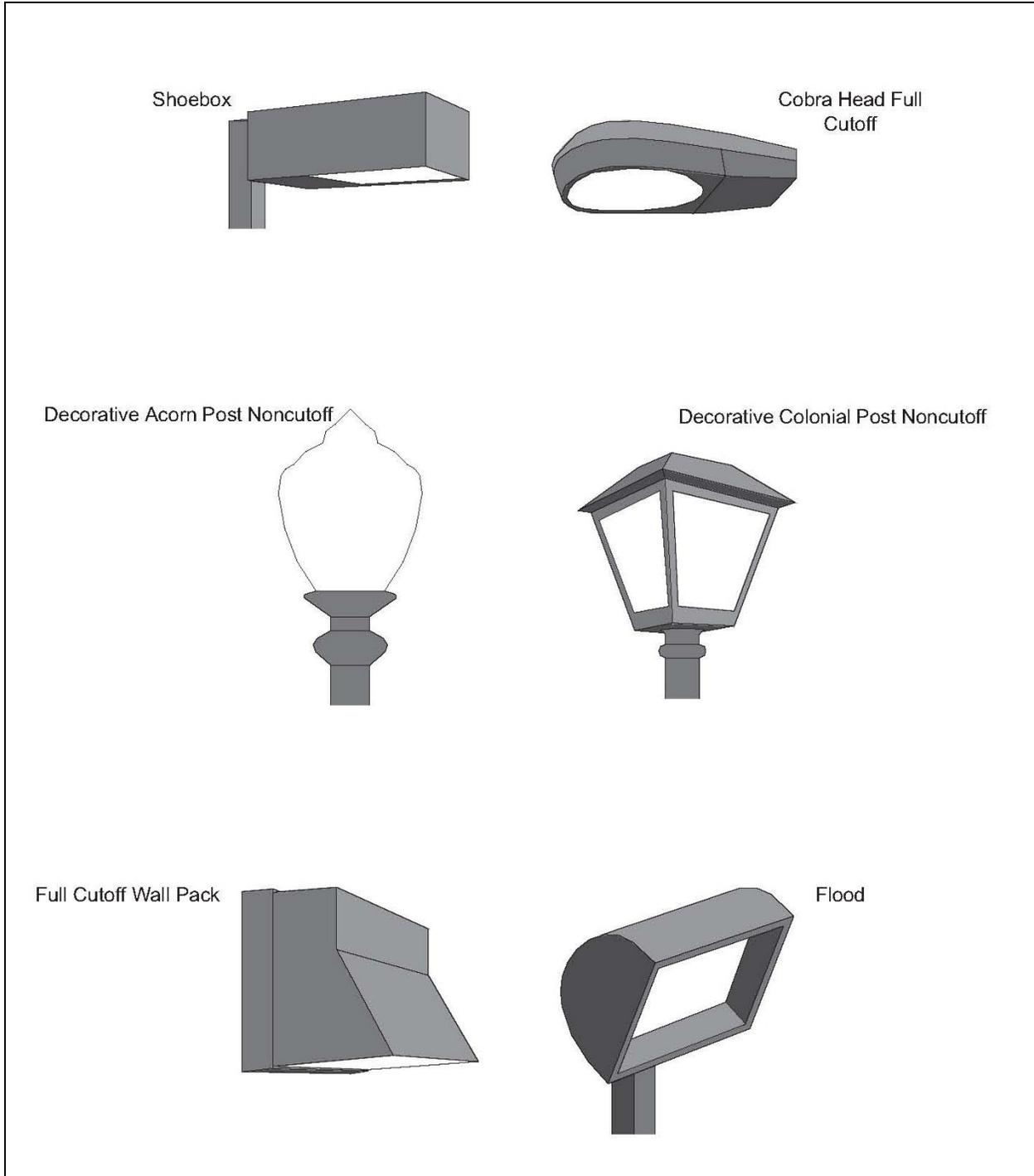


Figure 7.9-2 Maximum Mounting Heights

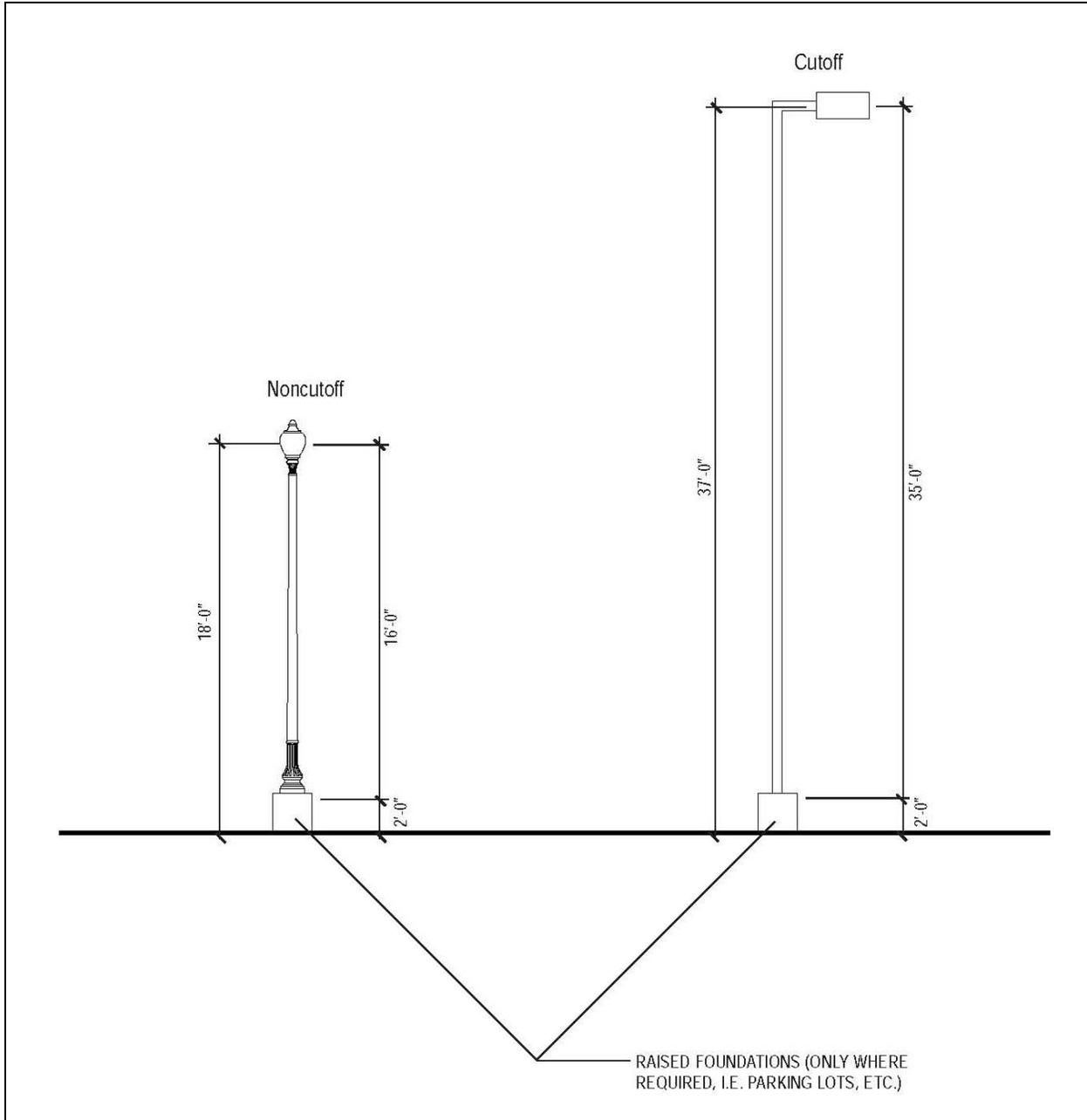


Figure 7.9-3 Cutoff Classifications

