8.2 LANDSCAPING, BUFFERING, AND SCREENING

8.2.1 Purpose and Intent

The intent of this Section is to establish standards to protect and enhance the Town's appearance by the installation of appropriate landscaping and buffering materials; to encourage the preservation of native plant communities and ecosystems; to maintain and increase the value of land by providing for restoration of disturbed areas and by incorporating adequate landscaping into development; to restrict the spread of invasive plant species that disrupt and destroy native ecosystems; to encourage skilled installation

and continued maintenance of all plant materials; and to establish procedures and standards for the administration and enforcement of this section.

8.2.2 General Landscaping Design Standards

A) ***Aesthetic Enhancement Requirements***
Landscaping shall be utilized in the design to enhance the aesthetic quality of the property by adding color, texture, and visual interest while obscuring views of parking and unsightly areas and uses. In locations where new development alters visually attractive and distinctive natural landscapes, the selection and arrangement of new plantings shall be designed to complement and enhance the natural landscape character of the site. All areas not covered by parking, drives, streets, or structures shall be improved with landscape elements in accordance with this section.

B) ***Plant Materials***

1) *Use of Native or Adaptive Plant Materials*
In order to further water conservation and to assure growth and survival of new plantings, all new landscaping installed pursuant to this chapter shall be comprised entirely of native or adaptive plants that reflect the surrounding plant materials and environment. See the Town of Apex Development and Design Manual for a list of approved native or adaptive plants.

2) *Existing Plant Materials*

a) Healthy, existing trees and shrubs, including those preserved pursuant to the requirements of Section 8.1, *Resource Conservation*, shall be incorporated into the landscape to the maximum extent feasible, and may be used to meet the new landscaping requirements of this section. These existing plants shall be shown on the sensitive area analysis and labeled as "existing."

b) Design of the landscape shall take retained, existing trees into consideration with an adequate area provided around each tree that is free of impervious material to allow for infiltration of water and air. This pervious area shall be equal to 1.5 times the critical root zone of the tree. The root zones of existing trees and shrubs to be preserved shall be protected from unnecessary disturbance as stated in Sec. 8.2.2.

c) *Incentives.* The following incentives are provided to encourage the preservation of existing vegetation:

(i) Existing healthy vegetation may be counted towards meeting the performance criteria for buffers (Sec. 8.2.4) and parking lots (Sec. 8.2.5).

(ii) A 5 to 20 percent reduction in the number of parking spaces required on the site shall be allowed to the extent that the reduction will preserve existing healthy trees. The amount of reduction will be determined by the Planning Director after taking all unique site conditions into account.

3) *Plant Sizes and Standards*
The standards for all trees and shrubs planted within buffers or as part of any landscaping, including the minimum height, root ball size, number of branches, and width shall conform with the American Standard for Nursery Stock published by the American Association of Nurserymen for that type of tree or shrub at the time of installation. The selection and planting of trees and shrubs shall conform to the standards set forth in the Town of Apex planting standards. Plants must meet the following sizes:

a) Large deciduous trees shall be at least 12 feet tall and 2½ inches caliper at the time of planting, and shall have an expected mature height of at least 30 feet.

b) Large evergreen trees shall be at least 8 feet tall and 2½ inches caliper at the time of planting, and shall have an expected mature height of at least 30 feet.

c) Small ornamental or under-story trees shall be at least 8 feet tall and at least 1½ inches caliper at the time of planting, and shall have an expected mature height of at least 18 feet.

d) Large type shrubs shall be at least 30 inches tall at the time of planting and at least 5-gallon container size. Mature height shall reach at least 4 feet. Large shrubs required to meet the standards for Type A buffer shall be between 5 and 6 feet tall at the time of planting, and at least 7-gallon container, and shall have a mature height of at least 6 feet.

e) Small type shrubs shall be at least 18 inches tall at the time of planting and at least 3-gallon container, and shall have a mature height of at least 2 feet.

f) Shrubs used as ground cover shall be at least one-gallon container size.

g) Grass shall be planted in species normally grown as permanent lawns in the Town and region. In swales or other areas subject to erosion, solid sod, erosion-reducing net, or suitable mulch shall be used and nursegrass seed shall be sown for immediate protection until complete coverage otherwise is achieved. Grass sod shall be free and clean of weeds and noxious pests or diseases. Ground cover shall be planted in such a manner as to provide 75% complete coverage after two growing seasons.

C) ***Location of Required Landscaping***

1) *On-Site Landscaping Required*
All landscaping shall be located on the property it serves. Landscaping located on adjacent properties or street rights-of-way shall not count toward the landscaping requirements of this section.

2) *Protection of Utilities*

a) No landscaping other than grasses shall be planted within underground public utility easements without the permission of the Water Resources Director per the accepted list of plant

material and planting standards as provided in the *Town of Apex Design and Development Manual*.

b) No private utility lines or easements shall be allowed to be counted in the calculations for RCA, riparian buffers, or required landscape areas.

c) Landscaped overhead public utility easements may encroach into required highway, thoroughfare, streetfront, and perimeter buffers and count toward the required buffer and undisturbed buffer width as determined by the Table in Section 8.2.6(B), provided that the following standards are met:

(i) The buffer provided is at least 30' in width and the overhead public utility easement encroaches no more than 50% into the buffer.

(ii) The buffer plantings within the overhead public utility easements shall not exceed a mature height of 20' and shall be planted to meet the buffer type (e.g. Type A, B, C, etc.) requirements as closely as possible.

(iii) The buffer plantings in the first 15' outside the overhead public utility easement shall not exceed a mature height of 30'; the remainder of the buffer shall be planted to meet the requirements of the buffer type (e.g. Type A, B, C, etc.).

D) ***Irrigation***
If irrigation is to be used, no overhead spray type irrigation is allowed.

E) ***Landscape Installation and Inspection***

1) *Site Plans*

a) *Time Limit*
All landscaping, including mulching and seeding, shall be completed in accordance with the approved site plan prior to issuance of a certificate of occupancy for the site.

b) *Extensions and Exceptions*
The Planning Department may grant exceptions and extensions to the above time limit in the following circumstances and under the following conditions:

(i) All landscaping is required to be installed prior to a certificate of occupancy for the project, or in the case of phased development, for the phase of the project. If the applicant chooses to delay the installation of landscaping from April 1 through September 1, then the applicant shall provide a cash bond equal to 150% of the cost of materials and installation, based on the highest estimate received, to ensure installation of the required landscaping.

(ii) Exceptions may be granted due to unusual environmental conditions, such as drought, ice, over-saturated soil (deep mud) or inappropriate planting seasons for the plant

species, provided that the developer or property owner provides the Town with a cash bond ensuring the installation of the remaining landscape materials. In such cases, the Planning Department may issue a temporary certificate of occupancy for a period of 30 to 180 days, depending on the Zoning Compliance Officer's recommendation for the next earliest planting season. The bond shall be accompanied by documentation of the estimated cost of the remaining landscaping to be completed. This documentation may be a landscaping contractor's bid or contract, a nurseryman's bill or a similar document. The amount of the bond shall be equal to 150% of the cost of the plant material and installation costs yet to be installed, based on the highest estimate received.

(iii) Exceptions may be granted due to the substitution or unavailability of plant species or acceptable plant size as specified on the site plan, provided that the developer or property owner provides the town with a cash bond to ensure that the unavailable plants will be installed on the property. In such cases, the Planning Department may issue a certificate of occupancy for a term of 180 days or to the next planting season, whichever comes first. Only 20% of the plant materials to be installed on the property may be delayed and bonded under this exception.

(iv) Exceptions may be granted due to circumstances beyond the developer's or property owner's control, such as incomplete construction or utility work in a proposed landscaped area within 30 days after expected site completion, provided that the developer or property owner submits a letter from the utility company stating the expected installation date and provides a cash bond equal to 150% of the cost of materials and installation to ensure installation of the required landscaping. In such cases, the Planning Department may issue a temporary certificate of occupancy for a period not to exceed 30 days.

c) *Inspections*

(i) The Planning Department and Zoning Compliance Officer shall inspect the site prior to the issuance of a permanent certificate of occupancy

(ii) Prior to obtaining a certificate of occupancy, the developer or property owner shall submit an "as-built" plan to the Planning Department for all landscaping-related components of the site plan.

(iii) The Zoning Compliance Officer shall inspect the site one (1) year after the issuance of a permanent certificate of occupancy in order to ensure compliance with the approved site plan and to ensure that the landscape is properly maintained.

2) *Subdivisions*

a) *Time Limit*
All landscaping, including mulching and seeding, within all buffers and common areas shall be completed in accordance with the approved subdivision plan prior to issuance of the recording of a Final Subdivision Plat.

b) *Extensions and Exceptions*
The Planning Department may grant exceptions and extensions to the above time limit in the following circumstances and under the following conditions:

(i) All landscaping is required to be installed prior to the recording of a final subdivision plat for the project, or in the case of phased development, for the phase of the project. If the applicant chooses to delay the installation of landscaping from April 1 through September 1, then the applicant shall provide a cash bond equal to 150% of the cost of materials and installation, based on the highest estimate received, to ensure installation of the required landscaping.

(ii) Exceptions may be granted due to unusual environmental conditions, such as drought, ice, over-saturated soil (deep mud) or inappropriate planting seasons for the plant species, provided that the developer or property owner provides the Town with a cash bond ensuring the installation of the remaining landscape materials within the next earliest planting season as determined by the Zoning Compliance Officer. The bond shall be accompanied by documentation of the estimated cost of the remaining landscaping to be completed. This documentation may be a landscaping contractor's bid or contract, a nurseryman's bill or a similar document. The amount of the bond shall be equal to 150% of the cost of the plant material and installation costs yet to be installed, based on the highest estimate received.

(iii) Exceptions may be granted due to the substitution or unavailability of plant species or acceptable plant size as specified on the site plan or subdivision plan, provided that the developer or property owner provides the Town with a cash bond to ensure that the unavailable plants will be installed on the property within the next earliest planting season as determined by the Zoning Compliance Officer. Only 20% of the plant materials to be installed on the property may be delayed and bonded under this exception.

(iv) Exceptions may be granted due to circumstances beyond the developer's or property owner's control, such as incomplete road or utility work in a proposed landscaped area, provided that the developer or property owner submits a letter from NCDOT or the utility company stating the expected installation date and provides a cash bond equal to 150% of the cost of materials and installation to ensure installation of the required landscaping.

c) *Inspections*

The Planning Department and Zoning Compliance Officer shall inspect the site prior to recording of the final subdivision plat.

8.2.3 Maintenance Responsibility and Replacement of Damaged Vegetation

A) ***Maintenance Responsibility***
The owners of the property and their agents, heirs, or assigns shall be responsible for the installation, preservation, and maintenance of all planting and physical features required under this article. Any vegetation that is dead, substandard, unhealthy, of poor structural quality, or missing, shall be removed and replaced in conformance with the standards of this section and to the approved site plan or subdivision plan. In the event that any vegetation or physical element functioning to meet the standards of this section is severely damaged due to an unusual weather occurrence or natural catastrophe, the owner shall have one year or one growing season, whichever is sooner, to replace or replant. All plant materials should be allowed to reach their mature size and maintained at their mature size. Plants shall not be cut or severely pruned so that their natural form is impaired. This section shall not apply when a developer has damaged or destroyed vegetation in the buffer, or caused vegetation to be damaged or destroyed. In this case, revegetation according to subsection (c) is required.

B) ***Replacement of Disturbed and Damaged Vegetation***
The disturbance of any landscaped area or vegetation installed pursuant to this article shall constitute a violation of the site plan or subdivision plan. All disturbed landscaped areas and vegetation shall be replanted so as to meet the standards of this section as well as the approved site plan or subdivision plan.

C) ***Replacement of Existing, Original Vegetation***
Existing trees and vegetation preserved pursuant to this article shall be considered as elements of a development project in the same manner as parking, building materials, and other site details. If such trees or vegetation are damaged during construction or dead within two years of completion of development, they shall be promptly replaced based on the standards of this section, taking into account any unique site conditions and vegetation remaining within the landscaped area. Replacement consists of one or a combination of the following:

1) A base fine of $20.00 per square foot area of disturbed area, not to exceed $40,000 total in accordance with appropriate penalty requirements then in effect.

2) Any tree with a caliper of at least 8 inches that is damaged or removed shall be replaced with one or more trees that have a caliper of at least 2½ inches and a cumulative caliper equal to or greater than the original tree.

3) For all other cases where existing vegetation is damaged or removed, the type and amount of replacement vegetation required shall be that which is necessary to provide the type of landscaped buffer or Resource Conservation Area required. Each category listed below is equal to one unit. One unit represents the replacement for 200 square feet of disturbed area. Fractions of a unit must be rounded to the nearest whole unit. Depending on the type of vegetation disturbed and the type buffer or Resource Conservation Area required, the Planning Department shall

determine which units must be used. For example, a 9,950 square foot disturbed area is required to have 49.75 units of replacement vegetation, which rounded to the nearest whole unit is 50 units of replacement vegetation. To ensure plant diversity and suitability, the Planning Department may, in consultation with the applicant, determine that twenty-five of category "a" and twenty-five of category "c" are required in one instance, while in another instance ten of each category (a, b, c, d, and e) are required. These requirements shall also be used to re-vegetate non-vegetated areas that are being used to meet Resource Conservation Area requirements. The five categories are as follows:

a) One large deciduous tree of at least 2½ inches caliper and 12 feet high.

b) Two small type trees of at least 1½ inches caliper and at least 8 feet high above ground level at the time of installation.

c) One large evergreen tree of at least 2½ inches caliper and at least 8 feet high above ground level at the time of installation.

d) Four evergreen shrubs of at least 2 feet in height and 3-gallon container size at the time of installation.

e) Four deciduous shrubs of at least 2 feet in height and 3-gallon container size at the time of installation.

4) In addition to the above requirements, on existing slopes equal to or greater than a ratio of 2:1, provide 1-gallon groundcover plants spaced approximately 2 feet on center.

5) The specific quantities and sizes of plants listed above may be adjusted by the Planning Department in order to meet the standards for a required buffer type, the replacement or establishment of an approved Resource Conservation Area, and/or to more appropriately match the surrounding existing vegetation, so long as substantially the same performance is achieved. Refer to the *Town of Apex Design and Development Manual*, Section 2 for more specific information.

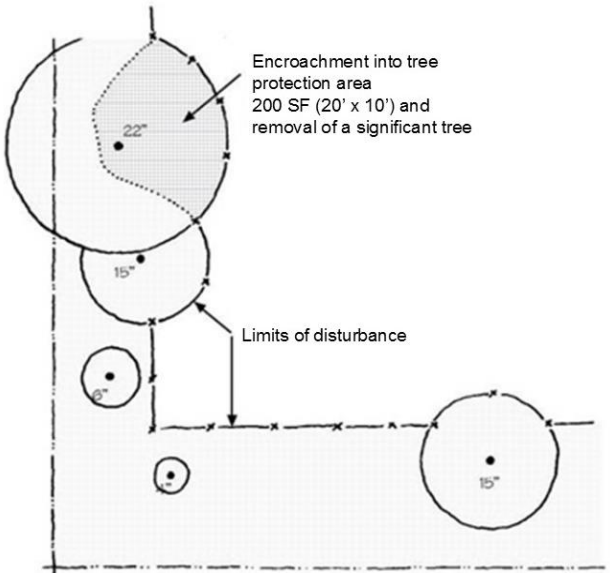

Figure 8.2.3(C): Illustration of Required Replacement of Existing, Original Vegetation

8.2.4 Building Landscaping Requirements

A) ***General Landscaping Standards***
All non-residential, multi-family/apartment, condominium and townhome developments, and all single-family residential subdivisions shall install landscaping pursuant to the requirements of this Section. This landscaping shall be in addition to any other landscaping required by Article 8: *General Development Standards*, unless otherwise specified.

1) *Non-Residential Development*
All non-residential development shall install at least one (1) tree and three (3) shrubs for every 2,000 square feet of building footprint. This is above and beyond any vehicular use area landscaping requirements, screening requirements, buffers, and Resource Conservation Area plantings.

2) *Multi-Family/Apartment Development*
All multi-family/apartment development shall install at least three (3) shrubs for every 2,000 square feet of building footprint. This is above and beyond any vehicular use area landscaping requirements, screening requirements, buffers, and Resource Conservation Area plantings.

3) *Townhome Development*
All townhome development shall install at least one (1) small ornamental type tree and two (2) shrubs per lot, to be located within HOA-owned commons areas. This is above and beyond any vehicular use area landscaping requirements, screening requirements, buffers, and Resource Conservation Area plantings.

4) *Single-Family Residential Subdivisions*
All single-family residential subdivisions shall install at least one (1) small ornamental type tree and two (2) shrubs per lot, to be located in the front, side, or rear yard of the individual single-family lot. This Section shall not apply to those single-family residential subdivisions that provide landscaping per UDO Sec. 7.2.5.B.7 *Single-Family Residential Subdivision Mass Grading*.

B) ***Installation Requirements for Non-Residential Development and Multi-Family/Apartment Development***

1) Large trees shall be no closer than 20 feet from any structure with at least 350 square feet of non-paved area around the trunk, and small trees shall be no closer than 10 feet from any structure with at least 250 square feet of non-paved area around the trunk.

2) Planting beds may contain a combination of living plant materials and mulch. However, living plant materials shall comprise no less than 50 percent of the required planting beds.

3) Plant materials shall be located in close proximity to the building and shall enhance views from public streets and sidewalks.

C) ***Installation Requirements for Townhomes and Single-Family Residential Development***

1) Trees shall be set back at least six (6) feet from the right-of-way line.

8.2.5 Vehicle Use Area Landscaping

A) ***Purpose***
Vehicle use area landscaping is intended to improve the views from adjacent properties and public use areas, alter the microclimate of vehicle use areas by providing shade and reducing reflected heat, and break up large areas of impermeable surface allowing areas for water infiltration.

B) ***Vehicle Use Area Screening***

1) *Applicability*
All vehicle use areas shall provide landscaping pursuant to the General Requirements below.

2) *General Requirements*

a) All vehicle use areas shall be screened from off-site view with a continuous evergreen hedge that will reach a minimum height of 42 inches within three (3) years of installation.

b) All vehicle use areas and access drives shall be separated from side and rear property lines by a planting area at least eight (8) feet wide. This planting area shall contain large deciduous trees spaced no less than 40 feet from another tree or small deciduous trees spaced no less than 20 feet from another tree. Outparcels with multi-tenant buildings shall be exempt from this requirement. Where adjacent properties are developed in conjunction with one another, the combined total planting area shall be at least 10 feet wide.

c) Perimeter plantings shall be arranged and maintained to protect visibility at any driveways.

d) Structured parking that incorporates ground level non-residential uses shall only comply with the standards in Sec. 8.2.4.A.1.

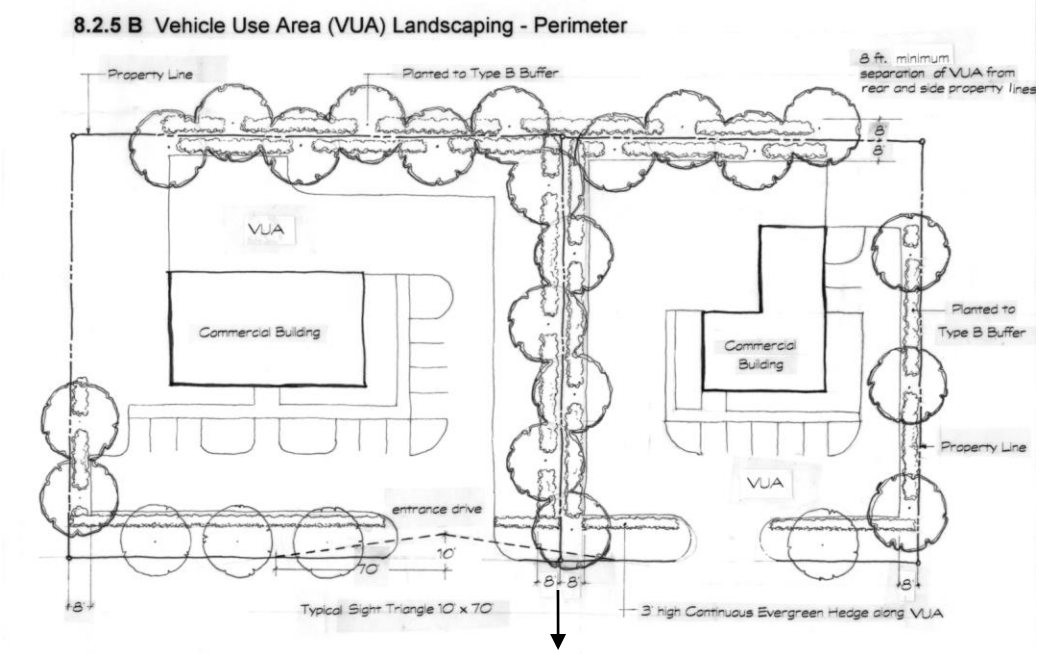

Figure 8.2.5.B Vehicle Use Area Landscaping for Single-Tenant Parcels

C) ***Vehicle Use Area Shading***

1) *Applicability*
All vehicle use areas, with the exception of the interior of structured parking areas, shall comply with these landscaping requirements. Perimeter, streetfront, and thoroughfare buffer trees may be used to meet the vehicle use area landscaping requirements.

2) *Minimum Requirement*
No portion of the vehicle use area shall be further than 40 feet from the trunk of a large-type deciduous tree. Two (2) small-type trees can be substituted for a large-type deciduous tree in cases where the health of the large-type deciduous tree may be compromised or where other circumstances so warrant, including, but not limited to, utility lines and/or easements located too close to the vehicle use area to allow the planting of a large-type deciduous tree or building location that does not provide a large enough planting bed for a large-type deciduous tree. No portion of the vehicle use area where the small-type tree substitution is allowed shall be further than 20 feet from the trunk of a small-type tree. The vehicle use area interior landscaping shall be designed to achieve shading of no less than 35% of the vehicle use area at maturity.

a) *Exceptions*

(i) Areas that cannot reasonably be landscaped in the interior (as determined by the Planning Director), including, but not limited to, truck loading and unloading spaces and vehicle storage yards. In these cases, the same number of trees required to meet the 40-foot requirement are required to be planted along the perimeter of the exempted vehicle use area.

(ii) Areas within an existing overhead utility easement or adjacent to such easement where a utility company has the authority to clear its "peripheral zone". In this case, the same number of trees required to meet the 40-foot requirement are required to be planted on the site. The location of such plantings shall be approved by the Planning Director.

D) ***Additional Vehicle Use Area Requirements***

1) *Landscaped Islands*

a) Individual landscaped islands shall include a minimum of one (1) tree. Planting areas shall be protected from damage by vehicular traffic with barriers including but not limited to curbs, wheel stops, walls or fences.

b) Landscaped islands shall have at least 350 square feet of planting area for each large tree, and 250 square feet for each small tree. The smallest planting area dimension of a landscaped island shall be 10 feet to allow for adequate root aeration and expansion.

c) Islands shall be arranged to maximize shading of parking spaces.

d) Plantings shall be arranged so as not to interfere with driver vision, vehicle circulation, or pedestrian circulation.

2) *Internal Pedestrian Walkways*

Internal pedestrian walkways required pursuant to Sec. 8.4.4 shall feature landscaping, benches, and other such materials or facilities for approximately 50% of the length of the walkway. Such walkways may pass through required buffers and other protected areas as long as construction is done in such a way as to protect significant resources. This landscaping may be counted toward the landscaping requirements of Sec. 8.2.4 *General Landscaping Requirements*.

8.2.6 Buffering

A) ***Purpose***

Landscaped buffers to separate adjacent land uses shall be provided in accordance with this section in order to fulfill the following purposes:

1) To shield adjacent properties from any adverse external effects of the development, so as to render incompatible adjacent uses more compatible;

2) To shield development from the negative impacts of adjacent land uses, so as to render incompatible adjacent uses more compatible;

3) To preserve open space and existing vegetation, using supplemental plantings only when necessary; and

4) To prevent adverse grade changes between properties and to provide adequate land area for transition of proposed grades.

B) ***Landscape Buffers Between Land Uses***

1) *Applicability*

a) All Site and Master Subdivision Plans shall provide a landscape buffer to separate that use or subdivision from differing land uses pursuant to the requirements of this Section.

b) This buffer requirement shall not apply to the B-2 zoning district and the Small Town Character Overlay District.

2) *Setbacks from Edge of Buffer*
All building setbacks along property lines with required buffers are determined by adding 10 feet to the buffer widths given in Table 1 below, except along the Streetfront D Type buffer, where building setbacks are determined according to the zoning of the parcel (see Sec. 5.1). In addition, all vehicular use areas shall be set back five (5) feet from any buffer shown in Table 1 below. Building setbacks along property lines with no required buffers are determined according to the zoning of the parcel (see Sec. 5.1).

3) *Type and Width of Buffer Required*

a) Table 1 below determines the type of landscape buffer that must be installed. Depending on the land use classifications of the proposed use and the use of the adjacent property, Table 1 specifies a landscaped buffer of a particular type and a particular minimum width. Subsection (4) below identifies the land uses that fall within each land use classification shown on Table 1. Subsection (5) below identifies the width and type of vegetation required for each type of buffer.

(i) To determine landscape buffers between land uses:

(a) Locate land use class of subject property in column I.

(b) Identify if adjacent parcel is developed or vacant (column II or III).

(c) Required buffer is at intersection of row and column. Buffer class is indicated by letter; width in feet is indicated by number.

(ii) To determine buffers along all major and minor collectors:

(a) Locate land use class of subject property in column I.

(b) Determine land use class of property across street from subject property in column IV.

(c) Required buffer is at intersection of row and column. Buffer class is indicated by letter; width in feet is indicated by number.

(iii) To determine buffers along all thoroughfares:

(a) Locate land use class of subject property in column I.

(b) Determine if the buffer will be an undisturbed buffer or a disturbed buffer in column V.

(c) Required buffer is at intersection of row and column. Buffer class is indicated by letter; width in feet is indicated by number.

Table 1: Type and Width of Buffer Required

I	II						III					IV			V	
	PERIMETER BUFFER											STREETFRONT[1, 4] (Major and Minor Collectors)			THOROUGHFARE[3,4]	
Req'd Buffer	Adjacent Property Developed: Land Use Class						Adjacent Property Vacant: Zoning District									
Proposed Land Use Class	1	2	3	4	5	6[2]	All Res.	TND-CZ, PUD-CZ, SD-CZ	MEC-CZ, O&I, PC	B1, B2	LI, TF	1,2,3	4	5,6	Undisturbed	Disturbed
1	10 B[5]	20 B	20 B	20 B	30 B	40 A	10 B	10 B	10 A	30 A	40 A	10 A	20 D	30 D	30 B	50 A/B[6]
2	20 B	10 B	15 A	20 A	40 A	60 A	10 B	10 A	20 A	40 A	60 A	10 A	20 D	30 D	30 B	50 A/B[6]
3	20 B	15 A	15 A	15 A	20 A	50 A	10 B	20 B	20 B	20 B	50 A	10 A	20 D	30 D	30 B	50 A/B[6]
4	20 B	20 A	15 A	0	0	15 B	20 A	10 B	0	0	15 B	30 D	10 D	10 D	30 E	50 E
5	30 B	40 A	20 A	0	0	0	40 A	20 B	0	0	0	30 D	10 D	10 D	30 E	50 E
6[2]	40 A	60 A	50 A	15 B	0	0	60 A	60 A	15 B	0	0	30 D	20 D	10 D	30 E	50 E

[1] For streetfront buffers only, non-residential uses in the Residential Agricultural (RA) zoning district shall have a 10' Type D buffer. Within residential developments, no streetfront buffer is required on minor collectors or residential streets.

[2] For Land Use Classes 1, 2, 3, 4, and 5 a 20' Type A buffer is required along the use "Railroad tracks", which is classified as Class 6. No buffer is required along the use "Railroad tracks" for Land Use Class 6. However, it is recommended that the developer consider the comfort of future occupants and security of the development in determining if additional buffering and/or screening should be implemented.

[3] Pedestrian-oriented streetscape buffers shall be allowed in lieu of standard landscaped thoroughfare buffers when such buffers are located inside the Apex Peakway. Pedestrian-oriented streetscape buffer shall contain both hardscape elements (such as but not limited to sidewalks, decorative lighting, street furniture, and fountains) and street tree plantings which do not have to meet typical minimum island widths or sizes.

[4] Where alley-loaded homes face a thoroughfare, a Type E buffer shall be required; where alley-loaded homes face a major collector, a Type D buffer shall be required.

[5] This buffer shall only be required when the proposed or adjacent land use is a single-family detached dwelling on a lot 12,000 square feet or greater.

[6] Disturbed portion of 50' Thoroughfare Buffer shall be planted to a Type A buffer standard; undisturbed portion of 50' Thoroughfare Buffer shall be supplemented to a Type B buffer standard.

b) *Reduced Width Buffers in Exchange for Resource Conservation Area*
Required buffers may be exchanged for Resource Conservation Area in accordance with Sec. 8.1.2.C.6.

4) *Land Use Classes*
The 6 land use classes appearing in Table 1 include the following uses:

a) *Class 1:*
Active farm
Botanical gardens
Campgrounds
Cemeteries
Golf course
Greenways
Horse boarding and riding stables
Parks, active and passive
Water reservoir
Single-family detached, lots 12,000 square feet and greater

b) *Class 2:*
Bed and breakfast
Manufactured home-detached, lots greater than 6,000 square feet
Single-family detached, lots greater than 6,000 square feet and less than 12,000 square feet

c) *Class 3:*
Condominium
Duplex
Manufactured home-detached, lots less than 6,000 square feet
Multi-family or apartment
Single-family detached, lots less than 6,000 square feet
Townhouse
Townhouse, detached
Triplex or Quadplex

d) *Class 4:*
Ambulatory Healthcare Facility with Emergency Department
Assembly hall, for-profit
Assembly hall, nonprofit
Barber/beauty shops
Bookstore
Church or place of worship
Congregate living
Day care facility
Drop-in or short-term daycare
Dispatching office
Farmers market
Financial institutions without drive through
Floral shop
Funeral home
Government service
Health/fitness centers/spas
Kennel
Laundromat
Medical, dental offices and clinics

Medical, dental laboratory
Mobile home park
Monument sales, retail
Newsstand or gift shop
Nursing or convalescent facility
Office, business or professional
Parking, parking lot, parking garage- commercial or residential
Personal services
Pet services
Pharmacy
Printing and copying services
Real estate sales
Restaurant, general
School, public or private
Studios for arts
Tailor shops
Utility, minor
Veterinary clinic or hospital
Vocational schools
Youth or day camps

e) *Class 5*
All drive through facilities
Artisan studio
Automotive accessory sales and installation
Automotive parts
Automotive service stations
Bars and nightclubs
Beach bingo
Broadcasting stations (radio and television)
Building supplies, retail
Carwash or auto detailing
Convenience store
Convenience store with gas pumps
Drycleaners and laundry services
Electronic gaming operation
Entertainment, indoor
Flea market
Gas and fuel, retail
Greenhouse or nursery, retail
Grocery, general
Grocery, specialty
Hotel/motel
Microbrewery
Pilot plant
Publishing office
Radio and television recording studios
Retail sales, bulky goods
Retail sales, general
Shopping center
Theater
Transportation facilities
Upholstery shop
Vehicle inspection center
Vehicle repair and service

f) *Class 6*

Adult establishment
Airplane landing strip
Airport
Arena, auditorium or stadium
Asphalt or concrete plant
Automotive paint or body shop
Brewery
Building supplies, wholesale
Chipping and mulching
Commissary
Communication tower, commercial
Contractor offices and storage yards
Distillery
Dry-cleaning and dyeing plants
Electrical power facility
Entertainment, outdoor
Fish hatcheries and fish ponds
Forestry
Gas and fuel, wholesale
Glass sales
Greenhouse or nursery, wholesale
Heliport or helipad
Hospital
Incinerator
Industrial services
Laboratory, industrial research
Land clearing and inert debris landfill
Laundry plants
Machine or welding shop
Manufacturing and processing
Manufacturing and processing, minor
Microdistillery
Railroad facilities
Railroad tracks
Recycling center
Recycling collection station
Recycling plant
Regional recreation complex
Repair and maintenance, general
Repair services, limited
Research facilities
Sanitary landfill
Self-service storage
Shooting range, indoor
Shooting range, outdoor
Towing services and storage
Truck terminals
Vehicle sales and rental, heavy
Vehicle sales and rental, light
Warehousing
Water or wastewater plant
Wholesaling, general
Wood or lumber processing
Woodworking or cabinetmaking
Zoological garden

5) *Types of Buffers*
The 7 types of landscaped buffers appearing in Table 1 are defined as follows and shall meet the following performance requirements:

a) *Type A: Opaque*
This buffer functions as an opaque screen from the ground to a height of at least 6 feet. Plantings of deciduous and evergreen trees shall obtain a height at maturity of between 18 and 60 feet and have no unobstructed openings between tree canopies at maturity. Large trees shall be spaced no wider than 15 feet at time of planting. Screening plants for the Type A buffer shall be evergreen and between 5 and 6 feet tall at the time of installation (see Plant Standards Sec. 8.2.2.B). At least 50% of the required trees and 100% of the required shrubs shall be evergreen species. Opaque fencing may be used to meet the opacity requirement provided that it is planned as an integral part of the buffer and is located immediately adjacent to the individual lots. Where a fence is used, shrubs shall be clustered so that there is a minimum of three (3) small evergreen shrubs spaced every 20 feet.

b) *Type B: Semi-Opaque*
This buffer serves as a semi-opaque screen from the ground to a height of between 3 and 6 feet with openings no greater than 10 feet. Trees shall obtain a height of between 18 and 40 feet at maturity and have no unobstructed openings greater than 20 feet between canopies at maturity. Large trees shall be spaced no wider than 40 feet at time of planting, and small trees shall be spaced no more than 20 feet. At least 75% of the required shrubs must be evergreen species.

c) *Type C: Spatial Definition*
This buffer is intended to provide a sense of separation between adjoining properties without significantly obstructing the view from one to the other. Generally, it will be less opaque than the Type B buffer, and more oriented towards aesthetic enhancement rather than screening. It shall include a combination of trees and shrubs that provide intermittent visual obstruction from the ground to a height of at least 20 feet. Large trees shall be spaced no wider than 50 feet at time of planting, and small trees shall be spaced no wider than 25 feet. At least 25% of the trees or shrubs must be evergreen species.

d) *Type D: Streetfront*
This buffer is intended to provide a softening of the view of a particular property from the street, without eliminating views to and from the property. This shall include at least one (1) large type tree for every 1,000 square feet of buffer, or two (2) small trees for every 1,000 square feet of buffer. Large trees may not be spaced more than 30 feet apart, and small trees no more than 15 feet apart. At maturity, these trees shall reach a height of at least 20 feet. A streetfront buffer is required along all private and public streets except thoroughfares and controlled access highways.

e) *Type E: Streetscape Buffers Along Thoroughfares*
Streetscape buffers are required on all thoroughfares as shown

on the adopted thoroughfare map. Streetscape buffers are to remain undisturbed to the maximum extent practicable except where no existing vegetation is present.

All uses that require site plan approval or subdivision plan approval shall preserve, install, and maintain a planted streetscape along each thoroughfare it abuts which protects the existing vegetation and abuts the perimeter of the property. All streetscape plantings, including the installation of all plant materials, shall perform in accordance with specifications of this section.

The width of the streetscape buffer shall be at least 30 feet if it remains undisturbed. If the buffer will require encroachment in order to install anything other than public street improvements, the portion of the buffer that is disturbed must be at least 50 feet wide. The disturbed section shall be replanted and the undisturbed section shall be supplemented to the standards required in Table 1. A buffer with an encroachment due to public street improvements may be reduced per Sec. 8.1.2.C.6 *Resource Conservation Area Exchanged for Reduced Width Buffers* and Sec. 8.2.6.B.3.b.

If any part of the buffer is disturbed or non-vegetated, the owner shall plant one large tree and two small trees for every 1,000 square feet of disturbed or non-vegetated buffer. Where existing overhead utility lines interfere with part of the buffer, the large tree requirement may be substituted by installing all small trees (4 small trees for every 1,000 square feet).

Trees shall be installed on the thoroughfare side of any berm or screen planting no less than 10 feet from the right-of-way of the thoroughfare. Street trees may be installed in a linear fashion or in clusters or groupings of larger and/or small trees in combination with associated plantings so as to enhance the visual appearance of the streetscape and views from adjacent properties.

Each large canopy tree in the streetscape shall be provided with at least 350 square feet of pervious ground area for root growth. Any planting area bounded by a built-upon area shall be at least 10 feet wide.

Where there is a vehicular use area between the right-of-way of the thoroughfare and a permanent building, the streetscape shall provide a semi-opaque screen or barrier between the right-of- way and the vehicular use area. The screen or barrier may consist of existing vegetation, plants, earthen berms, decorative entry fences (not privacy), walls, or any combination thereof that meets the following requirements:

The screen shall occupy the entire 100 percent length of the vehicular use area except for sidewalks and driveways. All vehicular use areas must be screened from off-site view. Plant material shall be at least 2 feet tall above the ground at the time of installation and must reach a height of 3 feet within 3 years.

Fences, walls, and berms may be installed in addition to plantings (see Sec. 8.2.7 *Fences, Walls, and Berms*). Plant materials shall be installed that meet these performance standards. Berms may be installed if there is no existing vegetation. The installation of additional plant materials is required so as to enhance the visual and aesthetical qualities of the streetscape.

f) *Buffers Along Fully- and Limited-Controlled Access Highways*
All uses that require site plan approval or subdivision plan approval shall install and maintain a vegetated buffer along each controlled access highway as follows:

(i) Residential Uses
A 100-foot Type A buffer is required along all fully- and limited-controlled access highways, measured from ultimate right-of-way. All highway buffers along residential uses shall remain undisturbed to the maximum extent practicable. The Planning Director or designee shall determine at the time of site plan or subdivision plan review what supplementation of plant material must occur to bring the existing natural buffer to a Type A standard. Disturbance within the buffer is only allowed as follows:

(a) Construction of driveways and public streets perpendicular to the buffer strip shall be allowed where such construction is necessary for safe ingress or egress to the site. The nature and limits of such construction must be designated on the approved Site Plan or Master Subdivision Plan.

(b) Notwithstanding any other provision pertaining to buffers, Town of Apex public utilities and easements shall be allowed, parallel and otherwise, within buffers, and the area within such easements shall still count towards buffer, undisturbed buffer, or RCA requirements.

(ii) Non-residential Uses
A 100-foot Type A buffer is required along all fully- and limited-controlled access highways, measured from ultimate right-of-way. All highway buffers along non-residential uses shall remain undisturbed to the maximum extent practicable. The Planning Director or designee shall determine at the time of site plan or subdivision plan review what supplementation of plant material must occur to bring the existing natural buffer to a Type A standard. Disturbance within the buffer is only allowed as follows:

(a) Construction of driveways and public streets perpendicular to the buffer strip shall be allowed where such construction is necessary for safe ingress or egress to the site. The nature and limits of such construction must be

designated on the approved Site Plan or Master Subdivision Plan.

(b) Notwithstanding any other provision pertaining to buffers, Town of Apex public utilities and easements shall be allowed, parallel and otherwise, within buffers, and the area within such easements shall still count towards buffer, undisturbed buffer, and RCA requirements.

(c) Highway buffers along non-residential uses meeting all of the following criteria shall be reduced to a planted 50' Type A buffer.

i. No more than 20% of the façades of non-residential buildings facing the highway can use EIFS or other synthetic stucco.

ii. Pedestrian connections in the form of sidewalks and/or multi-use paths shall be made from non-residential buildings to adjacent residential development and properties with future residential land use. The form of the connection shall be determined by the Planning Director or designee.

iii. Furthermore, properties that front a limited-controlled access highway with no other access or road frontage shall be allowed to reduce the opacity of no more than 50% of this buffer to a Type E buffer. The remainder of the buffer shall be planted to a Type A standard.

g) *Buffers Along the American Tobacco Trail*
For sites that contain and/or are adjacent to the American Tobacco Trail, a buffer of at least 50 feet in width is required. The buffer shall function as visual separation between the public trail and private property; it shall contain native plant material, supplemented where necessary with deciduous and evergreen trees to provide an opaque screen for the benefit of trail users and adjoining property owners. The buffer shall conform to the requirements of a Type 'A' Buffer as described in Sec. 8.2.6.B.5.a.

C) ***General Buffering Requirements***

1) *Location of Buffers*

a) The buffers required by this Section shall be located along the outer perimeter of the parcel and shall extend to the parcel boundary line or right-of-way line. Buffers shall not include any portion of an existing public or private street, proposed public street, existing or proposed private easement, or right-of-way. The required buffer width does not just determine a simple setback but is to be totally planted to meet the requirements for the applicable buffer type. Therefore, the plants comprising the

buffer shall be spread across the entire width of the buffer and not just planted in a row or rows.

b) Buffers for residential subdivisions shall not be located within the individual lots that make up the subdivision, but shall be located in common areas, and shall be owned and maintained by the homeowner's association.

2) *Existing Vegetation*

a) Existing significant vegetation within the required buffer shall be preserved and credited toward standards for the type of buffer required at the time of site plan approval, subdivision, or PD plan approval. In order to determine which existing vegetation shall be preserved, the applicant shall provide a Site and Tree Survey per the requirements of Sec. 8.1.2.B.2.

b) No plantings shall be required when a preserved wetland or required riparian buffer exists within a required buffer.

3) *Installation of New Vegetation and Other Features*
If existing significant vegetation and other site features do not fully meet the standards for the type of buffer required, then additional vegetation and/or site features (including fences) shall be planted or installed within the required buffer area. All plantings must face toward the public right-of-way.

4) *No Development Within the Required Buffer*
The required buffer shall not contain any development, built-upon area, or site features that do not function to meet the standards of this Section or that require removal of existing vegetation, except for signs within platted sign easements, utilities within public utility easements, and public art on private property within a platted public art on private property easement (see Secs. 8.1.2.C.8 and 8.2.2.C.2.a). When a public utility easement is located within a Streetfront Buffer or a Thoroughfare Buffer that is 20 feet or greater in width, a minimum 20 foot wide planting area shall be provided as measured from the edge of the easement. For all other required buffers, a minimum 10 foot wide planting area shall be provided as measured from the edge of the easement. The planting area shall be as wide as necessary in order to accommodate all required buffer plantings. Tree species with compact root systems shall be used adjacent to the easement.

5) *Critical Root Zone Encroachment*
If the critical root zone of any tree encroaches one-third or more onto an adjacent parcel, the developing site must protect the critical root zone to protect the health and vigor of the tree.

6) *Ownership of Buffers*

a) No required buffer in a residential subdivision shall be wholly owned (in fee simple absolute) by the owner of an individual residential building lot zoned for residential uses. The buffers shall be owned by a property owner's association or be owned by a third party or shall be otherwise divided so that the buffer is not removed, modified, or damaged. Any required buffer (including those required as a zoning condition) for a residential

development shall not be credited toward meeting the lot size requirements. The preferred method is that the residential buffer be a separate lot and owned by a separate entity (e.g., property owner's association).

b) The buffers required under this Sec. 8.2 may be left under the control of the lot owner provided that: (1) the width of the buffer is doubled; and (2) each lot that contains a buffer must have a deed restriction recorded with a restriction that the buffer is to be left undisturbed. In any case, where control of the buffer is through a property owner's association, modifications, removal, or damage to the buffer by an adjacent homeowner shall be prohibited. The property owner's association shall be responsible for any violation related to the buffers in accordance with Sec. 8.2.3 *Maintenance Responsibility and Replacement of Damaged Vegetation*. This Provision applies to residential developments only.

8.2.7 Fences, Walls, and Berms

Fences, walls, and berms are permitted as elements of site design and in some locations, may be used to conceal storage or other unsightly or conflicting land uses. Fences are not allowed around detention and retention basins per Sec. 6.1.12.B.10. All fences, walls, and berms shall meet the following requirements:

A) ***Materials***

1) Fences or walls shall be constructed of wood, stone, brick, decorative concrete block, wrought iron, (or products created to resemble these materials), or a combination of any of these materials. Chain link fencing is allowed provided it meets the standards in Sec. 8.2.7.A.4.

2) All fencing shall be finished on the side facing a public right-of-way or adjacent properties.

3) Materials such as, but not limited to, plywood, particleboard, sheet metal, concrete slabs, concrete barriers shall not be used for fencing or for walls.

4)

a) Chain link fencing used in non-residential zoning districts shall be coated in black, brown or dark green vinyl or equivalent, except that chain link fencing used in industrial zoning districts or for public utility purposes does not require vinyl coating.

b) In residential zoning districts, chain link fencing is only allowed in the side and/or rear yards of individual lots and is not allowed to be used by the developer of a subdivision for buffering and screening. Chain link fencing used for single-family recreational accessory uses as permitted in Sec. 4.5.4 such as but not limited to playgrounds, swimming pools, hot tubs, spas, tennis courts, volleyball courts, and basketball courts, shall be vinyl coated in black, brown or dark green, and must meet the requirements of Sec. 8.2.7.B.1 *Fence/Wall Height*.

5) Barbed-wire and similar fence materials may only be used in conjunction with a permitted agricultural use or in conjunction with the permitted keeping of horses or livestock. Up to 2' of barbed wire can be erected on top of another fence type for safety purposes for industrial and utility uses.

B) ***Fence/Wall Height***

1) No freestanding fence or wall shall exceed seven feet in height including piers, posts, and finials. Non-residential fences or walls may be higher for security and/or screening purposes with approval by the Planning Director, after taking into account topography, unique site conditions, and unique safety, security, and screening requirements of the property owner (see Sec. 8.2.8 Screening). Vinyl coated chain link fencing for single-family recreational accessory uses that typically require taller fencing, such as tennis courts and basketball courts, may be approved up to 10 feet in height by the Planning Director, after taking into account site topography, existing and proposed vegetative screening, setbacks, unique site conditions, and the nature of the single-family recreational accessory use.

2) Fences and walls in front yards shall not exceed 48 inches in height. Piers or posts and finials may extend up to 6 inches higher than the finished fence or wall height.

3) Fences and walls shall be allowed in the controlled and limited access highway buffer, thoroughfare buffer, and streetfront buffer provided that they meet the requirements of Sec. 8.2.7.F *Fences in Required Buffers* and the height requirements of Sec. 8.2.7.B.1 and 2.

C) ***Fences/Walls Abutting Public Rights-of-Way***

1) Where non-residential fencing or walls will abut a public right-of-way, it shall be set back at least 4 feet from the right-of-way, and a minimum of 3 small evergreen shrubs spaced every 20 feet shall be planted on the side of the fence or wall facing the surrounding rights-of way, walks, parks, trails, or other public use properties. Plantings shall not be planted within the public right-of-way. Fencing or walls must provide visual interest through the use of different materials, decorative posts and finials.

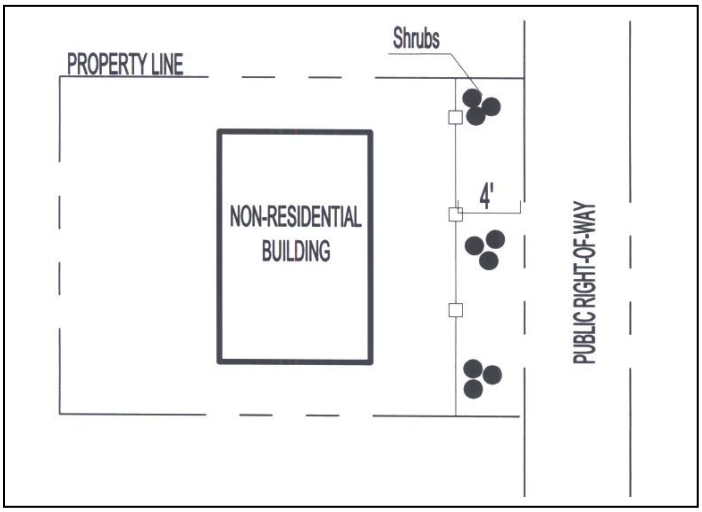

Figure 8.2.7(C): Fences/Walls Abutting Public Rights-of-Way

2) Where a residential fence or wall will abut a major or minor thoroughfare, it must provide visual interest through changes in fence setbacks or materials, or through the use of decorative posts with finials, or through the use of plants spaced every 20 feet on the side of the fence or wall facing the public thoroughfare. Plantings shall not be planted within the public right-of-way.

D) ***Berms***

Berms may be utilized as part of the landscaping and shall be covered with turf grasses or other appropriate groundcovers, shrubs, and trees as required to meet specific landscaping, screening, or buffer requirements as determined by the Planning Department provided that:

1) Berms shall be constructed to blend into the overall landscape and undulate to imitate the surrounding topography.

2) Berms shall be constructed to drain well and be composed of soils suitable to grow and sustain plants with at least the top foot consisting of good quality topsoil.

3) The slope of a berm shall not exceed a three to one (3:1) run to rise ratio.

E) ***Fences/Walls in Required Buffers***

1) Fences/walls shall be permitted in buffers only where they are planned as an integral part of the buffer. Fences/walls are not allowed in Riparian Buffers per Sec. 6.1.11, except for fences/walls installed by the Town for utility protection. Where there is existing vegetation, the installation of the fence/wall must be done in such a manner as to protect significant vegetation, such as, but not limited to, being hand built and winding around trees. It is not the intent of this section to allow the piecemeal installation of fences/walls in buffers or the installation of private fences/walls that result in completely enclosing sections of buffer inside of a fence/wall or fences/walls.

2) Fences shall supplement and not replace the existing and/or required plantings. Fences shall be set back from the edge of the buffer so that the buffer plantings are located on both sides of the fence, with a minimum of four feet from public rights-of-way. Fences shall be of uniform design throughout the buffer. The property owners association or other entity controlling the buffer shall maintain fences. Privately owned and/or installed fences are not permitted in the buffers except where designed and approved as part of the overall buffer.

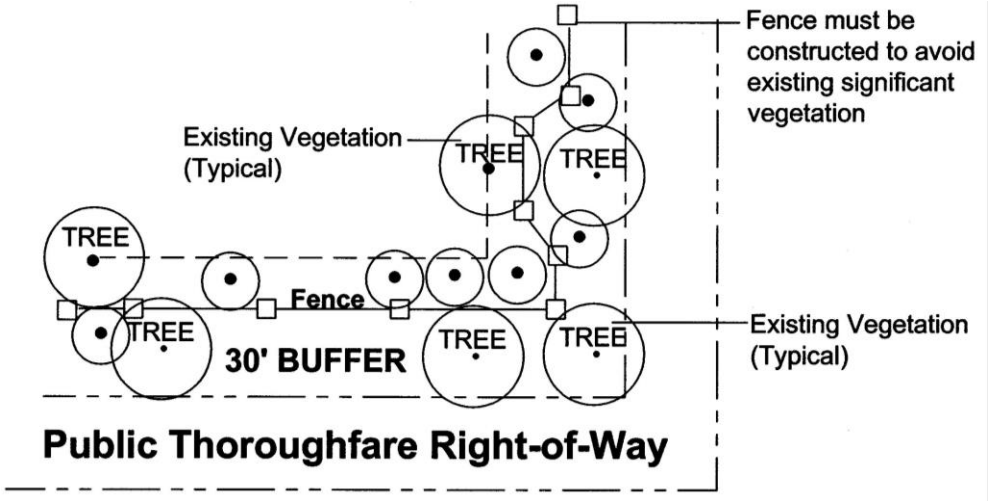

Figure 8.2.7(E): Fences/Walls in Required Buffers

F) ***Maintenance***
The owner of the property (or other party responsible for maintenance as depicted on the approved site plan) on which the fence, wall or berm is located is required to maintain the fence or wall in a safe and attractive condition. This shall mean the following:

1) No fence or wall shall have more that 20% of its surface area with disfigured, cracked, ripped or peeling paint or other material;

2) A fence or wall shall not stand with bent or broken supports, including loose or missing appendages;

3) Fences and walls shall be plumb (vertical) to the ground; and

4) Replacement of non-conforming fences, walls and berms shall comply with all the requirements of this section.

8.2.8 Screening

A) ***Integrate with Overall Design***
Loading docks, trash containers, outdoor storage, mechanical and HVAC equipment, and similar facilities on the roof, on the ground, or on buildings shall be incorporated into the overall design theme of the building and the landscape so that the architectural design is continuous and uninterrupted by ladders, towers, fences, and equipment, and no attention is attracted to such facilities by use of screening materials that are different from or inferior to the principal materials of the building and landscape. These areas shall be located and screened so that the visual and acoustic impacts of these facilities are fully contained and out of view from adjacent properties and public streets. See also Sec. 4.1.2 *Outside Storage, Display, and Sales/Rentals*.

B) ***Screening Methods***
Screening shall be accomplished by the following methods:

1) *Dumpsters.*

a) Dumpsters shall be screened with an opaque enclosure, fence or wall that reaches eight (8) feet in height or the height of the dumpster, whichever is higher. The design and materials of the enclosure, fence or wall must be presented as part of the Exempt Site Plan, Site Plan, or Master Subdivision Plan approval process. The screening structures must be constructed of masonry materials. The screening structures shall be architecturally compatible with the principal building(s) on site. The operational parts of the enclosure such as the gate frame and hinge assemblies must be built of heavy-duty material such as steel and engineered to hold up to daily use and abuse; wood is not allowed;

b) Gates or doors on dumpster enclosures shall be constructed of opaque metal, wood composite, or PVC composite. When composite products are used, they shall be placed close enough together to create an opaque gate. Any composite product used shall be lightweight. No wooden gates are permitted;

c) Where practical, shrubs or other plants must be planted outside the enclosure to visually soften the appearance;

d) The overall enclosure design must comply with the standards found in the Town's *Design and Development Manual*.

2) *Ground-located HVAC or other mechanical or utility equipment, including satellite dishes and roll-out carts.*
HVAC or other mechanical or utility equipment and roll-out carts located on the ground shall be screened with an opaque fence and vegetation or with an opaque screen of evergreen shrubs. Fences or shrubs shall be a minimum height of the proposed structure to be screened at installation. If ground located HVAC or other mechanical or utility equipment (including satellite dishes) are six (6) feet in height or taller, then fencing or other enclosure is required with vegetation planted outside the enclosure.

3) *Rooftop HVAC or other mechanical equipment, including satellite dishes.*
HVAC or other mechanical equipment located on the roof of buildings and not adequately screened by parapet walls shall be screened with an opaque screen similar in materials and color to the building materials.

4) *Other.*
Smaller devices such as but not limited to electrical boxes, vents, and externally mounted piping and conduit must also blend with and be incorporated into the overall architecture of the building. Where it is impractical to physically screen these smaller devices they may be painted to match the primary building color or the color of the portion of the building where they are mounted or affixed.