

**ARTICLE 7
DEVELOPMENT DESIGN AND IMPROVEMENT
STANDARDS**

Table of Contents

Article History	4
SECTION 7.01 GENERAL PROVISIONS	5
7.01.01 Purpose	5
7.01.02 Responsibility For Improvements	5
7.01.03 Principles Of Development Design	5
7.01.04 One Principal Use Per Parcel	5
7.01.05 Right-of-Way Protection	5
SECTION 7.02 DIMENSIONAL REQUIREMENTS	6
7.02.01 Generally	6
Table 7.02A -- Dimensional Requirements	6
7.02.02 Floor Area and Lot Coverage	14
TABLE 7.02B -- FLOOR AREA RATIO AND IMPERVIOUS SURFACE COVERAGE	15
7.02.03 Supplemental Provisions	15
SECTION 7.03 LANDSCAPING, BUFFERS AND SCREENING	19
7.03.01 General Provisions	19
7.03.02 Landscaping Vehicle Use Areas	20
7.03.03 Buffers and Screening	23
7.03.04 Tree Protection	27
7.03.05 Minimum Landscaping Installation Standards	28
7.03.06 Xeriscape	30
7.03.07 Maintenance of Existing or Installed Landscapes	31
7.03.08 Enforcement	31
SECTION 7.04 FENCES	32
7.04.01 Generally	32
7.04.02 Construction Standards	32
7.04.03 Height	33
7.04.04 Residential Project Fences	34
SECTION 7.05 OPEN SPACE	35
7.05.01 Generally	35
7.05.02 Creation of Open Space	35
SECTION 7.06 UTILITIES	37
7.06.01 Requirements for All Developments	37
7.06.02 Design Standards	38
7.06.03 Utility Easements	38

SECTION 7.07	PARKING AND LOADING	39
7.07.01	Generally	39
7.07.02	Required Number Of Parking Spaces	39
7.07.03	Reduction in Parking Requirements	44
7.07.04	Off-Street Loading	45
7.07.05	Alteration Of Conforming Development	46
7.07.06	Design Standards For Off-Street Parking And Loading Spaces	47
SECTION 7.08	STORMWATER	48
7.08.01	Generally	48
7.08.02	Permit Required	50
7.08.03	Standards	51
7.08.04	Water quality criteria	54
7.08.05	Erosion and Sedimentation Control	55
7.08.06	Special Requirements for systems within residential subdivisions	56
7.08.07	Submittals	56
7.08.08	Enforcement	58
SECTION 7.09	LIGHTING	58
7.09.01	Generally	58
7.09.02	Glare on Adjoining Properties	58
SECTION 7.10	ROADWAYS AND SIDEWALKS	59
7.10.01	Generally	59
7.10.02	Right-of-Way Use, Protection and Acquisition	60
7.10.03	Right-of-Way Requirements	60
7.10.04	General Road Design Requirements	61
7.10.05	Pavement Standards	63
7.10.06	Roadway Drainage	66
7.10.07	Existing Roadway/Access Facilities	70
7.10.08	Sidewalks	71
7.10.09	Intersection Sight Distance Requirements	72
SECTION 7.11	ACCESS MANAGEMENT	72
7.11.01	Generally	72
7.11.02	Road Frontage Requirements	73
7.11.03	Connection Permit Required	73
7.11.04	Location of Connections	74
7.11.05	Driveway Design	75
7.11.06	Use of Easements for Driveway Access	78

SECTION 7.12	SUBDIVISION DESIGN STANDARDS AND GUIDELINES	79
7.12.01	Access	79
7.12.02	Medians and Islands	80
7.12.03	Street Names	81
7.12.04	Natural Resources and Landscaping	82
7.12.05	Roadway Layout	83
7.12.06	Sidewalks	84
7.12.07	Lots	84
7.12.08	Stormwater Management	84
7.12.09	Water, Wastewater, Reclaimed Water Utilities	85
7.12.10	Fire Protection	85
7.12.11	Underground Utility Service	85
APPENDIX VII		86
Figures		87
Figure 7.1	Perimeter Landscaping	88
Figure 7.2	Interior and Perimeter Landscaping	89
Figure 7.3	Driveway Design Standards	90
Figure 7.4	Driveway Profile	91
Tables		92
Table 7.4	List of Approved Plant Species	93
Table 7.5	Prohibited Plantings	98

Article History								
Article	Description	Adoption of Entire Article	Adoption of Sections	Date of Adoption	Date Filed	Effective Date	Date of Repeal	Ordinance No.
7	Development Design Improvement Standards	✓		01/27/04	02/06/04	02/06/04		2004-03
7	Amendment Development Design Improvement Standards		7.06.01	12/12/06	12/21/06	12/21/06		2006-52
7	Amendment PUD minimum area requirements		Table 7.02A	02/24/09	03/02/09	03/02/09		2009-04
7	Amendment Street Naming Regulations		7.12.03	04/14/09	04/24/09	04/24/09		2009-16
7	Parking, Handicap, Stacking, Repeal 7.07.03 Deferral, Modify requirements number of spaces and design standards		7.07	10/27/09	10/30/09	10/30/09		2009-40
7	Development Design And Improvement Standards		7.01.01	05/28/2013				2013-13
7	Amend permits for work in or on County Right-of-Way, provide enforcement procedures, amend use of easement for access to property		7.01.05.b 7.10.02 7.11.03 7.11.06.a.4	11/14/2017		11/14/2017		2017-25

**ARTICLE 7
DEVELOPMENT DESIGN AND IMPROVEMENT
STANDARDS**

SECTION -- 7.01 GENERAL PROVISIONS

7.01.01 -- Purpose.

The purpose of this Article is to provide development design and improvement standards applicable to all development activity within the County.

7.01.02 -- Responsibility For Improvements.

All improvements or design standards required by this Article shall be designed, installed, maintained and paid for by the developer, unless otherwise specifically provided herein.

7.01.03 -- Principles Of Development Design.

- a. The provisions of this Article are intended to ensure healthy, functional, safe and attractive development.
- b. Development design shall first take into account the protection of natural resources as prescribed in **Article 6 of this Code**.
- c. In the case where design standards in other areas of the Code conflict with **Article 7**, the more restrictive standards shall apply. All development shall be designed to:
 1. avoid unnecessary impervious surface cover;
 2. provide adequate access to lots and sites; and
 3. avoid adverse effects of shadow, glare, noise, odor, traffic, drainage, and utilities on surrounding properties.

7.01.04 One Residential Unit Per Parcel

For any district in which single-family residential uses or mobile homes are allowed, only one (1) dwelling unit shall be permitted per platted lot or legal parcel, unless otherwise permitted by this Code.

7.01.05 Right-of-Way Protection

- a. Development Within Right-of-Way. No subdivision or non-residential development shall be permitted within proposed future County or State road right-of-way corridors, as established in the Traffic Circulation Plan and the Goals, Objectives & Policies of the Putnam County Comprehensive Plan, unless approved by the Board of County Commissioners.
- b. Development Contiguous to Right-of-Way. In any case where the development of land is contiguous to a roadway and determined by the Planning and Development Services Director and the Director of Public Works to have a significant impact on the function and/or

maintenance of that roadway, Putnam County may require right-of-way needed to mitigate such impacts to be dedicated to Putnam County in accordance with the Transportation Element of the Putnam County Comprehensive Plan, Land Development Code or other requirements specified within County approved plans. Right-of-way so dedicated may, or may not, be accepted into the County's maintenance system at the sole discretion of the Board of County Commissioners.

SECTION -- 7.02 DIMENSIONAL REQUIREMENTS

7.02.01 -- Generally.

Table 7.02A contains the basic dimensional requirements for all development subject to the requirements of this Code. Supplemental requirements that further clarify or limit the dimensional requirements in **Table 7.02A** are contained in **Subsection 7.02.03** below, and should be consulted before making development decisions under the requirements of **Table 7.02A**. Note that minimum lot area for each zoning category may be further limited upon application of **Paragraph 7.02.03.e** below, as well as the density limitations and point score allocations under the Future Land Use Element of the Comprehensive Plan and Article 2 of this Code.

Table 7.02A -- Dimensional Requirements

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
RE	<p>Minimum setback requirements: Front: 40 feet Rear: 20 feet Side: 20 feet Corner Side: 30 feet</p> <p>Minimum lot requirements: Lot Width: 150 feet Lot Area: 43,560 square feet (1 acre) Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-1	<p>Minimum setback requirements: Front: 25 feet Rear: 20 feet Side: 10 feet Corner side: 20 feet</p> <p>Minimum lot requirements: Lot Width: 100 feet Lot Area: 15,000 square feet Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-1A	<p>Minimum setback requirements: Front: 25 feet Rear: 20 feet Side: 10 feet Corner side: 20 feet</p> <p>Minimum lot requirements:</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
	<p>Lot Width: 75 feet Lot Area: 7,500 square feet Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-1HA	<p>Minimum setback requirements: Front: 25 feet Rear: 20 feet Side: 10 feet Corner side: 20 feet Minimum lot requirements: Lot Width: 100 feet Lot Area: 21,780 square feet (1/2 acre) Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-2	<p>Minimum setback requirements: Front: 25 feet Rear: 10 feet Side: 10 feet Corner side: 20 feet Minimum lot requirements: Lot Width: 75 feet Lot Area: 7,500 square feet Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-2HA	<p>Minimum setback requirements: Front: 25 feet Rear: 10 feet Side: 10 feet Corner side: 20 feet Minimum lot requirements: Width: 100 feet Area: 21,780 square feet Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
R-3	<p>Minimum setback requirements: Front: 25 feet Rear: 10 feet Side: 10 feet Corner side: 20 feet Minimum lot requirements: Lot Width: 75 feet Lot Area: 7,500 square feet Gross density shall not exceed 6 dwelling units per acre. Maximum Impervious Surface area: 45% Maximum building height: 35 feet</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
R-4	<p>Minimum setback requirements: Front: 35 feet (add 1' for every 2' of building height over 45') Rear: 10 feet (add 1' for every 2' of building height over 45') Side: 10 feet (add 1' for every 2' of building height over 45') Corner side: 20 feet (add 5' for every 5' of building height over 45')</p> <p>Minimum lot requirements: Lot Width: 75 feet Lot Area: 7,500 square feet</p> <p>Maximum impervious surface area: Depends on future land use category as outlined in Table 7.02B below</p> <p>Maximum building height: 45 feet. Structure may extend as high as 105 feet, subject to increased setbacks.</p>
<p>RMH*</p> <p><i>*See Article 2 and Article 3 for RMH zoning and special mobile home park development requirements.</i></p>	<p>Minimum setback requirements: Property Line setbacks: Front: 25 feet Rear: 10 feet Side: 10 feet Corner side: 25 feet</p> <p>Internal Separation between structures/units: 20 feet, except that one accessory building 150 square feet or less in size may be placed no closer than 3 feet the unit being served and 6 feet from any other units or accessory buildings.</p> <p>Minimum lot requirements: Mobile Home Park Width:</p> <ol style="list-style-type: none"> 1. 100 feet at ingress and egress points. 2. 200 feet at the portion of the site used for mobile home lots. <p>Lot Area for Mobile Home Park: 5 acres Maximum Gross Density: 8 dwelling units per acre. Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
CPO	<p>Minimum setback requirements: Front: 25 feet Rear: 15 feet Side: 10 feet Corner Side: 20 feet</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the CPO district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: 45% Maximum building height: 35 feet</p>
C-1	<p>Minimum setback requirements: Front: 35 feet Rear: 15 feet Side: 10 feet; provided, that no side setback is required if the developer is constructing two (2) or more buildings on contiguous lots; however, a ten-foot access way from the front of the buildings to their rear setbacks must be provided. Corner side: 20 feet</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the C-1 district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: 45% Maximum building height: 35 feet</p>
C-2	<p>Minimum setback requirements: Front: 35 feet Rear: 15 feet Side: 10 feet Corner side: 20 feet</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the C-2 district will be determined by the space requirements dictated by the proposed use, the required setbacks and the number of parking spaces required by this ordinance.</p> <p>Maximum Impervious Surface area: Depends on future land use category as outlined in Table 7.02B below Maximum building height: 35 feet</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
C-3	<p>Minimum setback requirements: Front: 35 feet (add 1' for every 2' of building height over 45') Rear: 10 feet (add 1' for every 2' of building height over 45') Side: 10 feet; provided that no side setback is required if the developer is constructing two (2) or more buildings on contiguous lots; however, a ten-foot access way from the front of the buildings to their rear setbacks must be provided. (add 1' for every 2' of building height over 45') Corner side: 20 feet</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the C-3 district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum impervious surface area: Depends on future land use category as outlined in Table 7.02B below</p> <p>Maximum building height: 45 feet. Structure may extend as high as 105 feet, subject to increased setbacks.</p>
C-4	<p>Minimum setback requirements: Front: 35 feet (add 1' for every 2' of building height over 45') Rear: 10 feet (add 1' for every 2' of building height over 45') Side: 10 feet; provided that no side setback is required if the developer is constructing two (2) or more buildings on contiguous lots; however, a ten-foot access way from the front of the buildings to their rear setbacks must be provided. (add 1' for every 2' of building height over 45') Corner side: 20 feet</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the C-4 district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: Depends on future land use category as outlined in Table 7.02B below</p> <p>Maximum building height: 45 feet. Structure may extend as high as 105 feet, subject to increased setbacks.</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
IL	<p>Minimum setback requirements: Front: 35 feet (add 1' for every 2' of building height over 45') Rear: 15 feet (add 1' for every 2' of building height over 45') Side: 15 feet (add 1' for every 2' of building height over 45') Corner side: 25 feet (add 1' for every 2' of building height over 45')</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the IL district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: Depends on future land use category as outlined in Table 7.02B below</p> <p>Maximum building height: 45 feet. Structure may extend as high as 105 feet, subject to increased setbacks.</p>
IH	<p>Minimum setback requirements: Front: 50 feet (add 1' for every 2' of building height over 45') Rear: 25 feet (add 1' for every 2' of building height over 45') Side: 20 feet (add 1' for every 2' of building height over 45') Corner side: 30 feet (add 1' for every 2' of building height over 45')</p> <p>Minimum lot requirements: The minimum lot size needed by the various uses in the IH district will be determined by the space requirements dictated by the proposed use, the required setbacks and parking, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: Depends on future land use category as outlined in Table 7.02B below</p> <p>Maximum building height: 45 feet. Structure may extend as high as 105 feet, subject to increased setbacks.</p>
MINING	<p>Minimum lot requirements: Area: 5 acres Distance from water body: As determined in the Master Mining Plan approved by the Board of County Commissioners.</p>

ZONING DISTRICT	DIMENSIONAL REQUIREMENTS
AE	<p>Minimum setback requirements: Front: 40 feet Rear: 20 feet Side: 20 feet Corner side: 30 feet</p> <p>Minimum lot requirements: Single-family dwellings or Churches: Lot Width: 150 feet Lot Area: 43,560 square feet (1 acre)</p> <p>Other: For other uses not specifically listed here, the lot area will be determined by the space requirements dictated by the proposed use, the required setbacks, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
A	<p>Minimum setback requirements: Front: 25 feet Rear: 10 feet Side: 10 feet Corner side: 20 feet</p> <p>Minimum lot requirements: Single-family dwellings and mobile homes on individual lots: Lot Width: 150 feet; maximum reduction by variance to 100 feet Lot Area: 43,560 square feet (1 acre)</p> <p>Other: For other uses not specifically listed here, the lot area will be determined by the space requirements dictated by the proposed use, the required setbacks, and any other applicable provisions of this ordinance.</p> <p>Maximum Impervious Surface area: 35% Maximum building height: 35 feet</p>
P1 and P2	<p>The lot area and setbacks shall be determined by the space requirements dictated by the proposed use and any other applicable provisions of this ordinance as determined by the Planning and Development Services Director.</p>
PUD	<p>Minimum lot area requirements: NO MINIMUM All other dimensional requirements depend upon the terms of the PUD rezoning ordinance, a development agreement, if any and the limitations of Land Development Code and the Comprehensive Plan</p>

7.02.02 – Floor Area and Lot Coverage

a. Definitions:

1. Floor Area means the sum of the gross horizontal areas of all floors in a building, measured from exterior faces of exterior walls or from the centerline of walls separating two (2) attached buildings.
2. Gross Floor Area means the sum of the gross horizontal areas of the several floors of a building measured from the exterior face of exterior walls, or from the centerline of a wall separating two (2) buildings, but not including interior parking spaces, loading space for motor vehicles, or any space where the floor-to-ceiling height is less than six (6) feet.
3. Floor Area Ratio means the ratio of gross floor area of all buildings on the lot or parcel to the area of the lot or parcel.
4. Impervious Surface means a surface that has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water. It includes, but is not limited to, surfaces such as compacted clay or limestone, as well as most conventionally surfaced streets, roofs, sidewalks, parking lots and other similar structures.

b. Limitations. Subject to the more specific impervious surface requirements of the applicable zoning district in **Subsection 7.02.01** above, development shall be governed by the maximum floor area ratios and impervious surface coverage limitations contained in **Table 7.02B** below. Because the limitations in **Table 7.02B** derive from the Comprehensive Plan, any requested variance to the limitations for a zoning district shall not exceed the limitations of **Table 7.02B**.

c. Table 7.02B Notes:

1. NA = not applicable
2. The impervious surface percentages represent the upper limit and may be further limited by drainage requirements, the zoning district's requirements, the soil conditions of the property, recharge potential of the soils or other environmental factors, such as those governed by Article 6.

TABLE 7.02B -- FLOOR AREA RATIO AND IMPERVIOUS SURFACE COVERAGE				
<i>FUTURE LAND USE CATEGORIES</i>	<i>Floor Area Ratio Non-Residential</i>	<i>Impervious Surface Coverage Non-Residential</i>	<i>Floor Area Ratio Residential</i>	<i>Impervious Surface Coverage Residential</i>
Urban Service (US)	1:1	85%	0.7:1	50%
Urban Reserve (UR)	0.85:1	80%	0.5:1	50%
Residential Low Density (RL)	0.5:1	70%	0.5:1	50%
Rural Center (RC)	0.7:1	75%	0.5:1	50%
Rural Residential (RR)	0.4:1	70%	0.4:1	40%
Commercial (CR)	1:1	85%	NA	NA
Industrial (IN)	1:1	85%	NA	NA
Mining (MI)	NA	NA	NA	NA
Public Facilities (PF)	0.5:1	70%	NA	NA
Agricultural I (A1)	See Zoning District	85%	0.4:1	50%
Agricultural II (A2)	See Zoning District	85%	0.4:1	50%
Conservation (CN)	NA	10%	NA	10%

7.02.03 -- Supplemental Provisions

- a. Lot Area. Lot Area or lot size is the minimum square footage required for an individual lot or parcel in the applicable zoning district. The Lot Area shall not include roadways, rights-of-way lands or property located waterward of the mean or ordinary high water line (i.e. submerged lands). For purposes of zoning districts or uses that require a Lot Area of 1 acre (43,560 square feet), a lot or parcel that is 0.95 acres in size or better shall be sufficient to meet the required Lot Area.
- b. Lot Width.
 1. Lot Width: Lot width is measured as the horizontal distance between side lot lines along the depth of the lot or parcel commencing at the boundary of the required front yard setback. For example, where the required front yard setback is 25 feet, the lot width will be measured starting 25 feet from the front property line.
 2. Waterfront Lot Width: The lot width needed to meet the 100-foot water frontage requirement of **Section 6.03** of this Code shall be measured as the horizontal distance between the side lot lines within an area that begins at the ordinary high water line and extends to the front lot line or a distance of 500 feet, whichever comes first.

c. Setbacks.

1. Defined. Standard setbacks are measured by the horizontal distance between the boundaries of the lot or parcel and the front, rear or side lines of the outside edge of the of the structure footprint (i.e. the exterior wall), which shall include screened enclosures.
2. Double Frontage. In the case of a double frontage lot the applicable front setback requirement shall apply to both frontages, unless such lot has a permanent solid face perimeter buffer wall precluding access along one (1) frontage. As used herein, double frontage means a single lot or parcel that is contiguous to two parallel roadways.
3. Waterfront setbacks. New development on the waterfront shall meet the setback pursuant to the requirements of **Paragraph 6.03.03.d** of this Code. Except that, lots or parcels of vested subdivisions created prior to December 19, 1991 that are adjacent to a water body shall maintain a waterfront setback that is, at a minimum, the equivalent of the front yard setback for the applicable zoning district.
4. Accessory Structures. Accessory structures may be allowed inside the setbacks in accordance with Articles 2 and 3 of this Code.
5. Corner Lots. On corner lots, the front yard shall apply along the shortest road frontage. The side corner yard shall have a minimum setback ten (10) feet greater than interior side yard requirement. No structures, berms, trees or landscaping may be erected or placed in violation of any visibility triangle in Section 7.10.09. "Corner Lot" as used herein means a single lot or parcel that is contiguous with two or more perpendicular or intersecting roadways.
6. Permitted Projections Into Required Yards
 - (a) Certain architectural features, such as eaves, bay windows and projecting fireplaces, which may occupy a portion of a building footprint, may project up to three (3) feet into required front, rear and side setbacks. No such intrusion is permitted into front or rear setbacks of less than ten (10) feet in width or side setbacks of less than five (5) feet in width.
 - (b) Mechanical equipment, such as air conditioning units, pumps, heating equipment, solar panels, and similar installations, and screening and housing for such equipment, may project into the required side setbacks or rear setbacks, but shall not be located closer than five (5) feet to any lot or parcel line, and may not project into the required front setbacks.
 - (c) Handicap access ramps built for access by persons with a disability to a legally permitted residential structure shall not be subject to required setbacks from property lines (yards) in any zoning district. This exemption shall not apply to any required setback from waterfront or wetlands. Any such handicap access ramp shall not extend off a property, or into any public or private right-of-way or easement of record. This exemption shall not apply to any accessory structure or any structure permitted as a non-residential structure. This section shall not exempt such handicapped access ramps from any other permitting requirements of the Putnam County Land Development Code or the Florida Building Code.
7. Patios and Pools.

- (a) Uncovered Patios, Pools, and similar Structures may intrude up to but no more than thirteen (13) feet into the required rear setback, but they may not intrude into the required side or front setbacks. In no case shall the permitted intrusion of the patio, pool or similar structure reduce the rear setback to less than ten (10) feet.
- (b) Covered Patios, Covered Pools, and similar structures may not intrude into the required setbacks, except as provided under paragraph 6 above.

8. Legally Nonconforming Flag Lots.

Where a legally nonconforming lot of record is a flag lot, the front setback shall be measured from a line where the access “flag pole” intersects the body or “flag” portion of the lot rather than from the frontage on the adjoining road. For purposes of this section, “flag lot” is defined as a flag shaped parcel of land such that the larger “flag” portion of the parcel is connected to the road from which legal access is taken by a narrow strip of land or “pole” that is part of the legal description of the parcel rather than being an appurtenant easement, prescriptive easement or public road. If the “pole” portion of the lot is of sufficient width to allow the placement of structures in accordance with required setbacks, the parcel shall not be considered a flag lot.

9. Platted subdivisions with lots of one acre or less in size that are 75 percent or more built out may request an administrative variance to conform with an alternate front yard or waterfront setback equal to the prevailing setback, as determined by the Planning and Development Services Director, of the existing legally-built structures from the front property line or waterfront.

10. Parcels whose legal access is via a legally-existing easement for ingress/egress shall measure the front setback from the edge of the easement regardless of the actual location of the property line.

d. Measuring Height. Structure or building height shall be measured as the vertical distance from the average ground elevation adjoining the front wall of the building to the highest point of the roof surface of a flat roof, to the deck line of a mansard roof surface of a flat roof, to the deck line of a mansard roof, or to the average height between the eaves and ridge of a gable, hip or gambrel roof. Where the structure is within a designated flood zone as shown on the adopted FIRM, height shall be measured from the determined base flood elevation (BFE). Steeples, clock towers, smoke stacks or similar architectural features may be excluded in determining the height of a structure when the steeple or smoke stack meets the following additional criteria:

1. The architectural feature is typical for the use occupying the structure (i.e. a church steeple, smoke stack on a manufacturing plant, or clock tower on a public building or public grounds); and
2. The use is allowed in the applicable zoning district; and
3. The architectural feature does not extend to height greater than twice the height limitation for the main structure in the applicable zoning district; and
4. The architectural feature is setback a distance equal to the height of the architectural feature from all property lines; and
5. The architectural feature meets the requirements for section 4.03 of this Code (Airport Overlays).

- e. Additional Utility-Based Requirements. In addition to the Lot Area requirements specified in **Table 7.02A** above, the following minimum lot area and lot width requirements shall apply to all new residential subdivisions, as well as residential and non-residential lots created after the effective date of this Article, regardless of the applicable zoning district:
1. Private Well and Private Septic Tank:
Lot Area: 43,560 square feet (1-acre) **Lot Width:** 100 feet
 2. Central Water and Private Septic Tank:
Lot Area: 21,780 square feet (0.5-acre) **Lot Width:** 100 feet
 3. Private Well and Central Wastewater:
Lot Area: 10,890 square feet **Lot Width:** 75 feet
Where there is a conflict with **Table 7.02A** or any other dimensional requirements of this Code, the stricter standard shall apply.
- f. Variances and Nonconformities. Unless a dimensional requirement is mandated by the goals, objectives and policies of the Comprehensive Plan, a property owner may apply for a variance to any of these dimensional requirements. Variances shall be reviewed and decided under Section **9.04** of this Code. Nonconforming lots or structures may also be reviewed under the nonconformity provisions of **Section 9.03** of this Code.

SECTION -- 7.03 LANDSCAPING, BUFFERS AND SCREENING

7.03.01 – General Provisions

- a. Intent – The purpose of the landscape regulations is to protect the general welfare of Putnam County citizens and visitors by establishing minimum standards for the protection of trees and native plant communities, to promote water conservation, to enhance the County's appearance, and to provide for the proper installation and maintenance of landscapes. The landscape standards are intended to eventually result in a developed environment that is in harmony with the surrounding natural environment.
- b. Applicability –The general standards set forth in this section shall apply to all planting or buffering when required by County regulations. Whenever plant materials are required for vehicle use area landscaping, perimeter buffers or any purpose required by this article, they shall be installed and maintained in accordance with the standards and requirements of this section. The buffering requirements in this section are in addition to the buffering requirements set forth in Article 6 of this Code (Resource Protection Standards). Where the buffering requirements of Article 6 and this section conflict, the stricter buffering standard shall apply.
- c. Definitions – As used in this article, the following terms shall have the meanings indicated:
 1. *Approved Plant Species* - The landscaping requirements of this section shall be achieved by using any of the plant species shown in **Table 7.4 found Appendix VII**.
 2. *Caliper* - The trunk diameter of a tree. Caliper is measured six inches above the soil line for installed trees up to and including four inches in diameter and twelve inches above the soil line for installed trees greater than four inches in diameter. For existing trees, caliper is

measured four and one-half feet above the soil line and is also referred to as diameter at breast height (DBH).

3. *Canopy Tree* - A species of tree that normally grows to a mature height of forty feet or more.
4. *Prohibited Plant Species* - Certain plant species are so obnoxious, invasive and detrimental to the environment so that they are considered contrary to the intent of this section and expressly prohibited. The list of prohibited plant species is provided in **Table 7.5, found Appendix VII**. The list found in **Table 7.5** is in addition to any plant species prohibited by State or Federal law.
5. *Street Tree* - A tree located in a planting strip between the sidewalk and the street. Street trees shall be canopy trees except where conflicts with overhead or underground utilities exist, in which case two understory trees shall be substituted for a canopy tree.
6. *Understory Tree* - A species of tree that normally grows to a mature height of fifteen to thirty-five feet.
7. *Undeveloped* - A general lack of structures or impervious areas with any improvements not exceeding five percent of the total parcel area.
8. *Undisturbed Area* - That area surrounding a tree within a circle described by a radius of one foot for each inch of the tree's diameter at breast height.
9. *Vehicle Use Area* - An area for the display or parking of any and all types of vehicles and equipment, whether self-propelled or not, and all designated access or service drives upon which vehicles traverse the property. A vehicle use area does not include parking spaces or driveways associated with and immediately adjacent to detached or attached single-family residential dwellings.

7.03.02 – Landscaping Vehicle Use Areas

- a. Intent. Vehicle use area landscaping required by this section is intended to promote the public health, safety and general welfare by providing minimum requirements for installation and maintenance of landscaped areas in connection with business, institutional and industrial areas, and to preserve the value of land and buildings on surrounding properties and neighborhoods.
- b. Applicability. The requirements of this section shall apply to all new vehicular use areas, and existing vehicular use areas altered or improved subject to **Section 9.03** of this Code. Landscaping shall be provided in accordance with this section prior to issuance of a certificate of occupancy or final inspection. The Director or designee may waive the requirements of this Section, as a whole or in part, upon determination that the existing vegetation, proposed vegetation, or a combination of the two, substantially meets the intent of this Section.
- c. Exemptions. The following shall be exempt from the provisions of this section:
 1. Public Educational Facilities.
 2. Development for which a valid concurrency reservation certificate has been issued or which is subject to a development agreement prior to the effective date of this Article.
 3. Lands used in conjunction with a bona fide farm operation within the meaning of section

823.14(6), Florida Statutes, and classified as agricultural land pursuant to section 193.461, Florida Statutes.

4. Lands used as botanical gardens or state-approved or government nurseries or groves.
 5. Single-family residential lots of record prior to the effective date of this Article.
 6. Single-family residential lots that are not part of a subdivision created after the effective date of **Article 12** of this Land Development Code.
 7. Cemeteries created prior to the effective date of this Article.
- d. Perimeter landscaped area required.
1. Except as exempted by 2 below, all vehicular use areas shall be separated by a perimeter landscaped area, a minimum of **nine feet** in width, from any public right-of-way and from any boundary of the property on which the vehicular use area is located.
 2. This landscape area is not required:
 - (a) When the paved ground surface area is completely screened from adjacent properties or public rights-of-way by intervening buildings or structures;
 - (b) When an agreement to operate abutting properties as essentially one contiguous parking facility is in force. The agreement shall be executed by the owners of the abutting properties, and shall bind their successors, heirs and assigns. Prior to the issuance of any building permit for any site having such a contiguous parking facility, the agreement shall be recorded in the public records of the county;
 - (c) When the paved area is at least 150 feet from the nearest property line; or
 - (d) When the required landscape strip would be in conflict with utility installations, and such conflicts cannot be resolved, such areas may be reduced to five feet and planted with shrubs and such understory trees as may be acceptable to the utility.
 3. The landscape area shall commence within five feet of the paved surface area. Where the perimeter landscape area and a required buffer strip overlap, the more stringent requirements shall be applied. Perimeter buffering shall be required for all storage, accessory service and customer parking areas at any auto sales facility.
 4. The Director or designee may alter these perimeter landscape requirements if it is determined that:
 - (a) Screening is better achieved by relocation of the landscape strip;
 - (b) There is an unresolvable conflict between other element(s) of the development plan and the location, width or height of the perimeter landscape area, and that the public interest is therefore best served by relocation of the landscape area, lowering the height of required material or the substitution of a solid fence or wall in conjunction with a reduction in width; or
 - (c) That the screening would only serve to emphasize a long driveway that would otherwise be unobtrusive.

5. The perimeter landscape area shall contain:

(a) Shrubs, arranged to provide a visual screen of 75 percent opacity and achieve a height of at least three feet within three years; and

(b) At least one shade tree planted for each 50 linear feet, or part thereof, of the boundary of the vehicular use area. The distance between such trees shall not exceed 55 feet.

(c) The Director or designee may determine that natural vegetation is sufficient to screen adjacent properties and rights-of-way. In such instance the existing vegetation, including understory plants and bushes, is protected from removal except that diseased plant material and invasive nonnative species may be replaced in accordance with this section. Pruning may be done to improve the health of plants, but not to such extent that buffering is lost. Where encroachments are made for utility connections, replacement plants appropriate to the ecosystem shall be required.

e. Landscaping in Interior Areas. Landscaping areas shall be provided for interior vehicular use areas so as to provide visual and climatic relief from broad expanses of pavement and to define logical areas for pedestrian and vehicular circulation. In connection therewith, the following standards shall apply:

1. Off-street parking areas of five (5) or more parking spaces or in excess of one thousand (1,000) square feet shall contain at least ten (10) square feet of interior landscaping for each parking space or at least ten percent of the gross area of the interior vehicular use area shall be landscaped, whichever is greater. Other vehicular use areas in excess of one thousand (1,000) square feet shall have twenty-five (25) square feet of landscaped area for each five hundred (500) square feet or fraction thereof of paved area.
2. Each separate interior landscaped area shall contain a minimum of three hundred (300) square feet and shall be at least five (5) feet wide. A minimum of one (1) tree shall be planted for every one hundred-twenty (120) square feet of interior landscaping with the remaining area adequately planted with shrubs, ground cover or other approved landscaping materials.
3. All interior landscaping shall be protected from vehicle encroachment by curbing or wheel stops.
4. A driveway into a Parking Area shall be bordered by a landscaped buffer a minimum of eight (8) feet in width and three (3) feet in height. See **Figure 7.2 in Appendix VII.**
5. Interior landscaped areas shall be dispersed so as to define aisles and limit unbroken rows of parking to a maximum of one hundred linear feet. Interior landscaped areas shall not be less than three hundred square feet in area.
6. In other vehicular use areas where the strict application of this section will seriously limit the function of the area such as off-street loading areas, the required landscaping may be located near the perimeter of the paved area. Such required interior landscaping which is relocated shall be in addition to the perimeter landscaping requirements.

7. Seventy percent (70%) of the required Trees shall be Canopy Trees. This provision does not exclude the use of existing trees.
8. Minimum Planting Areas For Trees.
 - (a) Understory Trees - The minimum planting area for understory trees shall be a two and one-half foot radius from the trunk perimeter. Retained trees used to meet the requirements of this section must be located within an undisturbed area.
 - (b) Canopy Trees - The minimum planting area for canopy trees shall be a five-foot radius from the trunk perimeter. Retained trees used to meet the requirements of this section must be located within an undisturbed area.
9. Interior landscaping layout or design shall be reviewed and approved by the Director or designee.
- f. The use of existing native vegetation in buffer zones is preferred. If a developer proposes to landscape a buffer zone with existing native vegetation, a buffer with fewer plants than required by this Section may be approved by the Director or designee if:
 1. Such is necessary to prevent harm to the existing native vegetation; and
 2. The buffering and/or aesthetic purposes of the buffer zone are substantially fulfilled despite the lesser amount of vegetation.

7.03.03 – Buffers and Screening

- a. Generally. A buffer zone is a landscaped strip along parcel boundaries that serves as a buffer between incompatible uses and zoning districts in order to minimize noise, the glare of lights and to visually screen buildings or act as an attractive boundary of the parcel or use, or as both a buffer and attractive boundary. The width and degree of vegetation required depends on the nature of the adjoining thoroughfares and uses.
- b. Requirements. The required screening and buffer distance between proposed land uses and the zoning or lot line is set forth in the tables below. If the land next to the proposed development is vacant, the buffer required shall be determined by the existing zoning on the adjacent vacant parcel. If the adjacent Parcel is vacant but is zoned for a more intensive zoning district, no buffer area shall be required of the less intensive Use. The relative degree of intensity shall be determined as follows:

Table 7.03A – Intensity for Buffers and Screening*	
Group	Land Use Classification
1	Residential – single family, including mobile homes (R-1, R-1A, R-1HA, RE, R-2, R-2HA, AE and AG)
2	Multi-Family less than or equal to six (6) dwelling units per acre (R-3 and R-4)
3	Multi-Family greater than six (6) dwelling units per acre (R-3 and R-4) Mobile Home Park (RMH) Cultural/Institutional
4	Neighborhood Business, Professional Office (CPO) and General Commercial (C-1, C-2)
5	High Intensity Commercial (C-3 and C-4) and Light Industrial (IL)
6	Heavy Industrial (IH) Mining and Extractive (A, Mining) Solid Waste & Correctional facilities Intensive Agriculture
7	Outdoor/Passive

*Example zoning districts are provided in parenthetical for informational purposes only.

Table 7.03B – Buffer and Screening Matrix*							
Proposed Use Intensity Group	Abutting Use Intensity						
	1	2	3	4	5	6	7
1	None	5/A	20/B	10/A	20/B	30/C	10/A
2	5/A	None	5/A	10/A	20/B	30/C	10/A
3	20/B	5/A	None	10/A	20/B	30/C	25/B
4	10/A	10/A	10/A	None	10/A	20/B	15/B
5	20/B	20/B	20/B	10/A	None	15/B	25/B
6	30/C	30/C	30/C	30/B	20/B	None	30/B
7	10/A	10/A	25/B	15/B	25/B	30/B	None

*Buffer and screening expressed as “Buffer width in feet/Applicable Screening Standard.” For example, “5/B” requires a 5-foot wide buffer and screening standard B. The Screening Standards are described in subparagraph c below.

c. Screening Standards.

1. Screening shall be installed within the buffers required above. Screening shall meet specified height requirements set forth in this subsection, except in front and corner yard areas. In meeting the screening standards, it is recommended that staggered hedgerow plantings be installed on three (3) foot centers to achieve the opacity indicated.
2. Screening Standard “A” shall consist of the following:
 - (a) Evergreen plants, at the time of planting, shall be six (6) feet in height and provide an overall screening opacity of seventy-five percent (75%); or
 - (b) A masonry wall six (6) feet in height, located within the required buffer; architecturally

finished on all sides, and if a block wall, shall be painted on all sides; or

(c) A solid wooden fence six (6) feet in height (finished side out); or

(d) A berm not steeper than two to one (2:1) in combination with (a), (b) or (c) above, to achieve a minimum height of six (6) feet and seventy-five percent (75%) opacity at the time of installation; and

(e) Lawn, low growing evergreen plants, evergreen ground cover, or rock mulch covering the balance of the buffer.

3. Screening Standard "B" shall consist of the following:

(a) The requirements of Screening Standard "A"; and

(b) A row of evergreen Canopy Trees which are not less than eight (8) feet high at the time of planting, a minimum of 1.5 inch caliper, and are spaced not more than twenty (20) feet apart. The Trees are to be planted within ten (10) feet of the property line.

4. Screening Standard "C" shall consist of the following:

(a) A row of evergreen canopy trees which are not less than eight (8) feet high at the time of planting, a minimum of 1.5 inch caliper, and are spaced not more than twenty (20) feet apart. The trees are to be planted within ten (10) feet of the property line; and

(b) A masonry wall, architecturally finished on all sides, located within the required buffer; such wall shall be a minimum height of six (6) feet and, if a block wall, shall be painted on all sides; and

(c) Lawn, low growing evergreen plants, evergreen ground cover, or rock mulch covering the balance of the buffer.

5. Variance. The requirements of the Screening Standards A, B and C may be modified by a variance from the Zoning Board of Adjustment under Section 9.04 of this Code; or they may be modified by an administrative variance under the procedures outlined under section 9.04.06, if, in addition to the conditions outlined in section 9.04.06, the following conditions exist:

(a) There is existing natural vegetation of sufficient height and density to screen the use, as determined by the Director or designee; or

(b) There are conditions in place on the property at issue prior to the effective date of this Code that prevent compliance with the buffering and screening requirements; for example, utility easements that prevent the planting of any vegetation or placement of an artificial screen in order to protect equipment or access. The property owner shall make every effort to achieve substantial compliance with the buffering and screening requirements.

6. Open Storage

(a) Open storage that constitutes the principal use of a site shall be buffered in accordance with screening standard “C”.

(b) Open storage areas which are accessory to a principal use shall be screened from view of any street and from residentially zoned land as follows:

(1) Where an open storage area is in view from a street, the method of screening shall consist of solid masonry walls or solid wooden fences at least six (6) feet in height, or evergreen shrubs which at the time of installation shall be six (6) feet in height and seventy-five percent (75%) opaque and shall grow to form a continuous hedge, with access from the Street only through solid gates which shall be closed except when in use. Said screening shall extend interior to the site a minimum of one hundred (100) feet from the street property line or the entire depth of the open storage area, whichever is less, unless an existing permanent structure shields the storage area from public view.

(2) Where an open storage area is in view from a residentially zoned district within two hundred (200) feet, the method of screening shall consist of solid wooden fences or painted solid masonry walls at least six (6) feet in height, or evergreen shrubs which at the time of installation shall be six (6) feet in height and seventy-five percent (75%) opaque and shall grow to form a continuous hedge. Said screening shall be installed along all boundaries of the storage area including internal boundaries, that are in view from the residential districts.

7. Solid Waste Storage. All new buildings and uses, except for Single Family and Two-Family Dwellings, shall provide facilities for the central storage of solid waste within the lot. Where such facilities are provided outside of a building, they shall be screened from public rights-of-way and adjacent property by an enclosure constructed of materials compatible with the materials on the front building wall of the main building. Trash receptacles shall be provided for all non-residential uses and shall be conveniently located near building exits for patron use. All drive-in restaurant facilities shall have a minimum of one trash receptacle that is accessible by patrons passing through the facility without the patron having to exit the vehicle.

8. Mechanical Equipment. All non-residential and non-agricultural uses shall screen all mechanical equipment, including but not limited to ground mounted air conditioners and transformers and rooftop equipment such as air conditioners or pumps, from view from public places and neighboring properties through the use of features such as berms, fences, false facades, landscaping or by placement in the rear or side yard of an existing or proposed non-residential structure. Ground level mechanical equipment serving non-residential, non-agricultural or more than one residential use shall be screened through the use of features such as berms, fences, false facades, landscaping or by placement in the rear of an existing or proposed non-residential structure. Screening shall allow for access to such equipment for repairs or replacement. Rooftop equipment shall be screened through the use of a parapet wall or false facade that is an integral part of the structure.

- d. Mixed-Use Developments. Buffering and screening around the exterior of a mixed-use development shall be based on the predominant use in the development. If the design of a mixed-use development protects adjacent uses without the full buffer or screen required by this subsection, a lesser buffer may be approved by the Development Review Committee, if the decision to allow the lesser buffer is supported by written findings.
- e. Responsibility for Buffers and Screens.
 1. The desired width of a buffer zone between two parcels is the sum of the required buffer zones of the parcels. Where a new use is proposed next to an existing use that has less than the required buffer zone for that use, an inadequate buffer zone will be tolerated, except as provided in 2 below, until the nonconforming parcel is redeveloped and brought into conformity with the buffer zone requirements of this subsection. The developer of the new adjoining use is encouraged, however, to take into account the inadequacy of the adjoining buffer zone in designing the site layout of the new development.
 2. Where a residential use is proposed next to an existing non-residential use, or a non-residential use is proposed next to an existing residential use, and the existing use does not have a conforming buffer zone abutting the property proposed for development, the proposed use shall provide eighty (80) percent of the combined required buffer zones of the two uses. Where the existing use has a buffer zone, but such zone does not meet the requirements of this subsection, the proposed use may provide less than eighty (80%) of the combined required buffer zones if the provision of such lesser amount will create a buffer zone meeting one hundred (100%) of the combined required buffer zone of the two uses. The Development Review Committee shall determine which areas may be counted as a buffer zone of the existing use based on the buffering qualities of the areas.

7.03.04 – Tree Protection

a. Variances

1. The Department shall be authorized to approve the following administrative variances from certain development standards in order to protect trees with a caliper that is six inches or greater as follows:
 - (a) Setbacks for principal and accessory buildings and structures within residential zoning districts: Front or rear setbacks may be reduced up to twenty five percent. Side setbacks may be reduced up to fifty percent.
 - (b) Setbacks for principal and accessory buildings and structures within nonresidential land uses where adjacent to residential land uses: Setback may be reduced a maximum of fifteen feet provided that the reduced setback area shall contain a ten-foot landscaped area with a six-foot high opaque visual barrier (either fence or vegetation) and tree planting thirty feet on center.
 - (c) Parking space quantity standards: Reduction of up to ten percent or one space whichever is more.
 - (d) Parking space size standards: Up to 1.5 feet from the required depth.

2. No variance granted to the width of required vehicle use area landscaping or the width of required perimeter buffers specified by this Article shall constitute a variance to the quantity of plantings required by this section, unless specifically authorized by the Zoning Board of Adjustment.

b. Subdivision and Street Design Modifications.

1. The Director of Public Works shall be authorized to approve modifications to the location and spacing requirements set forth in the design standards pertaining to utilities, sidewalks, roads or drainage structures in order to protect trees and native plant communities. Intersection and radius requirements, detention/retention pond capacities and offset requirements may also be modified in order to protect trees and native plant communities.
2. Wherever a joint use driveway is required or installed at the option of the applicant, the Department shall be authorized to make adjustments in the location and design of landscaped areas required on the affected building site(s), but not in the number of plantings required.

7.03.05 Minimum Landscaping Installation Standards.

a. Generally.

1. Any landscaping installation required under this Code shall be subject to the minimum installation standards set forth in this subsection, unless more specific standards are otherwise stated.
2. The property owner shall be responsible for installing landscaping, according to accepted commercial planting procedures, using plant materials of species that are native or adapted to the County.
3. Upon receipt of a written request from the developer, the Director may adjust the application of standards contained in this section, in part or in whole, to allow credit for healthy plant material on a building site prior or subsequent to its development, if such an adjustment is consistent with the intent of this section. Existing plant material native to Northeast Florida should, in particular, be retained.
4. Landscaped areas, exclusive of those located on single-family residential lots, shall be protected from vehicular encroachment with effective wheel stops or curbs.
5. Wherever new medium or large trees are installed, they shall be provided with anchoring only when necessary to maintain the tree in a vertical upright position.

b. Tree Health. Trees used to satisfy the requirements of this section shall be in good health. A determination as to the health of trees need not be made in advance of their use.

c. Quality. Plant materials used in conformance with provisions of this article shall equal or exceed the standards for Florida No. 1 as established by the Florida Department of Agriculture (FDOA) Grades and Standards. Turf grass sod shall be clean and reasonably free of weeds and noxious pests or disease. Turf grass seed used shall meet requirements of the FDOA quality control

program. The preservation and use of native vegetation is highly encouraged. Plant materials selected shall be the best suited to withstand the soil and physical conditions of the site. Plant materials that are freeze and drought tolerant are preferred.

- d. Irrigation. Unless the requirement is waived under paragraph 3 below, when landscaping or vegetative screening is required as provided in this Article, an irrigation plan shall be submitted and approved by the Director prior to permitting. The water use zones shall be shown on the Irrigation Plan. Turf grass areas shall be irrigated on separate irrigation zones from tree, shrub and groundcover beds. Reclaimed or non-potable water shall be used for irrigation if a source is determined to be available by the Putnam County Public Works. Moisture sensor and/or rain gauge equipment shall be required on automatic irrigation systems to avoid irrigation during periods of sufficient rainfall. The use of low volume, emitter, or target irrigation is preferred for trees, shrubs and groundcovers. No significant irrigation overthrow shall be allowed onto impervious surfaces. The use of low volume, emitter or target irrigation is preferred for trees, shrubs and ground covers. Irrigation systems shall be operated to conform to St. John's River Water Management District or Suwannee River Water Management District mandatory water use restrictions.
- e. Berms. When a berm is used to form a visual screen in lieu of, or in conjunction with, a hedge or wall, such berm shall not exceed a slope of three to one unless otherwise approved by the County Engineer, and shall be completely covered with shrubs, turf grass or other living ground cover.
- f. Ground Covers. Ground covers shall be planted in a manner so as to present a finished appearance with reasonably complete coverage under normal growing conditions within twelve months after planting.
- g. Hedges. Shrubs used to form hedges shall be of a non-deciduous species, shall be a minimum of twenty-four inches in height above grade at the time of planting and shall be spaced not more than thirty-six inches apart and maintained so as to form a continuous visual screen thirty inches in height above grade, under normal growing conditions, within one year after planting.
- h. Turf Grass. Turf grass shall be of a species normally grown as permanent lawns in the County. Turf grass areas may be sodded, plugged, sprigged or seeded except that solid sod shall be used in swales or other areas subject to erosion.
- i. Trees.
 1. Wherever the requirements of this section specify the use of canopy trees or understory trees, refer to **Table 7.4** to determine the approved tree species within each of these categories.
 2. The terms "small," "medium" and "large" refer to the size of a tree at the time it is installed or retained, regardless of its species, and are quantified according to the table above.
 3. The minimum planting area for all installed trees shall be as follows:
 - (a) Installed canopy trees: five-foot radius from trunk perimeter.
 - (b) Installed understory trees: 2.5' radius from trunk perimeter.

- j. Permanent Architectural Planters. The use of permanent architectural planters may be permitted in fulfillment of the landscape requirements when approved by the Director.
- k. Tree and Shrub Installation. Grow bags and containers including synthetic burlap shall be completely removed from the root ball prior to planting. All twine or wire shall be cut off from around the trunk at the top of the root ball. Trees and shrubs shall be mulched to a minimum depth of two inches with organic mulch at least to the perimeter of the root ball.

7.03.06 -- Xeriscape.

- a. Generally. Xeriscape is a set of landscape design and maintenance principles that promote good horticultural practice and the economic and efficient use of water. The term Xeriscape is the registered trademark of the National Xeriscape Council and means water conserving, drought tolerant landscaping or simply the use of appropriate plant materials that do not require special attention and which require little supplemental water to grow properly. Use of xeriscape principles shall be required for all non-residential, multifamily, planned unit developments (common areas and rights-of-way only), planned commercial developments and planned industrial developments. One and two family residential building sites are exempt from xeriscape design requirements, although they are encouraged to comply. The xeriscape principles shall be implemented through the following standards.
- b. Design. Installed trees and plant materials shall be grouped together with plants of the same water use needs into zones. The water use zones shall correlate to the water use zone designations of plants listed in **Table 7.4**, and as described below. Plant species may be grouped with other plants of the same water use zone or with plants of a higher water use zone. Plant species of a higher water use zone shall not be placed in a lower water use zone. The water use zones shall be shown on the landscape plan. *All newly installed plants require regular, moderately applied watering for the first year to become established.* Installed trees and vegetation shall be spaced and located to accommodate their mature size on the site. The water use zones are as follows:
 - 1. High Water Use Zone – A high water use zone consists of plants that are associated with moist soils and require supplemental water in addition to natural rainfall to survive. This zone includes most turf grass areas.
 - 2. Moderate Water Use Zone – Plants that survive on natural rainfall with supplemental water during seasonal dry periods. This zone includes St. Augustine, Bahia and other turf grass areas.
 - 3. Low Water Use Zone – A low water use zone consists of plants that survive on natural rainfall without supplemental water.
- c. Plant Selection. Plant material shall be selected that is best suited to withstand the physical growing and soil conditions which are found in the microclimate of each particular location on a site. Plant species that are freeze and drought tolerant are preferred. Plants required to be installed by this section shall be selected from **Table 7.4**.
- d. Turf Grass. Turf grass areas shall be consolidated and limited to those areas on the site that receive pedestrian traffic, provide for recreational uses, or require soil erosion control such as on slopes or in swales, or where turf grass is used as a design unifier, or other similar practical use. The Landscape Plan shall label the use of turf areas.

- e. Mulch. A layer of organic mulch to a minimum depth of two inches shall be specified on the landscape plans in plant beds and around individual trees in turf grass areas. Mulch shall not be required in annual beds.
- f. Irrigation. The irrigation system shall be designed as required under section 7.03.05.d and shall correlate to the organization of plants into zones as described in 1 above.

7.03.07 -- Maintenance of Existing or Installed Landscapes

- a. Pruning and Trimming. Trees installed or retained as required under this section shall not be topped or severely pruned so as to appear stunted. Trees shall be pruned as needed to maintain health and form in such a way that retains or improves the natural form of the particular species; provided, topiary may be practiced upon suitable species if professionally and consistently maintained. The branches of a tree extending over any public sidewalk shall be trimmed to at least the height of eight feet above the sidewalk. The branches of a tree extending over the travel portion of any public street or alley used for vehicular traffic shall be trimmed to the height of at least fifteen feet above the street or alley. All landscaping installed or retained to meet the requirements of this section shall be maintained in a healthy and growing condition.
- b. Non-residential Development. With respect to a non-residential development, the obligation to faithfully and continually provide the irrigation and maintenance necessary and proper to ensure continued vitality of landscaping and protected trees installed or retained within any such right-of-way located in and adjacent thereto, and for the replacement of any such tree that dies or becomes non-viable, shall remain that of the owner thereof and any voluntary or involuntary transferee of the owner. Prior to or simultaneously with the submission of any application for a right-of-way permit authorizing access to an existing public roadway from a non-residential development, the owner thereof must submit to the County a fully executed and recordable instrument setting forth a covenant by such owner in favor of the County that such owner will perform the obligation. Such covenant shall run with the land upon which the development is located, and shall be binding upon the owner and the owner's heirs, successors and assigns with respect to such lands in perpetuity.
- c. Replacement. Installed or retained landscaping which dies after development has completed shall be replaced by the responsible party to meet the requirements of this article within thirty days.

7.03.08 -- Enforcement

Any failure to maintain landscaping in accordance with the requirements of this Article shall be deemed to be a violation of this Code and subject to enforcement action under **Article 12** of this Code. The property owner shall be responsible in all enforcement matters pertaining to this section. As part of any enforcement action regarding a violation of the requirements of this article, the County shall be authorized to require, in addition to any fines or other enforcement measures, the replacement of any removed or damaged tree(s) with new tree(s) of at least four inches caliper each and having a total tree caliper equivalent to that of the removed or damaged tree(s) as space allows. Placing of the replacement trees shall be at the landscape reviewer's direction.

SECTION 7.04 FENCES

7.04.01 Generally.

- a. Applicability. This Section applies to all fences and fence walls unless specifically exempted in this Section, or unless specifically regulated elsewhere in this Code.
- b. Definition. The term “fence” as used in this section shall include walls used for fencing, screening, or decorative purposes.

7.04.02 Construction Standards

- a. Compliance with Building Permit Procedures. Except for fences used for bona fide agricultural uses, all fences that are over 36 inches in height must comply with established building permit procedures, if any.
- b. Uniformity. All fences on each property must be of uniform materials, design and color. Any additions to existing fences that do not exceed the length of the existing fence or wall shall maintain a uniformity of materials, design and color with that of the existing fence or wall. The Planning and Development Services Director may approve the use of alternative materials and/or color upon determination that they are compatible with the existing fence or wall.
- c. Appearance. All fences must be constructed and maintained in a manner that will not detract from the neighborhood or community. Fences must not contain missing materials or components of which it was built and must remain substantially vertical so that it serves the function or aesthetic purpose for which it was built and has not been compromised to the point that the fence would present a danger of flight or destruction during severe weather. Fences shall not be used for advertising or other non-advertising messages, except as provided in Article 8 (Sign Regulations) of this Code.
- d. Materials. Fences must be constructed of conventional and traditional building materials including, but not limited to, concrete block, brick, wood, decorative aluminum, iron or steel, chain link or composite products manufactured specifically for fences and walls. Non-traditional materials, including but not limited to, tires, mufflers, hubcaps, auto or mobile homes body parts etc., are prohibited.
- e. Presentation. Fences must be constructed to present the finished side of the fence to the adjoining lot or any abutting right-of-way. Where, there is an existing fence, wall or continuous landscape hedge, or other circumstance on the abutting parcel making construction and maintenance difficult or impossible, this provision may be administratively waived by the Director upon written request.
- f. Sharp or Electrified. Except as provided below, no barbed wire, spire tips, sharp objects or electrically charged fences may be erected within 100 feet of any residential zoning district under separate ownership:
 - 1. Bona fide agricultural uses may use barbed wire or electrically charged fences to control livestock when located in districts permitting the raising, keeping or breeding of livestock.
 - 2. The use of barbed wire for temporary security fences around construction materials or

equipment in conjunction with an active construction project may be permitted when approved by the Director.

3. The use of chain-link fence with three strands of barbed wire on top of the fence with six-inch spacing between the strands of barbed wire may be required or approved by the Director around structures, site improvements or equipment that may present a potential hazard or attractive nuisance to residents or passersby not otherwise protected.
 4. The prohibition of electrical fences should not be read to prohibit underground, wireless outdoor sonic (aka “invisible”) fences used to keep domestic animals on the property.
- g. Location. Except as may be specifically permitted or required by other sections of this Code, no fence may be erected, placed or maintained:
1. Within any street right-of-way or street easement.
 2. Within any natural water body where submerged lands are owned or controlled by the State of Florida unless otherwise approved by the Florida Department of Environmental Protection.
 3. Within a regulatory floodway as shown on the adopted Flood Insurance Rate Maps (FIRM).

7.04.03 Height.

- a. Generally. Except as may be specifically permitted or required by other sections of this Code, the height limitations set forth in this subsection shall apply.
- b. Measurement. Fence height will be measured from the existing elevation of the natural adjacent grade at the location of the fence.
- c. Residential Districts.
 1. A fence located between a street right-of-way or easement and the front yard setback line may not exceed three feet in height, except that fences may be a maximum height of four feet so long as the fence is of open screening and does not interfere with vehicle visibility requirements at traffic access points. For purposes of this paragraph only, open screening may include vertical picket-type fencing provided that the minimum space between vertical members must be a minimum of one and one-half times the width and thickness of the vertical members or bars. For example, if the vertical members are two and one-quarter inches wide and three-quarter inch thick (total three inches), then the minimum space between them must be four and one-half inches ($1.5 \times 3.0 = 4.5$). In no case may the space between vertical members or bars be less than four inches.
 2. A fence located between a side or rear lot line and the required setback line is limited to a maximum height of six feet.
 3. A fence located within 25 feet of a body of water must be open mesh screening above a height of three and one-half feet.
 4. A property owner may request an administrative variance to extend the fence height up to an additional two (2) feet.

- d. Commercial and industrial areas. A commercial or industrial fence may be a maximum height of eight feet around the perimeter of the project upon a finding by the Director that the fence does not interfere with vehicle visibility requirements at traffic access points.
- e. Along limited access or controlled access streets. A fence may be placed or maintained along any property line abutting a limited access or controlled access street provided it complies with the same regulations as are set forth for residential project fences in **Section 7.04.04.**
- f. Agricultural fences. An open screen or wire fence for bonafide agricultural uses may be a maximum height of eight feet along any property line in an agricultural district provided that the fence does not interfere with vehicle visibility requirements at traffic access points.

7.04.04 Residential Project Fences

- a. Definition. For purposes of this subsection, a residential project fence means a wall or fence erected around a residential subdivision (but not individual lots) or development of five or more dwelling units.
- b. Design Requirements. A residential project fence:
 - 1. May be a maximum height of eight feet around the perimeter of the project upon a finding by the development services director that the fence does not interfere with vehicle visibility requirements at traffic access points.
 - 2. May include architectural features such as columns, cupolas, fountains, parapets, etc., at a height not to exceed twice the fence or wall height provided they are compatible with the project and abutting properties.
 - 3. Must be landscaped and irrigated on the exterior side (between the fence and the abutting property or street right-of-way) with a minimum of five trees per 100 lineal feet and shrub hedges.
 - (a) Hedges must be planted and maintained so as to form a 36-inch high continuous visual screen within 1 year after time of planting.
 - (b) Trees adjacent to a right of way must be appropriately sized in mature form so that conflicts with overhead utilities, lighting and signs are avoided. The clustering of trees and use of palms adjacent to the right of way will add design flexibility and reduce conflicts.
 - 4. Must be constructed to ensure that historic water flow patterns are accommodated and all stormwater from the site is directed to on-site detention/retention areas in accordance with stormwater requirements.

SECTION – 7.05 OPEN SPACE

7.05.01 – Generally

- a. Purpose. The purpose of this Section is to provide methods for setting aside open space in order to earn density bonuses under the Land Use Element of the Comprehensive Plan and **Article 2** of the Code, and to promote the protection of natural resources agriculture lands and establish outdoor recreational areas and green space within the County.
- b. Definitions. For purposes of this Subsection:
 1. *Park, outdoor recreational or green space uses*-- Includes boating, fishing, hunting, primitive camping, swimming, horseback riding, and historical, archaeological, scenic, or scientific sites.
 2. *Open Space* – Means vegetated, pervious surface areas of land set aside for parks, outdoor recreation, green space or viable agriculture, as these terms are defined herein.
 3. *Present use* -- Means the manner in which the land is utilized on January 1st of the year in which the assessment is made.
 4. *Perpetual covenant* -- Means a permanent recorded covenant running with the land and acts as an encumbrance upon the title.
 5. *Deferred tax liability* -- Means an amount equal to the difference between the total amount of taxes which would have been due in March in each of the previous years in which the covenant was in effect if the property had been assessed under the provisions of F.S. 193.011 and the total amount of taxes actually paid in those years when the property was assessed under the provisions of this Subsection, plus six (6) percent interest per year on the amount so established.
 6. *Successor homeowners association* -- Means an entity established for the purpose of coordinating the collection and expenditure of funds for the maintenance of certain designated improvements or lands within a subdivision. For the purposes of this Subsection, a successor homeowners association may raise funds through the imposition of dues or other fund-raising, but may not charge a fee for the use of lands subject to a covenant.

7.05.02 – Creation of Open Space

- a. Generally. Any developer or landowner may designate land to be set aside and perpetually utilized for open space through one of the methods set forth below. Establishing greenbelt status or the presence of an active farming operation alone is not sufficient to meet the requirements of this Code or the Comprehensive Plan for establishing open space and recreational opportunities.

b. Acceptable Methods.

1. Establish a covenant with the Board of County Commissioners that the lands set aside shall not be used by the developer or homeowners association for any purpose other than open space purposes and that the covenant shall run with the land and be perpetual.
2. Establish a conservation easement in accordance with section 570.71 or section 704.06, Florida Statutes.
3. Transfer of fee simple or lesser property rights to the Board of Trustees of the Internal Improvement Trust Fund or a similar Federal, State, Local or private conservation group in accord with the Florida Communities Trust program, the Florida Forever Act, the Florida Preservation 2000 Act, or similar land conservation programs.

c. Covenants.

1. A covenant for the purpose of restricting land use to park, outdoor recreational or green space purposes shall be established by a plat dedication as provided in Chapter 177, Florida Statutes, and shall conform to the requirements of that chapter. The dedication including the covenant shall clearly indicate which lands shall be subject to the covenant, the purposes for which the lands may be used, and that the covenant establishes a perpetual encumbrance upon the title to any lands subject to it.
2. No covenant shall be made a part of any plat dedication until the developer has provided for the establishment or future establishment of a subdivision homeowners association and has provided that the homeowners association will have responsibility for the collection and expenditure of funds among its membership for the maintenance of the lands subject to the covenant, and provided that the assessment procedure in Subsection (h) shall not be utilized except upon a recorded conveyance of the lands subject to covenant from the developer to the homeowners association.
3. After the platting of lands subject to a covenant pursuant to this Section, the developer and successor homeowners association shall not use the land in any manner not consistent with the restrictions voluntarily imposed and shall not change the use of the land from park, outdoor recreational, viable agriculture or green space purposes without first obtaining a written instrument from the Board of County Commissioners, which instrument releases said developer or successor homeowners association from the terms of the covenant and which instrument must be promptly recorded in the same manner as any other instrument affecting the title to real property. Upon obtaining approval of the Board of County Commissioners for release, the release shall be made to the developer or successor homeowners association upon payment of the deferred tax liability. Any payment of said deferred tax liability shall be payable to the County Tax Collector within ninety (90) days of the date of approval by the Board of County Commissioners of the release. The collector shall distribute the payment to each governmental unit in the proportion that its millage bears to the total millage levied on the parcel for the years such covenant was in effect.

- d. Prohibited uses. The following land uses are specifically prohibited for lands set aside as open space under this Section.
1. All commercial activities.
 2. The imposition of any fees or charges of any type for admission. This does not prohibit the use of donations to maintain or improve the lands protected by the covenant.
 3. Intensive agriculture activities and agriculture related uses that may require a special use permit or a commercial or industrial zoning. Examples of these types of uses may include commercial feedlots, concentrated dairy farms, rendering plants, livestock auction facilities and saw mills.
 4. The placement of any mobile homes, modular buildings or the erection of any buildings, except for a clubhouse or recreational buildings, in which case said the land coverage for such clubhouse or recreational buildings shall not exceed 10% of the total land area set aside for open spaces and shall be assessed under the provisions of Florida Statutes, section 193.011.
 5. The use of the land in any manner which impairs the natural beauty of the land or which is determined by the Board of County Commissioners to be inconsistent with the purposes of this Subsection.

SECTION -- 7.06 UTILITIES

7.06.01 -- Requirements for All Developments

- a. Generally. The following basic utilities are required for all developments subject to the criteria listed herein.
- b. Electricity. Every principal use and every lot within a subdivision shall have available to it a source of electric power adequate to accommodate the reasonable needs of such use and every lot within such subdivision.
- c. Telephone. Every principal use and every lot within a subdivision shall have available to it a telephone service cable adequate to accommodate the reasonable needs of such use and every lot within such subdivision.
- d. Water and Sewer. Every principal use and every lot within a subdivision shall have central potable water and wastewater hookup whenever required by Putnam County or the Florida Department of Health. When connecting utilities, design and development of water and wastewater infrastructure and services shall comply with the approved County water and wastewater technical manuals. Water and/or sewer services shall be deemed to be available if:
 1. Such services would be available to the use or the subdivision subject to an annexation agreement with a municipality providing such water or sewer;
 2. Actual annexation into the municipality providing such water or sewer, when the site is eligible for annexation into the city, or
 3. Potable water lines lie within 250 feet of the boundaries of the subject property, or
4. Sewerage lines are deemed “available” by the Florida Department of Health.

- e. Illumination. All streets, driveways, sidewalks, bikeways, parking lots and other common areas and facilities in developments shall provide illumination meeting the standards of this Code.
- f. Fire Hydrants. All new developments served by a central water system shall include a system of fire hydrants consistent with the applicable plumbing and fire safety codes. Where a central water supply is not available for fire hydrant protection, and the proposed residential or non-residential development is considered a Class III Development under section 12.03.02 of this Code, such development shall be required to install one or more adequately charged fire hydrants to meet the needs and demands for fire protection as determined by the Development Review Committee. Such system shall comply with the most current NFPA standards for Water Supply for Suburban and Rural Fire Fighting, which may include installation of a fire hydrant connected to a well.

7.06.02 -- Design Standards

- a. Florida Building Code. All utilities required by this Code shall be installed in a manner that meets or exceeds the minimum standards contained in the Florida Building Code.
- b. Placement of Utilities Underground. Where utilities are placed underground, the following standards shall apply:
 - 1. All electric, telephone, cable television, and other communication lines (exclusive of transformers or enclosures containing electrical equipment including but not limited to, switches, meters, or capacitors which may be pad mounted), and gas distribution lines shall be placed underground within easements or dedicated public rights-of-way, installed in accordance with the specifications of the Florida Building Code and the most current FDOT Utilities Accommodation Manual.
 - 2. Lots abutting existing easements or public rights-of-way where overhead electric, telephone, or cable television distribution supply lines and service connections have previously been installed may be supplied with such services from the utilities' overhead facilities provided the service connection to the site or lot are placed underground.
 - 3. Screening of any mechanical utility apparatus (i.e. electrical transformers) placed above ground shall be required in accordance with **Paragraph 7.03.03.c.7** above.

7.06.03 -- Utility Easements

When a developer installs or causes the installation of water, sewer, electrical power, telephone, or cable television facilities and intends that such facilities shall be owned, operated, or maintained by a public utility or any entity other than the developer, the developer shall transfer to such utility or entity the necessary ownership or easement rights to enable the utility or entity to operate and maintain such facilities. Such easements shall expressly state whether the encumbered property owner or any other property owner is allowed to use any part of the easement for ingress and egress to properties abutting the easement or to develop any uses, other than the permitted utilities, within the easement. Such uses shall comply with the right-of-way, access and roadway standards of this Code. Any limitation on the use of the utility easement shall not prohibit crossing of the easement for purposes of ingress and egress to abutting property from a public road or lawfully

established private road. It shall be presumed that uses not expressly provided for in the easement are not permitted within the easement.

SECTION -- 7.07 PARKING AND LOADING

7.07.01 – Generally

- a. Applicability. The requirements for off-street parking or loading facilities apply to any multi-family residential, commercial or industrial uses, or any other off-street parking or loading facilities that serve multiple vehicles or users. They do not apply to on-site parking and loading areas that serve a single-family residence or a two-family residence.
- b. Definition. The term “off-street parking or loading facilities” includes parking spaces, loading spaces, loading docks, and internal aisles or access drives that extend from the driveway apron to a parking lot or loading facility.

7.07.02 -- Required Number Of Parking Spaces

- a. General Requirements. A minimum of one hundred eighty (180) square feet for each off-street parking space shall be used in determining the required area to meet the requirements of this subsection, exclusive of access thereto. Off-street parking spaces shall be provided and maintained for all uses and structures occurring on a site as indicated in **Table 7.07A** below. Where ever Table 7.07A refers to a “per employee” parking standard, it shall be based on a single, peak work shift.

Table 7.07A -- Number of Required Off-Street Parking Spaces Based on Use

LAND USE AND/OR BUILDING TYPE	Number of Spaces Required
Multifamily Dwellings with three (3) or more dwelling units	Two Spaces per dwelling unit; plus one space for owner or operator and one space for each employee not living in one of the dwelling units
Mobile home park, per lot	Two spaces per manufactured or mobile home
Institutional uses such as rest homes, hospitals, group homes, nursing homes and assisted living facilities (ALF) not determined to qualify as a Community Residential Home with 6 or less residents per CH 419.F.S	One space for every four beds, plus one space for each employee (including visiting doctors). In the case of hospitals, bassinets shall not count as beds.
Fraternity, sorority houses, dormitories and boarding houses	One parking space for each two beds
Hotels and motels	One space for each sleeping room; plus one space for each employee
Churches and funeral homes	One space for every four seats in the sanctuary or chapel based upon the occupancy rating of the facility;

LAND USE AND/OR BUILDING TYPE	Number of Spaces Required
Art gallery, library or museum	One space for each 300 square feet of gross floor area
Elementary and junior high schools	2 per class room, office, gymnasium, auditorium and kitchen
Senior high schools	6 per class room, office, gymnasium, auditorium and kitchen
Day nurseries and kindergartens	2 per employee plus adequate provision for loading and unloading of children
Colleges, junior colleges, universities; dance, art and music studios; and vocational, trade and business schools	One space for every 300 square feet of gross floor area, plus additional spaces required for places used for public assembly such as auditoriums, stadiums and theaters, which are considered separately.
Private clubs and lodges	One space every 300 square feet of gross floor area.
Restaurant, night club, bar or tavern	One space per every 75 square feet of gross floor area.
Bowling alleys	Four (4) spaces for each bowling lane, plus any additional spaces required for accessory uses such as restaurants or game rooms.
Places for public assembly such as auditoriums, stadiums, arenas, ball fields and theaters	One space for every four seats.
Community center or indoor recreational facility	One space for every three seats or one space for every 200 square feet of gross floor area.
Public, private and commercial parks, campgrounds and outdoor recreational areas other than ball fields	One space per campsite, plus one space per picnic table located outside the campsite area.
Medical and dental office or clinic	One space per doctor, plus one space for every two employees and 1.5 spaces per consultation or examination room.
Research laboratory	One space per 500 square feet of gross floor area, plus one space for every two occupants or employee, plus one per company vehicle
Professional, personal service establishment and business office (other than medical or dental)	One space for every 300 square feet, plus one space for every two occupants or employees
Radio or television broadcasting office or studio	One space for every 500 square feet of gross floor area, plus one space for every 2 employees.

LAND USE AND/OR BUILDING TYPE	Number of Spaces Required
Outdoor sales or displays	One space for every 1,000 square feet of lot or ground area outside buildings used for any type of sales or display in addition to parking required for uses within structures.
Marinas	One and one-half (1.5) spaces per wet boat slip, plus one space per six dry boat slips and one space per employee of the marina operation. Where the marina is a mixed use operation (i.e. includes a restaurant, hotel or convenience store) sufficient parking to accommodate each additional use shall be added.
Boat Ramps	10 spaces (measuring 10 feet by 40 feet) per ramp to accommodate vehicles with trailers plus 4 spaces per ramp;
Bus, railroad or other transportation terminals	One space for every 500 square feet of gross floor area, plus one space for every 2 employees.
Wholesale, warehouse or storage use (not including mini-warehouses or mini-storage facilities)	One space for every two employees on peak shifts, plus one space per vehicle based at the facility
Commercial shopping centers, general retail sales and services	One space for every two hundred fifty (250) square feet of gross floor area devoted to sales and display plus one space per 500 square feet of gross floor area devoted to storage.
Mini-warehouses	One space for every 2 employees.
All uses in Industrial districts not otherwise listed	One space for each employee on peak shifts, plus one space per company vehicle based at the facility, plus one space for every 5,000 square feet of gross floor area.

b. Houses of Worship and Schools. Up to seventy percent of the required parking spaces for houses of worship, schools and other similar uses, as determined by the Department, may be surfaced with grass. Such spaces shall be stabilized, well drained and maintained with a durable grass cover. All driveways, access aisles and handicap spaces must be paved. All spaces must be delineated by marking, if paved, and wheel stops.

- c. Handicap Spaces. Handicap parking spaces shall be provided and maintained in all districts according to the requirements of the Florida Building Code as indicated in **Table 7.07B** below:

Table 7.07B – Handicap Space Requirements

HANDICAP SPACE REQUIREMENTS	
<p>Handicap parking spaces shall meet the requirements of the Florida Building Code and be clearly marked and posted.</p>	<p>The number of required handicapped spaces is decided based on the number of required standard parking spaces as follows: Total spaces: Handicap spaces required*: 1 – 25 ----- 1 26 – 50 ----- 2 51 – 75 ----- 3 76 – 100 ----- 4 101 – 150 ----- 5 151 – 200 ----- 6 201 – 300 ----- 7 301 – 400 ----- 8 401 – 500 ----- 9 501 – 1000 ----- 2 % of total spaces 1000 + ----- 20 plus 1 per 100 spaces over 1000</p> <p>*The number of required spaces may vary as allowed by specific circumstance in the Florida Building Code.</p>

- d. Determination for Uses Not Listed. For a use not listed in the **Table 7.07A**, the Department shall make a determination of the minimum required off-street parking spaces based on a similar listed use. In reaching the determination, the Department shall be guided by the requirements for similar uses, the number and kind of vehicles likely to be attracted to the proposed use and studies of the parking requirements of such uses in other jurisdictions.
- e. Fractional Spaces. When units or measurements determining the number of required off-street parking or loading spaces result in a fractional space, such fraction shall be rounded up to the nearest whole number (i.e. 1.5 spaces shall be rounded to 2 spaces).
- f. Mixed Use Development. In the case of mixed uses, the total requirements for off-street parking shall be the sum of the requirements of the various uses computed separately and off-street parking space for one use shall not be considered as providing the required off-street parking for any other use.
- g. Gross Floor Area. Where floor area is indicated as a basis for determining the required amount of off-street parking or loading, "gross floor area" means the floor area inside the exterior walls.

- h. Determining the Number of Seats. In stadiums, sport arenas, churches and other places of public assembly in which occupants utilize benches, pews or other similar seating arrangements, each eighteen (18) lineal inches of such seating facilities shall be counted as one (1) seat for the purpose of computing off-street parking requirements based on seating. In the absence of a definite number of seats, the number shall be the greater of the actual number of seats installed, one seat per each 15 square feet of area used by the public or the number called for by the Florida Building Code.
- i. Minimum Requirement. Notwithstanding any other requirement of this Code, each separate individual store, office or other business shall provide a minimum of at least two (2) off-street parking spaces.
- j. Joint Use Off-Street Parking. Nothing in this Section shall be construed to prevent the joint use of off-street parking or off-street loading space for two or more structures or uses, if the total of such spaces, when used together, will not be less than the sum of the requirements of the various individual uses computed separately in accordance with the requirements of this section. Joint use of parking and loading shall be subject to approval of a Special Use Permit. If approved, a binding agreement including, a reciprocal easement acceptable to the Putnam County Attorney shall be filed with the Department and recorded with the Clerk of the Circuit Court for Putnam County, Florida.
- k. Location of Off-Street Parking. All required off-street parking shall be located on the same parcel as the principal use(s) it serves, except as provided in this paragraph. In lieu of actual construction of required on-site parking facilities, all or any portion of the off-street parking required for a use may be located on another parcel, either by itself or combined as joint use or shared parking for other uses, subject to approval of a Special Use Permit. Such special use permit shall include the following requirements:
1. The use being served by the off-site parking is a permitted principal use within the zoning district for the parcel or lot where the parking is to be located.
 2. A safe, direct, attractive, lighted and convenient pedestrian route shall exist or be provided between the off-site parking and the use being served.
 3. The continued availability of off-site parking spaces, necessary to meet the requirements of this Section, shall be ensured by an appropriate reciprocal easement, satisfactory to the County Attorney and recorded with the Clerk of the Circuit Court.
 4. For purposes of determining applicable minimum and maximum land use intensities (i.e. impervious surface coverage and floor area ratios), the land area devoted to off-site parking shall be added to the land area of the parcel containing the use being served by such parking and shall be subtracted from the area of the parcel containing the off-site parking.
 5. The provision of off-site, off-street parking shall not occur in residentially zoned property or property used for residential development, unless expressly allowed by right or special use permit in applicable zoning category.
 6. Off-site, off-street parking shall not be separated from the use it serves by an Arterial or Major Collector Roadway, or other similar physical barriers to convenient access between the parking and the use.

7. Area required for off-street parking shall not be used to satisfy off-street loading facility requirements and off-street loading facilities shall not be used to satisfy off-street parking requirements.

l. Drive-through Facilities. Any commercial establishment providing drive through service windows or stalls shall provide stacking lanes in addition to the required number of parking spaces. Any overflow resulting from such stacking lanes shall be contained within the subject property and shall not occupy required parking areas, access aisles or any road right-of-way. Stacking lane capacity for drive through facilities shall be:

1. Banks and financial establishments: 80 feet per lane;
2. Restaurants: 120 feet per lane;
3. Other retail establishments: 60 feet per lane.

m. Bicycle Parking. In the Urban Reserve and Urban Service future land use categories, at least one (1) bicycle parking space shall be provided for every (20) automobile parking spaces, except as otherwise provided in **Table 7.07C below.**

Table 7.07C – Bicycle Parking Requirements		REQUIRED BICYCLE SPACES
TYPE OF USE		
Entertainment and Recreation	Arcades, games, skating, ball fields, racquet sport facilities & swimming pools	1 space per 4 auto spaces.

7.07.03 -- Reduction in Parking Requirements.

a. For Joint Use Of Parking Spaces. The Zoning Board of Adjustment may grant a variance to the total number of required parking spaces for two or more uses jointly providing off-street parking when their respective hours of need for the maximum parking do not normally overlap. Any such variance shall be considered simultaneously with the Special Use Permit request to allow joint parking. Reduction of parking requirements because of joint use may be approved if the following conditions are met:

1. The developer submits sufficient data to demonstrate that hours of maximum demand for parking at the respective uses do not normally overlap.
2. The developer submits a legal agreement approved by the County Attorney guaranteeing the joint use of the off-street parking spaces as long as the uses requiring parking are in existence or until the required parking is provided elsewhere in accordance with the provisions of this Section.

b. For Low Percentage Of Leasable Space. The parking requirements of in **Table 7.07A** assumes the average percentage of gross leasable building to be 85% of the total gross building area. If a use has a much lower percentage of leasable space because of cafeterias, athletic facilities, covered patios, multiple stairways and elevator shafts, atriums, conversion of historic residential structures to commercial use, or for other reasons, then an administrative variance may be granted to reduce the parking requirements by up to twenty (20) percent of the required spaces if the following conditions are met. Any application for such a reduction in spaces that exceeds 20 percent shall be made to the Zoning Board of Adjustment in accordance with the hearing procedures in Article 9 for variances.

1. The developer submits a detailed floor plan describing how all of the floor area in the building will be used.
 2. The developer agrees in writing that the usage of the square footage identified as not leasable shall remain as identified; unless and until additional parking is provided to conform fully with this Section.
- c. To Protect Historic Properties. The preservation of any property that has been placed on a local, state or national register of historic places, or that is located in a designated historic district and contributes to the historic character of the district, may be granted an administrative variance from the required number of parking spaces not to exceed twenty (20) percent of the required spaces. The applicant must demonstrate that the variance is necessary to preserve the historic character and allow a viable use of a historic structure or site. Any application for such a reduction in spaces that exceeds 20 percent shall be made to the Zoning Board of Adjustment in accordance with the hearing procedures in Article 9 for variances.
- d. To Protect Trees or Environmentally Sensitive Areas. The required number of off-street parking spaces or area of off-street loading facilities may be reduced by up to twenty (20) percent by the granting of an administrative variance where deemed necessary by the Director of Planning and Development Services to protect existing trees or environmentally sensitive areas. Any application for such a reduction in spaces that exceeds 20 percent shall be made to the Zoning Board of Adjustment in accordance with the hearing procedures in Article 9 for variances.

7.07.04 -- Off-Street Loading

- a. Standards. Off-street loading spaces shall be provided and maintained in accordance with the following standards:
1. Each retail store, storage warehouse, wholesale establishment, industrial plant, factory, freight terminal, merchant, restaurant, mortuary, laundry, dry cleaning establishment or similar use shall be required to provide off-street loading facilities in accordance with the requirements contained in **Table 7.07D** as follows:

Table 7.07D – Required Off-Street Loading Spaces

GROSS SQUARE FEET	FLOOR AREA	NUMBER OF SPACES
Over 5,000 but not over 24,900	25,000	1
25,000 but not over 59,999	60,000	2
60,000 but not over 119,999	120,000	3
120,000 but not over 199,999	200,000	4
200,000 but not over	290,000	5
More than 200,000	>290,000	1 space for each additional 90,000 square feet or major fraction thereof

2. For each auditorium, convention hall, exhibition hall, museum, hotel, motel or office building, sports arena, stadium, hospital, sanitarium, welfare institution or similar use which has an aggregate floor area of over ten thousand (10,000) but not over forty thousand (40,000) square feet, one (1) off-street loading space plus one (1) space for each additional sixty thousand (60,000) square feet or major fraction thereof.
3. When units or measurements determining the number of required off-street loading spaces result in a fractional space, such fraction shall be rounded up to the nearest whole number (i.e. 1.5 spaces shall be rounded to 2 spaces).
4. For a use not specifically listed in this subsection, the Department shall make a determination of the minimum required off-street loading spaces based on a similar identified use.

b. Location.

1. Off-street loading for persons or goods delivered by a standard delivery van or car of sufficient size to fit in a 12' by 40' space shall be located within the off-street parking facility at the most proximate location to a point of entry to use.
2. Off-street loading for goods (i.e. loading docks) delivered by a vehicle larger than the 12' by 40' space shall be located in the rear or side yard in manner that avoids interference with or encroachment into off-street parking spaces and access aisles. They shall be sufficiently screened and buffered in accord with **Section 7.03** of this Article.

7.07.05 -- Alteration Of Conforming Development

- a. Decreased Demand For Parking Or Loading. The number of off-street parking or loading spaces may be reduced if the Department finds that a diminution in floor area, seating capacity, or other factor controlling the number of parking or loading spaces would permit the site to remain in conformity with this Code after the reduction. No reduction in the number of spaces may be made unless a variance is approved administratively or by the Zoning Board of Adjustment.
- b. Increased Demand For Parking or Loading. Unless a variance is otherwise approved administratively or by the Zoning Board of Adjustment, the number of off-street parking or loading spaces must be increased to meet the requirements of this Code if the Department finds that an increase in floor area, seating capacity, or other factor controlling the number of parking or loading spaces required by this Code causes the site not to conform with this Code.

7.07.06 -- Design Standards For Off-Street Parking And Loading Spaces

- a. Generally. All off-street parking and loading facilities:
1. Shall be identified on development plans as to purpose and location.
 2. Shall be surfaced with asphalt, concrete pavement, brick, paver block, turf block, or an acceptable improvement allowing greater permeability. It is the intent of this Section that the developer provides a durable surface, properly drained, maintained, and landscaped in accordance with **Section 7.03** of this Article. An “acceptable improvement” shall be reviewed and approved in writing by the Putnam County Public Works Department. In addition to indicating the type of surface approved in making the acceptable determination, the Public Works Director or his designee shall make the following specific findings:
 - (a) The proposed surface provides a safe surface, suitable for the quantity and quality of traffic expected to use it;
 - (b) Provides a surface that will accept delineation of parking spaces, aisles, access ways and maneuvering areas;
 - (c) Provides a surface that will be dust free and properly drained; and
 - (d) Will not contribute to erosion or sedimentation, either on-site or off-site.
 3. Shall be designed so that sanitation, emergency and other public services vehicles can safely access and maneuver.
 4. Shall be maintained in functioning condition with marking clearly visible;
 5. Shall not have speed bumps installed within 100 feet of the point of access from the parking area to the adjacent street.
- b. Lighting. If off-street parking or loading facilities are lighted, lighting shall be designed and installed so as to be shielded and aimed downward to prevent glare or excessive light on adjacent property and public roadways, in accord with lighting requirements of section 7.09 of this Article. Whenever wheel stops are installed, lighting shall be installed to make the wheel stops visible during evening business hours.
- c. Encroachment. Where off-street parking or loading areas are located on the perimeter of a lot, barriers shall be provided and maintained to insure that no portion of a parked vehicle shall encroach over and onto any adjacent private property in separate ownership, unless such parking is part of a joint use off-street parking facility approved under this Section, or over and onto any public street or sidewalks. Such barriers shall further insure that no parked motor vehicle door, when open, will encroach over and onto any adjacent private property in separate ownership or over and onto any public street or sidewalks. Barriers may consist of solid fences, walls, hedges, wheel stops, shrubs, ditches (when necessary to the drainage plan of a lot only) or other forms of barrier satisfactory to the enforcement officer. Parking layout must be designed such that all maneuvering into and away from parking spaces occurs within the limits of the subject property.

- d. Internal Connection of Off-Street Parking. The County may require use of internal access aisles to connect otherwise separate off-street parking facilities, after a determination by the Director of Public Works that such a connection is appropriate in order to meet the concurrency part of a Traffic Mitigation Plan under **Section 5.01** of this Code or to provide a needed safety improvement under **Section 5.02** of this Code.
- e. Access. Each off-street parking or loading space shall be directly accessible from a street or alley without crossing or entering any required off-street parking or loading space. Each loading space shall be accessible from the interior of the building it serves and shall be arranged for convenient and safe ingress by motor truck and/or trailer combination.
- f. Dimensions.
 - 1. Minimum dimensions of off-street parking and loading spaces shall be as follows:
 - (a) Off-street parking spaces: nine (9) feet in width and twenty (20) feet in length, except for parallel parking spaces, which shall be twenty-four feet in length.
 - (b) Handicap parking spaces: twelve (12) feet in width and twenty (20) feet in length, plus a five-foot wide access aisle as required by the Florida Building Code (see Table 7.07B). The access aisle may be shared between two handicapped spaces.
 - (c) Off-street loading spaces: twelve (12) feet in width and forty (40) feet in length with a minimum of 15 feet height clearance.

- 2. Minimum width of interior drives shall be related to the angle of parking stalls and use of one-way or two-way traffic as follows:

PARKING ANGLE (in degrees)	WIDTH OF AISLE (One-Way)	TRAFFIC DIRECTION (Two-Way)
0 (parallel)	12 feet	One-Way
0	24 feet	Two-Way
30	12 feet	One-Way
45	13 feet	One-Way
60	18 feet	One-Way
90	24 feet	Two-Way

NOTE: A 24-foot minimum aisle width is required in all two-way traffic circulation situations.

SECTION 7.08 STORMWATER

7.08.01 Generally

- a. Applicability. The terms and provisions of this Section shall apply to all real property lying within the unincorporated areas of Putnam County, Florida.
- b. Intent and Purpose. It is the intent and purpose of this Section to implement the goals, objectives, and policies of the Comprehensive Plan of Putnam County by providing standards for the design, construction, and operation of stormwater management systems in conformance with the best overall management practices for the control of runoff volume and treatment of

stormwater runoff for the protection of surface water and groundwater quality, and for the control and prevention of erosion, sedimentation, and flooding. It is further the intent of this chapter to provide flexibility in meeting the design standards in an effort to encourage the construction of stormwater management systems that are an amenity to the development.

c. Definitions. For the purposes of this chapter, certain terms or words used herein shall be interpreted to have the following meanings unless another meaning is plainly indicated. The word "shall" is mandatory; the word "may" is permissive.

1. *Construction* -- Any activity, including land clearing, earth moving, or the erection of structures, that will result in the creation of a stormwater management system.

2. *Control elevation* -- Lowest elevation at which water can be released through the discharge structure.

3. *Detention* -- The collection and temporary storage of stormwater with subsequent gradual release of the stormwater.

4. *Engineer* -- A professional engineer registered in Florida, or other person exempted pursuant to provisions of Chapter 471, Florida Statutes, who is competent in the fields of hydrology and stormwater system design.

5. *Karst areas*-- Areas where sinkhole formation is common and that have landscapes that are formed by the dissolution of limestone.

6. *Regional stormwater management facility* -- A facility designed and constructed to manage stormwater from multiple parcels within a specified drainage area.

7. *Retention* -- The provision for storage of a given volume of stormwater runoff. Only evaporation, evapotranspiration, and/or infiltration shall be used to calculate recovery.

8. *Reuse* -- The deliberate application of stormwater runoff for irrigation, agricultural or industrial water needs.

9. *Seasonal high-water table* -- The elevation to which the groundwater can be expected to rise during a normal wet season.

10. *Sedimentation* -- The deposition of detached soil particles which have been eroded and transported by flowing water or wind.

11. *Stormwater management system* -- A system which is designed and constructed or implemented to control stormwater discharges, incorporating methods to collect, treat, convey, store, absorb, channel, inhibit, divert or reuse water to prevent or reduce flooding, over drainage, environmental degradation, and water pollution or otherwise affect the quality and quantity of the discharge.

7.08.02 Permit Required

- a. Generally. No person shall initiate any construction activity, or construct a stormwater management system, without complying with the provisions of this Section.
- b. Specifically. The following activities shall, unless exempt pursuant to **paragraph c** below, require a construction permit from the County Engineer prior to the initiation of any project:
 1. Construction, clearing, filling, excavating, grading, paving, dredging, root raking, mining, drilling or related activities that disturb the soil of a site. This is not meant to include clearing of vegetation for timbering, fire control or general maintenance, provided provisions are made to allow a sufficient density of vegetation to remain in place or re-establish itself in order to prevent erosion or a significant disruption to the natural flow of surface water.
 2. Building, installing, enlarging, replacing or substantially restoring an impervious surface, or water management system.
 3. Converting agricultural lands to nonagricultural uses.
 4. Subdivision of land where road improvements are required.
 5. Alteration of land and/or the construction of a structure or other impervious surfaces or a change in the size of one or more structures.
 6. Borrow areas or man-made ponds greater than 1/8 acre in size.
- c. Exemptions. The following activities shall be exempt from the requirements of this Section:
 1. The clearing of land that is to be used solely for agriculture, silviculture, floriculture, or horticulture, provided the property owner provides for the construction, maintenance, and operation of self-contained agricultural drainage systems to prevent off-site diversion of any runoff. This exemption will not apply where clearing and drainage may directly or indirectly impact County or State right-of-ways or areas defined as Conservation Areas pursuant to the Putnam County Comprehensive Plan.
 2. The construction, alteration, or maintenance of a single-family residence and accessory structures, provided this activity does not change the natural grade of the land in an area of special flood hazard. This exemption shall not apply where such activity will result in the addition of impervious surfaces or changes in the natural grade of the soils in an area of special flood hazard, as defined in Section 6.05 of this Code.
- d. Waivers. In cases where preliminary investigation shows that a proposed building addition will not have detrimental results, or the impact will be insignificant, and/or where increased runoff discharges to an existing basin with sufficient capacity, a waiver may be obtained. If the alteration results in less than a one percent increase in the overall imperviousness of the site, a waiver may be granted. It is the property owner's or his agent's responsibility to show that a waiver is warranted. The appropriateness of a waiver will be determined by the County Engineer. This waiver will not negate the need for obtaining permits required by other agencies. A waiver will not be granted in cases where it is determined that the existing site is violating current water quality or quantity criteria.

7.08.03 Standards

- a. Compliance Required. All stormwater management systems in the unincorporated portions of Putnam County shall be designed and maintained in accordance with the provisions of this Section.
- b. General requirements.
 1. No site alteration shall cause siltation of downstream surface waters or reduce the natural retention or filtering capabilities of downstream surface waters.
 2. No stormwater management system shall cause water to become a health hazard as determined by the County Engineer, the Department of Environmental Protection and/or the Health Department.
 3. All storage volumes in detention or retention systems shall be calculated above the mean seasonal high-water table or normal pool elevations.
 4. Permeability soil testing procedures shall be conducted as required in the Department of Transportation's drainage manual, and the results must be submitted to the County Engineer for review and consideration. The design engineer must take into account confining layers, soil profile, and apparent water table depths when choosing a design permeability rate. The maximum allowable rate in the perforated and confined zones shall be six feet per day. The maximum allowable rate in the unconfined zones shall be 20 feet per day. A safety factor of two shall be applied.
 5. Stormwater management systems shall not significantly alter contributing areas or watershed boundaries of any watershed or basin not wholly contained within the project area, except as approved by the county engineer.
 6. Runoff from off-site areas which drain to or across a site proposed for development must be accommodated.
 7. Treatment volumes must be recovered within 72 hours following the storm event. The remaining storage volumes must be recovered within 14 days following the storm event, except in the case of wet detention facilities.
 8. Filtration systems shall be designed with a safety factor of two.
 9. Minor components, such as roadside swales, shall be designed for the 10 year/24-hour storm event. All major components, such as collector ditches and storm sewers, shall be designed for the 25 year/24 hour storm event.
 10. In no case shall the discharge rates of a stormwater management system exceed the capacity of the outfall conveyance facility.
 11. The design shall be such that water containing a minimal amount of debris is allowed to leave the system, and manual removal of the debris shall be the responsibility of the entity responsible for maintenance of the system.
 12. The reuse of stormwater runoff in irrigation systems is encouraged.

- c. Basin Design Requirements.
1. The following basin design conditions will require fencing:
 - (a) Basins with a depth greater than four feet, as measured from the basin bottom to the control elevation, with slopes steeper than 6:1.
 - (b) Basins without a controlled outfall, if the design high-water elevation for the design storm is greater than four feet and the side slopes are steeper than 6:1.
 - (c) Wet detention basins with a normal pool depth six feet or greater.
 2. The following basin design conditions do not require fencing:
 - (a) Basins with a depth less than or equal to four feet, as measured from the basin bottom to the control elevation.
 - (b) Basins designed to be "dry" with side slopes no steeper than 6:1, regardless of basin depth.
 - (c) Wet detention basins with a maximum pool depth less than six feet and side slopes no steeper than 6:1 to a depth of two feet below the control elevation. From this elevation to the basin bottom a maximum side slope of 2:1 is permissible.
 3. All fences must be a minimum height of four feet and have a 14-foot-wide gate that is appropriately placed to allow easy access for maintenance equipment. Basins that have a depth greater than six feet must have a six-foot fence.
 4. Basins that require a fence and are to be dedicated to the County for maintenance will require a minimum 12-foot maintenance strip between the fence and the basin. All other basins will require a minimum maintenance strip of five feet. Maintenance strips shall have a maximum slope of 8:1.
 5. Side slopes steeper than 3:1 must have the sod stapled or pegged. Basin side slopes flatter than 3:1 may be seeded and mulched or sodded.
- d. Supplemental standards. In addition to the above standards, the following documents are incorporated herein as part of this Code by reference, for supplemental standards and methodologies for use in designing a stormwater management system to meet the intent of this chapter:
1. Drainage Manual, State of Florida Department of Transportation.
 2. Chapter 40B-4, Rules of the Suwannee River Water Management District.
 3. Chapter 17-25, Florida Administrative Code, Rules of the State of Florida Department of Environmental Protection.
 4. Chapter 17-40, Florida Administrative Code, Rules of the State of Florida Department of Environmental Protection.
 5. Chapter 40C-42, Rules of the St. Johns River Water Management District.
 6. Florida Development Manual: A Guide to Sound Land and Water Management.
- e. Methods. Innovative approaches to stormwater management shall be encouraged and the concurrent control of erosion, sedimentation, flooding and water quality shall be mandatory. The County Engineer has authority to approve alternate methods of meeting the objectives of these technical guidelines and regulations on a demonstration by the applicant that results equivalent to the following design standards can be achieved by the proposed alternate method.

1. For projects that discharge to a stream or open lake, the stormwater management system must be designed such that the proposed peak rate of discharge does not exceed the predevelopment peak rate of discharge for storm events up to and including the 25-year storm. The detention storage shall be sufficient to contain up to the 25-year 24-hour storm event. However, a 100-year 24-hour storm must be routed through the system to establish the 100-year flood elevation.
2. For projects that discharge to a closed lake, the stormwater management system must be designed such that the increased volume of runoff for the 100-year 24-hour storm event is retained and that only the predevelopment volume of runoff is discharged at rates not to exceed the predevelopment rates for storm events up to and including the 100-year storm.
3. For projects that have no positive outfall (i.e. water is detained rather than retained), the stormwater management system shall be designed to retain the total volume of stormwater runoff from the contributing watershed for the 25-year 24-hour storm event.
4. All stormwater management systems located within the karst areas of the County should be designed to provide treatment of the stormwater runoff prior to discharging to the aquifer and to preclude the formation of solution pipe sinkholes in the system. In addition, the following minimum design features are required:
 - (a) A minimum of three feet of unconsolidated soil material between the surface of the limestone bedrock and the bottom and sides of the stormwater basin.
 - (b) Stormwater basin depth should be as shallow as possible with a horizontal bottom.
 - (c) Maximum stormwater basin depth of ten feet.
 - (d) Fully vegetated basin side slopes and bottoms.
 - (e) More stringent requirements may apply for some industrial and commercial sites. These can include:
 - (1) More than three feet of soil material between limestone bedrock surface and the bottom and sides of the stormwater basin.
 - (2) Basin liners--clay or geotextile.
 - (3) Sediment sumps at stormwater inlets.
 - (4) Off-line treatment.
 - (5) Paint/solvent and water separators.
- f. Alternatives to on-site control. A regional stormwater management facility may be provided, in lieu of on-site storage, particularly in areas where individual properties cannot meet the established criteria on-site because of soil limitations or other constraints that may exist.
- g. Maintenance. All stormwater management systems require periodic maintenance. The entity designated in the application will be responsible for implementing the maintenance plan. If a system is not functioning as designed, the owner or permittee will be responsible for taking corrective measures to ensure the applicable criteria of this chapter are met.

7.08.04 --Water quality criteria.

- a. Class III or Higher Receiving Waters. All stormwater management systems with a discharge to a Class III or higher receiving water must be designed to meet the following applicable minimum treatment criteria:
 1. Retention under-drain and exfiltration.
 - (a) Off-line treatment: 0.5 inches of runoff or 1.25 inches times impervious area, whichever is greater.
 - (b) On-line treatment: 0.5 inch additional treatment volume over that required in off-line.
 2. Filtration.
 - (a) Off-line treatment: 1.0 inches of runoff or 2.5 inches times impervious area, whichever is greater.
 - (b) On-line treatment: 0.5 inch additional treatment volume over that required in off-line.
 3. Wet detention. On-line treatment: 1.0 inch of runoff or 2.5 inches times impervious area, whichever is greater.
 4. Swale. On-line treatment: 80 percent of the runoff from the three-year, one-hour storm.
 5. Wetland treatment. On-line treatment: 1.0 inches of runoff or 2.5 inches times percent impervious area, whichever is greater.
- b. Class I, Class II and OFW Receiving Waters. All stormwater management systems with a discharge to Class I, Class II, and Outstanding Florida Waters (OFW) as receiving waters must be designed to meet the following minimum treatment criteria:
 1. Detention with under-drain, exfiltration, and/or filtration.
 - (a) Off-line: 50 percent additional treatment volume over class III off-line treatment criteria.
 - (b) On-line: Runoff from the three-year, one-hour storm or 50 percent additional treatment volume over class III on-line, whichever is greater.
 2. Wet detention.
 - (a) Off-line: Pretreatment pursuant to class III retention, exfiltration, or under-drain criteria in addition to class III wet detention criteria.
 - (b) On-line: 50 percent more treatment volume over class III criteria.
 3. Swale. On-line: Runoff from the three-year, one-hour storm.
 4. Wetland treatment. On-line: 50 percent additional volume over class III treatment criteria.

- c. Discharge to Active Sinkholes. If a stormwater management system is proposed to discharge into an active sinkhole, the system must be reviewed and approved in writing by the Department of Environmental Protection and/or the Water Management District and shall be designed, at a minimum, to provide treatment for the first two inches of rainfall from the design storm.
- d. Impervious Surfaces. All detention systems that receive stormwater from areas with greater than 50 percent directly connected impervious surface shall include a baffle, skimmer, grease trap or other mechanism on the discharge structure.

7.08.05 -- Erosion and Sedimentation Control

- a. Generally. The development and implementation of an erosion and sedimentation control system is essential to minimizing the adverse impacts of soil erosion and sediment transport.
- b. Design Principles. The system shall be designed according to the following principles:
 - 1. The development plan must be compatible with the existing topography, soils, waterways, and natural vegetation of the site.
 - 2. The smallest possible area should be exposed for the shortest possible time during construction.
 - 3. On-site control measures shall be applied to reduce erosion. Stockpiling and storage of materials should not be located in a manner to impede flow or cause materials to be eroded by stormwater runoff.
 - 4. The erosion and sedimentation control plan shall identify permanent stormwater conveyance structures, final stabilized conditions of the site, provisions for removing temporary control measures, stabilization of the site when temporary measures are removed, and maintenance requirements for any permanent measures. All sedimentation control structures to be used during construction shall be installed prior to any construction activity and shall be maintained in an effective condition until such time as the completion of the permanent system or other erosion control measures can assure adequate erosion and sediment control.
 - 5. All stormwater management facilities shall be stabilized with either grass or sand-based sod. The following minimum requirements shall be met:
 - (a) All dry basin bottoms must be seeded. The seeding mix must provide both long-term vegetation and rapid growth seasonal vegetation. A topsoil mixture may be required in excessively drained sandy soils.
 - (b) Erosion protection at the outlet of all drainage structures must be provided. For outlet velocities less than three feet per second, pegged or stapled sod must be provided. For velocities in excess of three feet per second, an energy dissipation device must be installed, such as riprap, baffles, or stilling basins.
 - (c) A 12-inch strip of sod shall be placed around the full perimeter of all head walls, end walls, and mitered end installations.
 - (d) During construction, provisions must be made to minimize disturbance to and compaction of soils in the basin bottom.

7.08.06 -- Special Requirements for systems within residential subdivisions.

- a. Maintenance. A homeowners' association must be established to provide routine maintenance and associated landscape management responsibilities for the stormwater management system within the residential subdivision. However, the developer or the homeowners' association may opt to have the County implement a stormwater management benefit assessment in accordance with the provisions of section 403.0893, Florida Statutes. When the streets within the subdivision are to be dedicated to the County, Putnam County will be responsible for maintaining the structures associated with the system.
- b. Location. Retention/detention basins shall not be located within platted building lots, unless the lot is one acre or greater in size, the soils are well drained and have no confining layers, and the basin is designed with slopes 4:1 or flatter.
- c. Access. Reasonable maintenance access to all stormwater management facilities must be provided. This access-way must also be outside the limits of platted building lots and have a minimum width of 12 feet, except in cases where the side slopes are no steeper than 8:1.

7.08.07 -- Submittals

- a. Preliminary Development Plan. Class III Developments shall include the following information, plans and supporting data with the applicant's preliminary development plan submitted to the Development Review Committee under section 12.04.05 of this Code:
 1. An aerial photograph delineating the project area and the watershed boundaries in which the project is located.
 2. A map of the project that shows the following information:
 - (a) Project boundary.
 - (b) Existing topography of the project at one-foot contour intervals and existing spot elevations with the existing drainage patterns clearly established. Additional off-site topographical information may be needed to adequately identify drainage patterns.
 - (c) The drainage boundary of the area of any lands outside the project limits contributing runoff to the project.
 - (d) Existing 100-year floodplains and/or floodways.
 - (e) A plan of the proposed land use and land cover, including acreage and percentage of impervious surfaces.
 - (f) Description of vegetative cover, locations of any wetlands, surface waters or other known conservation areas.
 - (g) Proposed construction phases.
 - (h) Rights-of-way, common areas, and/or easement locations.
 - (i) Location of existing and proposed stormwater retention and/or detention facilities, including size, design capacity, 100-year flood elevation, side slopes, depth of pond, and retained and/or detained runoff volumes.
 - (j) Detailed grading plan with sufficient spot elevations to determine the direction of flow.
 - (k) Erosion and sedimentation control plan.

3. Professional certified drainage and pipe calculations, including a description of the proposed stormwater management plan, identification of the classification of the receiving basin and the name of any water body or stream to which the project discharges.
 4. Soils report that includes borings, water table encountered, estimation of seasonal high-water table, and estimated permeability rates. Soil borings must be performed to a depth of at least ten feet below the proposed basin bottom and at a frequency of two borings per one-quarter of an acre of basin bottom area. For systems that contain multiple basins, there shall be a minimum of one boring per basin.
 5. A statement designating the entity that will be responsible for the operation and maintenance of the stormwater management system. A copy of the restrictive covenants for the establishment of a homeowners' association must be submitted, if applicable. The restrictive covenants shall contain a statement indicating that, upon the homeowners' association's written request, Putnam County will inspect the stormwater management system prior to the developer transferring responsibility for the maintenance of the system to the association.
 6. A certification and statement by a Florida licensed engineer in accordance with Chapter 471, Florida Statutes.
 7. A proposed maintenance plan for the stormwater management system. This plan, along with the estimated annual maintenance costs, shall be incorporated into the restrictive covenants when applicable.
 8. Off-site easements for stormwater management facilities will be required when either of the following conditions exist:
 - (a) The discharge is into any man-made facility for which Putnam County does not have either drainage easements or rights-of-way.
 - (b) The discharge is into a natural system such that the rate or character (i.e., sheet flow versus concentrated flow) of the flow at the property line has been changed. The easement will be required to a point at which natural conditions are duplicated.
- b. Other Permits. Prior to the issuance of a construction permit, a copy of all other applicable State, Water Management District, or City permits must be submitted to the County Engineer.

7.08.08 -- Enforcement.

- a. Inspections. The Public Works Department will provide inspection services during the construction activities of all approved stormwater management systems. The inspections office will work with the development review office to ensure that the criteria set forth in the review and approval process are adhered to during the construction phase.
- b. Procedures. This Section shall be enforced in accordance with procedures outlined in **Article 12 of this Code.**

SECTION 7.09 – LIGHTING

7.09.01 -- Generally

- a. Height. The maximum height of light fixtures, except as otherwise regulated by this section, shall not exceed 30 feet.
- b. Light pollution. All building lighting for security or aesthetics shall be fully cut-off type, not allowing any upward distribution of light.
- c. Variance. The lighting requirements in this section may be modified by administrative variance provided that the applicant establishes that such an increase meets the following standards:
 1. Any increase in intensity is reasonably required for security purposes for the use or for conducting the permitted outdoor use;
 2. Any increase in intensity will not result in a nuisance to adjoining properties and does not interfere with the lawful use and enjoyment of adjoining properties; and
 3. Necessary screening will be erected or exists and maintained to reduce the impact of any increase in intensity on adjoining properties.
 4. The parcel on which the lighting is to be located is not within the Military Restriction Overlay Zone (MROZ).

7.09.02 -- Glare on Adjoining Properties

- a. Generally. All lighting shall be designed, hooded or shielded to direct light so that the illumination source does not create a glare or a nuisance to any adjoining property or unreasonably interfere with the lawful use and enjoyment of any adjoining property.
- b. Specific Standards.
 1. The lighting of any communication tower due to possible hazards to air navigation shall be exempt from this Section provided that all lighting conforms to the requirements of the Federal Aviation Administration (FAA).
 2. Roadway lighting is exempt from these light trespass requirements.
 3. Directional luminaries such as floodlights, spotlights, sign lights and area lights shall be so installed and aimed that they effectively illuminate only the task intended and that

the light they produce does not shine directly onto neighboring properties or roadways.

4. Building facade lighting, sports lighting and other applications using floodlights shall have glare shielding (external or internal shields) to minimize light trespass and light pollution.

5. Outdoor recreational lighting. Lighting installations for outdoor recreational uses (including pole heights) shall be designed and installed in conformance with the Florida Building Code.

SECTION 7.10 – ROADWAYS AND SIDEWALKS

7.10.01. Generally

- a. New Roadways. All new roadways shall be paved in accordance with approved design and construction plans prepared to or exceeding the design standards established in this Section.
- b. Previously Platted Roadways. Previously platted roadways that have not been constructed are subject to the requirements of this section, unless bonds have been received and accepted on construction of such roadways.
- c. FDOT Standards. The design and specifications for Major and Minor Collectors shall comply, at a minimum, with the Florida Department of Transportation (FDOT) "Roadway and Traffic Design Standards" (Standards), "Manual of Uniform Standards for Design, Construction and Maintenance for Streets and Highways" (Green Book), and the "Manual of Uniform Traffic Control Devices" (MUTCD), unless specifically revised by this Code. Material specifications and construction procedures shall comply to the FDOT "Standard Specifications for Road and Bridge Construction" (Specifications). Any roads, including Local Roads, developed to the FDOT design standards and specifications referenced in this paragraph shall be considered to be in compliance with this section.
- d. Roadway Classifications
 1. Arterial Roads are roadways providing service that is relatively continuous and of relatively high traffic volumes, long trip lengths and higher operating speeds. Examples in Putnam County include SR 19, SR 20, SR 26, SR 100, SR 207 and US 17.
 2. Collector Roads are roadways providing service for relatively moderate traffic volumes, moderate trip lengths and moderate operating speeds. Collector roads collect and distribute traffic between local roads and arterial roads. They are further categorized into major collectors and minor collectors. Examples in Putnam County include CR 21, CR 20A, CR 209, CR 216, CR 219, CR 308, CR 309, CR 310 and CR 315.
 3. Local Roads are roadways providing service for low traffic volumes, short average trip lengths or minimal through traffic. A Local Road may be privately or publicly owned. For purposes of this Code, any privately owned road shall be presumed to be a Local Road. Any newly constructed Local Road shall be required to meet, at a minimum, the design requirements of this section. The Public Works Department may establish supplemental minimum design standards for Local Roads that are in place prior to the date of adoption of this Article, which may be used when such existing Local Roads are considered in need of repair or improvements for any reason.

7.10.02 -- Right-of-Way Use, Protection and Acquisition

a. Use of Right-of-Way. Any use of County-owned right-of-way to transport mobile homes, modular homes, houses, or any over-sized load shall require a permit from the Public Works Department prior to transport. For purposes of this section, “over-sized” shall be defined as exceeding a width of 8.5 feet, a height of 13.5 feet, a length of 80.0 feet or a gross weight as specified in Section 42-4 of the Putnam County Code of Ordinances.

b. Development Within Corridors. No subdivisions or non-residential development shall be permitted within proposed future County or State road right-of-way corridors, if any, as established in the Traffic Circulation Plan and the Goals, Objectives & Policies of the Putnam County Comprehensive Plan, unless approved by the Board of County Commissioners.

c. Development Contiguous to Existing Collector Roadways. Prior to the development of subdivisions or non-residential development contiguous to an existing County Collector Roadway, the right-of-way shall be reserved or dedicated to Putnam County in accordance with the Transportation Element of the Putnam County Comprehensive Plan or other requirements specified within County approved plans, unless otherwise approved by the Board of County Commissioners.

7.10.03. Right-of-Way Requirements

a. Minimum Widths. Minimum Right-of-Way Widths shall be as listed in **Table 7.10A**. These minimum widths may be increased to allow sufficient width for drainage facilities, utilities, sidewalks, bicycle paths, or other appurtenances within the right-of-way.

TABLE 7.10A: MINIMUM RIGHT-OF-WAY WIDTHS				
ROADWAY CLASSIFICATION	CURB/GUTTER		SWALE SECTION	
	2-LANE	4-LANE	2-LANE	4-LANE
LOCAL ROADS	66 feet *	N/A	66 feet **	N/A
MINOR COLLECTORS	80 feet	110 feet	80 feet	130 feet
MAJOR COLLECTORS	80 feet	130 feet	100 feet	150 feet

* *Right-of-Way Widths for Local Road curb and gutter sections may be reduced to fifty (50) feet upon demonstration that an electric utility easement five (5) feet in width or greater is provided outside of the Right-of-Way on each side.*

** Curb and Gutter may be required by the Director of Public Works if the proposed roadway cannot meet the minimum right-of-way widths established by Table 7.10A above.

b. Special Circumstances.

1. If pavement within a roadway is divided, or if the centerline of the roadway deviates from the centerline of the right-of-way, such as to allow for preservation of trees within the right-of-way, the width for the remaining portion of the right-of-way outside of the travel lanes shall comply with the Roadway Typical Section for the designated roadway classification. Design of the roadway must be adequate to assure that the tree root system will not adversely affect the integrity of the Roadway in the future or impact the proper location of the utility placement. Utility installation must be in accordance with the Manual of Uniform Utility Installation of Public Rights-of-Way.

2. Intersections. All intersecting roadways shall require additional right-of-way at the corners. The corner clip shall connect the two points which are twenty (20) feet from the intersecting right-of-way lines or a twenty-five (25) foot radius return.

3. Reduction of the minimum right-of-way widths listed in **Table 7.10A** may be permitted if documentation demonstrates sufficient width to safely accommodate all planned or required drainage facilities, utilities, sidewalks, bicycle paths, or other appurtenances within the right-of-way or separate easements.

4. Requirements of this Code shall not prohibit the County from undertaking, or permitting, expansion of existing travel lanes within right-of-way not meeting the minimum widths in **Table 7.10A**, if environmental, legal, or physical constraints prevent expansion of such right-of-way to the minimum widths, so long as public safety is not jeopardized.

7.10.04. General Road Design Requirements

a. Minimum Lane Width.

1. Minimum travel lane widths shall be as follows:

TABLE 7.10B: MINIMUM TRAVEL LANE WIDTHS			
ROADWAY CLASSIFICATION	MINIMUM VEHICLE	LANE BICYCLE	WIDTHS SHOULDER WIDTH
LOCAL ROADS	11 feet per lane	0 feet	3 feet (paving optional)
MINOR COLLECTORS	12 feet per lane	0 feet	3 feet (paving optional)
MAJOR COLLECTORS	12 feet per lane	5 feet	3 feet (2 feet paved)

2. If pavement within a Roadway is divided, such as to allow for preservation of trees, the minimum pavement width shall be twenty (20) feet. The minimum pavement width of twenty (20) feet shall be measured from the edge of pavement. Right-of-way widths for the divided section shall be in accordance with **Table 7.10A**.

b. Cul-de-Sacs.

1. All roadways without a paved outlet shall be terminated with a cul-de-sac.
2. The minimum right-of-way width for a cul-de-sac bulb with curb and gutter sections shall be a fifty (50) foot radius. For a swale section, the minimum right-of-way width shall be a fifty-five (55) foot radius. These widths may be increased to allow sufficient width for drainage facilities, utilities, sidewalks, bicycle paths, or other appurtenances within the right-of-way.
3. The minimum pavement radii for cul-de-sacs shall be forty (40) feet with the pavement design for the cul-de-sac bulb consistent with the roadway.
4. Other variation or shapes of cul-de-sacs may be allowed if the design conforms to American Association of State Highway and Transportation Officials (AASHTO) criteria contained in "A Policy on Geometric Design of Highways and Streets".

- c. Roadway Alignment. Roadways shall be designed with the following minimum radii for the centerline of curves:

TABLE 7.10C: CENTERLINE RADIUS REQUIREMENTS	
ROADWAY CLASSIFICATION	MINIMUM CENTERLINE RADIUS
LOCAL ROADS	100 feet
MINOR COLLECTORS	325 feet *
MAJOR COLLECTORS	500 feet *

* *Minimum centerline radius may be increased based upon design speed of Roadway.*

- d. Shoulder Treatment and Guardrails.

1. All disturbed construction areas within County rights-of-way and easements shall be treated with seed and mulch, at a minimum, to protect the right-of-way against erosion, siltation and rivulets caused by surface run-off.
2. All Roadway work shall require a minimum of thirty-six (36) inches of sod adjacent to the edge of pavement. Grasses shall be Argentine Bahia or an approved alternative. Winter Rye and/or Millet may be mixed for protection until germination. Grasses shall be fully established and free of disease and damaging insects prior to County approval of the project. All soil preparation, grassing, mulching, sod and watering shall meet FDOT specifications for material and method of construction.
3. Major Collectors must have a minimum of 24 inches of paved shoulder.
4. Guardrails and shoulders shall be designed and placed in accordance with FDOT Standards and Specifications.

- e. Signing and Pavement Marking.

1. All roadway signs and pavement markings shall comply with the Manual on Uniform Traffic Control Devices (MUTCD) and FDOT standards and specifications. Signing and pavement marking plans shall be submitted on all development plans and shall require approval from the Public Works Director. All traffic control signs and pavement markings for new developments shall be furnished and installed at no cost to the County.
2. Local Roads shall meet FDOT Standards and Specifications for all pavement markings, including turn lanes, stop bars, crosswalks, and other areas as designated by the Public Works Director. New asphalt shall be allowed a thirty (30) day curing period before placement of thermoplastic materials. Temporary pavement markings shall be applied where necessary to control traffic on roadways during the curing period.
3. All Major and Minor Collectors shall be delineated with roadway pavement markings according to FDOT Standards and Specifications. The approach leg of a Local Road with a Major or Minor Collector shall be delineated with a stop bar and a double yellow centerline for a minimum length of one hundred (100) feet from the stop bar.

4. All Major and Minor Collectors shall be delineated with reflective pavement markers (RPM) according to FDOT Standards and Specifications. Variances may be granted for roads where highway lighting exists, or when, in the judgment of the Public Works Director, the need for Reflective Pavement Markers does not exist.
 5. When access is to a Major Collector, the stop sign shall be thirty-six (36) inches wide. The back side of each Sign is required to have the date of installation stenciled on it (month/year), in one (1) inch figures using a long lasting flat black paint or decal.
 6. Street Name Signs, whether on Public or Private roadways, shall have white lettering on green background. All Street name Signs shall conform to County specifications for size, shape, lettering style, and other requirements.
 7. All signs shall be manufactured with high-intensity sheeting material unless otherwise specified by the Director or by this Code.
- f. Traffic Signals. Traffic signals may be required if justified based upon traffic signal warrants contained in the MUTCD and the signal location is approved by the Public Works Director. All expenses, including signal warrant study, design, materials, and installation shall be the responsibility of the applicant at no cost to the County. Traffic signals shall be designed to comply with the MUTCD and FDOT Standards and Specifications, and the signal equipment shall meet County specifications. The traffic signal shall become the property of Putnam County upon acceptance by the County of the signal installation following a ninety (90) day burn-in time period to ensure that all equipment is functioning properly.

7.10.05. Pavement Standards

a. Stabilized Subgrade.

1. All roadway and driveway subgrades shall have a minimum width to meet minimum roadway design requirements of section 7.10.04 above. Minimum depth and bearing values shall be as follows:

TABLE 7.10D -- SUBGRADE DEPTH AND BEARING RATIO		
ROADWAY CLASSIFICATION	STABILIZED DEPTH	LIME ROCK BEARING RATIO (L.B.R.)
LOCAL ROADS	8 inches	40
MINOR COLLECTORS	12 inches	40
MAJOR COLLECTORS	12 inches	40

2. Where the existing soils to be used in the roadway subgrade have the required bearing value, no additional stabilizing material will be required. The stabilizing material, if required, shall be high-bearing value soil, sand clay, lime rock, shell or other materials that meet the standards established in the FDOT Specifications.
3. The construction of the stabilized roadbed shall meet the criteria as set forth in the FDOT specifications. Minimum density shall be ninety-eight percent (98%) (Modified Proctor Method).
4. Tests for the subgrade bearing capacity shall be located no more than five hundred (500) feet apart or every soil change, and tests for compaction shall be located no more than three hundred (300) feet apart. Tests shall be staggered to the left, right, and on the centerline of the Roadway with no less than two (2) tests conducted per Roadway section. When conditions warrant, in the judgment of the Public Works Director, additional tests may be required to assure compliance with FDOT Specifications. The Contractor/Project Engineer will be advised in writing that additional tests will be required and the extent of

such additional tests. Special attention shall be given to the need for any compaction retests in subgrade areas disturbed by underground utilities or other construction, especially under curb areas.

5. All test data shall be forwarded to the Public Works Director for review prior to constructing the base course.

b. Base Course.

1. Base course materials shall be lime rock or material with an equivalent structural value. The minimum thickness and density for lime rock shall be as follows:

TABLE 7.10E -- BASE COURSE DEPTH AND BEARING RATIO		
ROADWAY CLASSIFICATION	STABILIZED DEPTH	LIME ROCK BEARING RATIO (L.B.R.)
LOCAL ROADS	6 inches*	100
MINOR COLLECTORS	8 inches*	100
MAJOR COLLECTORS	10 inches*	100

*Note: The Director of Public Works may approve a lesser base course depth if provided for using FDOT Standards and Specifications.

2. The base course width shall be a minimum of twelve (12) inches greater than the finished surface course. Lime rock shall conform to FDOT Specifications for base course material and construction methods. Under special conditions where base material may be subjected to greater than normal moisture, soil cement or asphaltic base may be used after approval by the Public Works Director. In such instances, the applicant shall submit the justification and geotechnical data to be used to determine mix and depth of the base material, the Contractor's experience record, and quality control procedures. The Engineer of Record shall state whether a fabric or other method will be used in the system to minimize surface cracking.
3. All bases shall be primed in accordance with the FDOT specifications. A tack coat will not be required on primed bases except on areas which have become excessively dirty and cannot be cleaned, or in areas where the prime has cured and lost all bonding effect. Tack coat material and construction methods shall conform to FDOT specifications.
4. The construction of the base shall meet the criteria as set forth in the FDOT specifications. Minimum density shall be ninety-eight percent (98%) Modified Proctor Method.
5. Testing for the base thickness and compaction shall be located no more than three hundred (300) feet apart and staggered to the left, right, and on the centerline of the Roadway with no less than two (2) tests conducted per roadway section. When conditions warrant, in the judgment of the Public Works Director, additional testing may be required to assure compliance with FDOT Specifications, the Contractor/Project Engineer will be advised in writing that additional tests will be required and the extent of such additional tests.
6. All test data shall be forwarded to the Public Works Director for review prior to applying the surface course.

- c. Asphaltic Concrete Surface Course. Surface courses for flexible pavements shall meet the following minimum thickness requirements:

TABLE 7.10F -- ASPHALTIC CONCRETE SURFACE COURSE DEPTH				
ROADWAY CLASSIFICATION	STRUCTURAL COURSE		FRICTION COURSE	
	MINIMUM THICKNESS	TYPE	MINIMUM THICKNESS	TYPE
LOCAL ROADS	1-1/4 inches	S-I*	NA	NA
MINOR COLLECTORS	1-1/2 inches	S-I*	NA	NA
MAJOR COLLECTORS	1-1/4 inches	S-I	3/4 inches	S-III

* *S-III or other suitable substitute with an equivalent structural value shall be permitted.*

1. Asphaltic concrete types or equivalent structural courses shall conform to the FDOT Standards and Specifications for design, materials, and method of Construction. A mix design shall be submitted to the Public Works Director prior to commencing the paving.
2. Asphalt cores for thickness shall be located no more than two hundred (200) feet apart and staggered to the left, right, and on the centerline of the Roadway with no less than two (2) cores taken per Roadway section.
3. All test data shall be forwarded to the Public Works Director prior to final approval of the roadway.

d. Portland Cement Concrete Pavement

1. Stabilized subgrade requirements for Portland Cement Concrete Pavements shall be the same as those for flexible pavements.
2. Minimum pavement thickness requirements shall be as follows:

TABLE 7.10G -- PORTLAND CEMENT CONCRETE PAVEMENT THICKNESS	
ROADWAY CLASSIFICATION	MINIMUM THICKNESS
LOCAL ROADS	6 inches
MINOR COLLECTORS	8 inches
MAJOR COLLECTORS	10 inches

3. Portland Cement Concrete Pavement, including joints, shall conform to FDOT Specifications for materials and method of Construction. A mix design shall be submitted to the Public Works Director prior to commencing operations.

7.10.06 Roadway Drainage

a. Open Channels

1. The design of open channels shall be in accordance with FDOT design standards, using standards for the 25-year/24-hour storm event as the minimum.
2. Provision for on-site and off-site retention of storm water shall be in accordance with St. John's River Water Management District.
3. The design of open channels shall consider the need for channel linings. Standard treatment for roadside swales shall be seeded and mulched and/or hydro-mulched where flow velocities are less than velocities permitted for bare soil conditions. Sodding shall be used when the design flow velocity exceeds values permitted for bare soil conditions, but do not exceed four (4) feet per second or where side slopes exceed a steepness of three (3) feet horizontal to one (1) foot vertical (3:1). Sodding shall be staggered, to avoid continuous seams in the direction of flow. For flow velocities greater than four (4) feet per second, flexible or rigid linings shall be used. Flexible linings may include use of geotextile grids, rock rip-rap, and interlocking concrete grids. Rigid linings shall include concrete pavement. **Table 7.10H** below sets forth guidelines for lining types based on various design factors that include open channel gradient, side slopes, and velocity ranges. Subject to applicability to site conditions, manufacturer's recommendations and approval from the Public Works Director, alternative channel linings may be acceptable.

TABLE 7.10H -- GUIDELINES FOR LINING TYPES			
GRADIENT (%)	SIDE SLOPES	VELOCITY RANGE (fps)	PROTECTIVE LINING
0.75% and Less	Flatter than 3:1	Less than 2.0	Grass with Mulch
0.75% to 2.00%	3:1 to 2:1	2.0 to 4.0	Sod
Greater than 2.00%	Steeper than 2:1	Greater than 4.0	Flexible/Rigid Lining

Note: Channel velocities greater than 6 feet per second shall require energy dissipation.

4. For open channels where positive flow conditions are required, a minimum physical slope of 0.1 foot per 100 feet (0.1 percent) or the slope to provide for conveyance of the design flow, whichever is greater, shall be used.
5. The design of all open channels and roadside swales shall consider ease of maintenance and accessibility. Side slopes for roadside swales shall be in general conformance with the roadway typical sections. Side slopes for other facilities requiring regular maintenance shall not be greater than three (3) feet horizontal to one (1) foot vertical (3:1).

b. Cross-Drains

1. Cross-drains shall be sized and designed to handle run-off for a 50-year/24-hour storm event.
2. All cross-drain pipes shall be constructed of reinforced concrete, unless otherwise approved by the Public Works Director.
3. The minimum allowable pipe diameter for cross drains shall be fifteen (15) inches or the equivalent section for arch or elliptical pipe.
4. The minimum length of pipe to be used, including the end treatment, shall be the length necessary to provide for the required roadway shoulder width and adequate clear zone requirements.

5. All construction drawings submitted for review shall include a schedule showing the size, type, and invert elevation of the side-drain needed to provide access to each subdivided lot.
6. Unless otherwise approved, minimum pipe cover shall be twelve (12) inches measured from the outside top of pipe to the top of the roadway base at any point in the roadway cross-section.
7. Culverts under intersecting side roads shall be considered as cross drains and shall be designed using cross drain criteria.
8. Cross-drains shall be installed with County approved end treatments. End treatments shall include mitered ends and “U” type mitered end walls. Headwalls may be allowed where placement meets clear zone requirements.

c. Side-Drains (Driveway Culverts)

1. Side-drains shall be designed to handle run-off for a 50-year/24-hour storm event.
2. The minimum allowable pipe diameter for side drains shall be fifteen (15) inches or the equivalent section for arch or elliptical pipe.
3. All construction drawings submitted for review shall include a schedule showing the size, type, and invert elevation of the side-drain needed to provide access to each subdivided lot.
4. Side-drains shall be installed with County approved end treatments. End treatments shall be mitered ends and "U" type mitered end walls.
5. Side drains shall be set at an elevation that conforms to the ditch grade.
6. Standard Pipe length including shoulder for side-drains with ditches less than 5 feet in depth shall be based on the following:

TABLE 7.10I -- DRIVEWAY CULVERT PIPE LENGTH REQUIREMENTS		
DRIVEWAY TYPE	MAXIMUM PIPE LENGTH *	MINIMUM PIPE LENGTH *
<i>Residential Driveways</i>	Driveway Width PLUS 4 feet each side	Driveway width PLUS 2 feet each side
<i>Non-Residential Driveways</i>	Driveway width PLUS 8 feet each side	Driveway width PLUS 4 feet each side

** Pipe length does not include the length of end treatment or slope length. For ditches greater than 5 feet in depth, the pipe length shall be reviewed for approval by the Public Works Director on a case-by-case basis pursuant to FDOT standards.*

d. Curb, Gutter and Inlets

1. The FDOT standards and American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications shall be used as a guideline for selection of drainage structure types and hydraulic capacities.
2. Selection of curb, gutter, and inlet type, location, and spacing shall consider roadway geometry; width of spread (flow); inlet geometry and intake capacity; maximum pipe length without maintenance access; potential for flooding of off-site property; and pedestrian and bicycle safety. Maximum spacing for curb inlets shall be based on the width of spread. Width of spread shall not exceed one-half of the travel lane adjacent to the gutter for a rainfall intensity of four (4) inches per hour. In general, maximum spacing for inlets shall be five hundred (500) feet. Longer spacing may be allowed upon demonstration that the width of spread meets requirements set forth above.
3. Inlets shall be placed at all low points in the gutter grade, and as appropriate at intersections, median breaks, and on side streets where drainage could adversely affect the safety of vehicular or pedestrian movements within the roadway intersection.
4. Curb inlets shall not be located within drop curb locations.
5. The minimum allowable gutter grade shall be 0.3 percent.

e. Pipe Material and Specifications.

1. The FDOT Standard Specifications for Road and Bridge Construction shall be used as a guideline for specifications on pipe material, placement, bedding, and backfill requirements.
2. Pipe material shall be selected based on durability, structural capacity, and hydraulic capacity. The design service life of the facility shall be based on the following:

FACILITY TYPE	SERVICE LIFE
Stormwater Systems	50 or 100 years*
Cross-Drains	50 years*
Side-Drains	25 years

**Note: Where more than one service life is given, the lower value shall be used for locations on Local and Minor Collector Roadways, and the higher value shall be used for locations on Major Collectors and in urban areas.*

3. In estimating the projected durability of a material, consideration shall be given to actual performance of the material in nearby similar environmental conditions, its theoretical corrosion rate, the potential for abrasion, and other appropriate site factors. To avoid unnecessary site-specific testing, generalized soil maps such as the Soil Conservation Service Soil Survey for Putnam County Area may be used to delete unsuitable materials from consideration. In the event testing is necessary, tests shall be based on FDOT approved test procedures. The potential for future land use changes which may change soil and water corrosion indicators shall also be considered to the extent practical. Backfill material shall not be more corrosive than that which is required to provide the design service life.
4. All gravity flow pipe installations shall have a soil tight joint performance unless site-specific factors warrant watertight joint performance.
5. The approved pipe materials are listed in **Table 7.10K**. Prior to any aluminum pipe installation, test reports on the soil pH shall be submitted with a certification that the material furnished will provide sufficient resistance to corrosion to maintain the design service life.

TABLE 7.10K -- APPROVED PIPE MATERIAL
Corrugated Steel Pipe or Arch
Bituminous Coated Corrugated Steel
Reinforced Concrete
Reinforced Concrete Elliptical Pipe
Aluminum Pipe
Corrugated High Density Polyethylene Pipe

f. Other Drainage Structures.

1. The FDOT Roadway and Traffic Design Standards shall be used as a guideline for selection and Construction of all drainage Structures, including but not limited to: manholes, inlets, pipe end treatment, and box culverts.
2. Bridges shall be designed and constructed in accordance with the FDOT Standards and Specifications, FDOT Structures Design Guidelines, and American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges.
3. Bulkheads and/or retaining walls shall be designed by a Professional Engineer holding an active license in the State of Florida.

7.10.07 -- Existing Roadway/Access Facilities

a. Generally.

1. Any new subdivision or non-residential development *that will cause a change to the functional classification of an existing roadway used for access to the proposed development* (e.g. development that causes a Local Road to become a Minor Collector) shall be required to improve the impacted section of existing roadway to meet the requirements of the new functional classification.
2. Notwithstanding the above, in no case shall a new subdivision be approved unless the roadway used to access the subdivision is a public roadway, nor shall any subdivision or non-residential development be approved by the County if the existing portion of the roadway used to access the subdivision or non-residential development is less than twenty (20) feet in width, unless improvements are made to the existing right-of-way to allow for the necessary right-of-way infrastructure.
3. As used herein, “existing” roadways facilities means roads or related facilities in place prior to the effective date of this Article.

b. Non-Paved Roads.

1. Existing private or public roadways that are non-paved, which are to be used for access to one of the proposed development types described in subparagraphs (a) through (c) below, shall be improved by the developer to meet the roadway design requirements of this Section from the development’s point of access to the intersection of the next higher classification roadway:
 - (a) New subdivision.
 - (b) New multi-family residential and non-residential development.
 - (c) New development that will result in more than one (1) residential unit per Lot of Record (e.g. the road servicing the proposed development serves multiple residential units on one lot of record).
 - (d) The Board of County Commissioners may waive the requirements of this paragraph, if there is competent substantial evidence in the form of traffic studies that are conducted in accordance with generally accepted methodologies, which demonstrate that the proposed development will not exceed the functional capacity of the existing facilities.
2. In all cases, any new development that will result in more than ten (10) residential dwelling units accessed by a private paved or private non-paved roadway, including private access easements, must be approved in writing by the County Engineer prior to issuance of any construction permits; unless the private roadway is maintained pursuant to a maintenance agreement approved by the Board of County Commissioners for the continual maintenance of the private roadway.

- (a) If the County Engineer determines that the proposed development will exceed the functional capacity of the roadway and that improvements are required, the required improvements shall be stated in writing. The Department shall not issue permits for the proposed development until such improvements are in place.
- (b) All owners of record abutting the private roadway in question shall be provided a copy if the findings in paragraph (a) above. Determinations of the County Engineer under this subparagraph shall be considered final and subject to appeal pursuant to section 12.13 of this Code.

7.10.08 -- Sidewalks

a. When Required.

1. Sidewalks shall be required on all roads that are classified as County Major or Minor Collectors. Sidewalks shall be constructed on each side of the roadway to be developed unless otherwise provided through an approved pedestrian circulation plan. On all new County Major or Minor Collectors, sidewalks shall be required on both sides.
2. The Public Works Director may grant an Administrative Waiver for the Construction of sidewalks within its Right-of-Way. However, the Developer may be required to provide funds for the cost of sidewalk to the County. The unit price for sidewalk shall be established by the Public Works Director.

b. Design.

1. Sidewalks shall be designed and constructed in accordance with FDOT Standards except as modified herein. The finished grade of sidewalk shall be constructed to conform to the master drainage plan, if applicable, to prevent ponding.
2. The minimum sidewalk width shall be five (5) feet in width on Major and Minor Collectors, with six (6) feet provided in areas of high pedestrian travel such as near schools, parking facilities, shopping centers, and transportation facilities. Sidewalks provided on Local Roads shall be a minimum of four (4) feet in width and shall be placed three (3) feet inside the Right-of-Way line. Handicap ramps, meeting Florida Accessibility Code specifications, are required on all curb and gutter sections. If an obstruction is unavoidable, the sidewalk shall be widened to compensate for the obstruction.
3. Sidewalks should be placed as far as possible from the Roadway travel lane as practical. If right-of-way constraints require the sidewalk to abut curb and gutter, the minimum sidewalk width shall be six (6) feet. Utility strips should be considered in determining the location of the sidewalk to better serve the needs of the pedestrian traffic as well as the Utility companies and to increase Roadway safety. Location of roadway signs and signal poles should also be a consideration in establishing sidewalk location.
4. Where bicycle paths are called for in the roadway design, whether mandatory or voluntary, the County may require or allow multipurpose walks that are a minimum of seven (7) feet wide in order to allow for use by bicycles. Use of multipurpose sidewalks shall satisfy the bicycle path design requirements of section 7.10.04.

7.10.09 -- Intersection Sight Distance Requirements

- a. Generally. Upon creation of any intersection of public or private roads, streets or driveways, or development of parcels abutting such intersections, unobstructed visibility within the designated visibility triangle shall be maintained. Visibility triangles shall be required as follows:
 1. Driveways. Where a driveway intersects a roadway, the visibility triangle shall be measured ten feet each way (i.e. along the right-of-way and along the driveway) from the point of intersection at the pavement or other road surface.
 2. Roadways. Where roadways intersect, the visibility triangle shall be measured 25 feet each way from the point of intersection.
- b. Standards. To ensure adequate visibility at defined intersections, the owner(s) of private real property shall not, within a required visibility triangle:
 1. Plant or permit the growth of shrubbery or any other vegetation above the height of thirty (30) inches from the surrounding general ground level; or
 2. Allow tree branches to extend below the height of ten (10) feet from the surrounding general ground level; or
 3. Allow any berm, fence, wall, or any other structure to be erected, placed or exist, which will obstruct a driver's view of approaching traffic on a through road or Street.
- c. Existing Obstructions. If a visual obstruction described in paragraph b(1)-(3) above is in existence before the effective date of this subsection or it was both (a) formally permitted by the County and (b) substantial investment was made on its completion or erection, which investment would be lost by compliance with this subsection, it shall be considered a non-conforming use. Such a non-conforming use may continue to exist but shall not be altered, expanded, replaced, renewed, or enhanced after the effective date of this Code unless in conformance with this Code.

SECTION 7.11 -- ACCESS MANAGEMENT

7.11.01 -- Generally

- a. Intent.
 1. Putnam County has the authority to establish, control, and limit points of ingress and egress from County and private roadways to ensure the safety and efficiency of its roadway system and the safety of the general public. These standards are intended to implement Florida law. Consequently, this Code shall be consistent with the Florida Department of Transportation (FDOT) "Manual of Uniform Standards for Design, Construction and Maintenance for Streets and Highways" (Green Book), FDOT "Roadway and Traffic Design Standards" (Standards), and the United States Department of Transportation "Manual on Uniform Traffic Control Devices" (MUTCD) unless specifically revised by this Code or the S&D Manual. References will be made to the FDOT "Standard Specifications for Road and Bridge Construction" (Specifications).

2. No facilities for ingress or egress to County or private roadways shall be constructed unless they comply with the standards set forth in this subsection.
3. This subsection adopts access standards for regulation and control of vehicular ingress to, and egress from the County Roadway system. The implementation of these standards is intended to protect public safety and general welfare, provide for the mobility of people and goods, and preserve the functional integrity of the County Roadway system. The standards shall be the basis for connection permitting and the planning and development of County and Developer construction projects.

7.11.02 -- Road Frontage Requirements.

- a. Generally. No lot or parcel of land created after the effective date of this Section shall be used for the construction, location or erection of any building or structure (including a mobile home), where such lot does not abut upon a public right-of-way or a private roadway that meets minimum road and drainage standards established by this Article and has an approved maintenance guarantee under section 12.08.12 of this Code.
- b. The minimum road frontage shall be 80% of the required lot width of the zoning district, except that when the frontage is on a cul-de-sac or a curve, the minimum frontage shall be 25 feet.
- c. Subject to the limitations of section 7.10.07 of this Article, lots created prior to the effective date of this Article that do not meet the frontage requirements of this Article, must obtain an administrative variance to allow for the construction, location or erection of a residential building or structure (including a mobile home), provided the lot or parcel has at least 35 feet of road frontage and conforms with all other applicable provisions of this Code. If lot frontage is less than 35 feet or if the lot was created after the effective date of this Article, any reduction in lot width shall require a variance from the Zoning Board of Adjustment.
- d. Non-Residential Uses. Non-residential uses must provide ingress and egress to public roads through a non-residential zoning district. Nonresidential uses or districts shall not be accessed by motorized vehicles from or through property that is designated residential under both the Future Land Use and zoning.

7.11.03 -- Connection Permit Required

- a. Generally. A permit shall be required prior to repairing, constructing or modifying, as defined below, any connection to the County road system. A connection permit shall be required for the following:
 - (1) All connections onto a County road, regardless of whether the development served by the connection is new or existing;
 - (2) All modifications to existing driveways that will result in a change in the driveway's dimensions, location, profile, or the movement of vehicular or pedestrian traffic or in the manner in which stormwater is routed at the connection;
 - (3) All modifications to the driveway required by the County Public Works Director due to changes on-site that affect the safe and efficient operation of traffic at the connection;

- (4) All new public or private roads and modifications to public or private roads;
 - (5) All sidewalk or bikeway placement in, or connections to, the County road system.
 - (6) All public or private utility placement or work within a County right-of-way.
- b. Exemption from Permit Requirement. Connections to and work in the State roadway system do not require a connection permit from the County, but may be reviewed during the development review process to insure an appropriate permit is obtained from the Florida Department of Transportation and to insure consistency with the requirements of this chapter, in regards to location, spacing and number of connections to the property and the impact the development may have on traffic.
 - c. Permit Application. An application for a connection permit to a County right-of-way shall be filed with the Department and reviewed by the Public Works Department.
 - d. Required Information. The plans submitted for review shall depict, at a minimum, the proposed improvements for driveway connections and driveway approaches. The plans shall provide the driveway size, width, return radii, angle to the roadway, approach taper length, existing and proposed pavement marking, existing and proposed drainage pipes or other drains (including pipe size and type of material), and existing and proposed grades (including pavement design). Applications for any other type of work within the County right-of way must schedule a pre-application conference with the County Public Works Director or designee prior to submitting an application.
 - e. Unauthorized or Non-Compliant Construction and/or Failure to Maintain.
 - (1) If construction occurs within County right-of-way prior to receiving the required review, permits and inspection, the County will send a letter by certified U.S. Mail to the benefiting property owner and any known contractor that may be involved. The letter will give the parties involved notice that if the construction is not compliant within thirty (30) days from the date of the letter, the County Public Works Department may proceed to remove the noncompliant construction. Furthermore, the County may open a Code Enforcement case against the property owner(s) and any involved contractor(s), to be heard by the Special Magistrate, seeking liens to recover the County's cost incurred in removing and/or replacing the construction.
 - (2) In any case where such driveway connections or other work within the County right-of-way have not been maintained or have otherwise failed and has created nuisance flooding, improper drainage or is otherwise damaging the County right-of-way, the County will employ the same procedure as outlined in (1) above.

7.11.04 -- Location of Connections

- a. Commercial Uses. The location of commercial driveways should be compatible with the internal movement of traffic and the planned parking layout. The location of the driveway connection shall never allow vehicles to back across the throat of a driveway or back into the "through" travel lane. Developments with thirty thousand (30,000) square feet gross floor area or more shall have a minimum of seventy-five (75) feet of storage lane at the entrance to avoid obstructing through traffic. The throat length shall be computed from the end of the radius point and extend seventy-five (75) feet into the site.
- b. Single Family Uses. Single Family residential driveway connections shall be restricted to Local Roads unless otherwise approved by the Public Works Director.
- c. Planned Developments. Planned developments shall incorporate design of the internal roadway systems to alleviate residential driveway connections to Arterials and Major and Minor Collectors.
- d. Spacing. The spacing of driveway connections on Major Collectors shall generally comply with the standards in **Table 7.11A.**

Adjoining Road Posted Speed Limit	Minimum Access Spacing (feet)
25 mph	80
30 mph	105
35 mph	145
40 mph	185
45+	200

7.11.05 -- Driveway Design

- a. Dimensions. Driveway widths, spacing, radii, and minimum angles for residential and commercial driveways shall be based on the guidelines in Table 7.11B below. An illustration of the driveway connection can be found in Figure 7.3 of Appendix VII.

Residential Driveways	Local Roads	Minor Collectors	Major Collectors
Nominal Width			
Single Residence (W)	12-18 feet	12-18 feet	14-18 feet
Two or Three Residences (W)	20-24 feet	20-24 feet	22-26 feet
Minimum Flare (F)*	5 feet	5 feet	10 feet
Minimum Radius (R)*	15 feet	15 feet	15 feet
Minimum Spacing	5 feet	5 feet	15 feet
From Property Line (P)	10 feet	10 feet	20 feet
From Street Corner (C)	10 feet	10 feet	10 feet
Between Driveways (S)			
Minimum Angle (A)	80 degrees	80 degrees	80 degrees
Commercial Driveways	Local Roads	Minor Collectors	Major Collectors
Nominal Width			
One-Way (W)	16 feet	16 feet	16-20 feet
Two-Way (W)	24-30 feet	24-36 feet	24-36 feet
Minimum Radius (R)	25 feet	30 feet	35 feet
Minimum Spacing			
From Property Line (P)	25 feet	30 feet	30 feet
From Street Corner (C)	25 feet	50 feet	50 feet
Between Driveways (S)	10 feet	20 feet	See Table 7.11A
Minimum Angle (A)	80 degrees	80 degrees	80 degrees

- b. Maximum Number.
1. The maximum number of driveways allowed for projects other than Single Family residential units shall be as follows:
 - (a) Property with two hundred (200) frontage feet or less - one (1) driveway
 - (b) Property with more than two hundred (200) frontage feet - two (2) driveways. Developments shall not be allowed more than two (2) driveways on a single frontage without approval of the Public Works Director. Two (2) one-way connections shall equate to one (1) driveway for the purposes of this requirement.

2. Single Family residential units shall generally be limited to one (1) driveway. Circular driveways with two connections shall be permitted with a minimum one hundred fifty (150) foot frontage.
- c. Driveway Grades. **Figure 7.4** establishes maximum grade changes for driveways from the three classes of roadways. For the values shown, no vertical curve connecting the tangents is necessary. For grade changes more abrupt than those in **Figure 7.4**, vertical curves at least ten (10) feet in length shall be used to connect tangents.
- d. Connection Design.
1. Proposed connections shall have no fences, walls, hedges, or other obstacles that will obstruct vision between a height of two and a half (2.5) feet and ten (10) feet above the centerline grade of the intersecting driveway, per FDOT Standards, Index No. 546.
 2. All connections to paved roadways shall be permanent type pavement, including Portland Cement Concrete or asphaltic concrete. Gravel, bituminous surface treatments, and other materials without a permanent surface are prohibited.
 3. Pavement design requirements of commercial driveway connections, for the extent of permanent pavement required in **Subparagraph e**, below, including stabilized subgrade, base course, and surface course, shall equal or exceed the requirements of the adjacent roadway travel lane. Pavement design requirements of residential driveway connections, for the extent of permanent pavement required in **Subparagraph e**, below, shall equal or exceed the requirements for Local Roads, with the exception of Portland Cement Concrete driveways which shall have a minimum pavement thickness of four (4) inches.
 4. Where driveways are constructed within the limits of existing curb and gutter Construction, the existing curb and gutter shall be removed either to the nearest joints or to the extent that no remaining section is less than five (5) feet long. If the curb is not removed to the nearest joint, the curb will be cleanly cut with a concrete saw. Driveway materials type should conform to the original Construction on a section unless otherwise specifically provided on the Permit.
- e. Connection Limits. Permanent pavement for all driveways shall extend at least to the end of the driveway curb radius, or to the right-of-way line, whichever is greater. Unless waived in writing by the County Engineer, the property owner or developer shall install any required drainage structures and sufficient base materials for the driveway prior to the first required inspection to insure protection of the drainage structure, drainage and utility easements and right-of-way during construction.
- f. Temporary Driveway Connections.
1. Temporary driveway connections shall be permitted for activities that do not require a permanent driveway connection. Examples of activities that may obtain a temporary driveway connection may include, but are not limited to:
 - (a) Silviculture operations;
 - (b) Agricultural activities;
 - (c) Limited duration borrow area or mining activities.

2. Right-of-Way Permits shall be obtained for all temporary driveway connections. Right-of-Way Permits for temporary connections shall expire after a six (6) month period and may be extended for additional six (6) month periods upon payment of the applicable right-of-way renewal fee. Driveways that are used beyond a twelve (12) month period shall be permitted and designed as permanent driveway connections.
3. Temporary driveway connections shall be stabilized with lime rock or other suitable material for a minimum of twenty-five (25) feet, or enough to improve the entire the right-of-way area, whichever is greater. If a roadside ditch or swale is present, a side drain is required which meets the requirements of **Section 7.10**. The temporary driveway connection shall be constructed to ensure that erosion will not occur that could affect the roadway drainage system. The Applicant shall ensure that dirt or debris is not tracked into the roadway travel lanes from the driveway connection or shall make provisions for its immediate removal. The location, width, turning radii, and other design elements of the driveway connection shall be consistent with all other provisions of this Code for a permanent driveway connection.
4. Upon expiration of the temporary driveway connection permit, the driveway connection shall be removed and the right-of-way shall be restored to its original condition. Any damage to the edges of pavement, shoulder, swale or any other feature within the right-of-way caused by the construction, use, or removal of the temporary driveway connection shall be repaired or restored to its original condition at no expense to the County within thirty (30) calendar days after written notice to the Applicant.

g. Auxiliary Lanes.

1. Auxiliary turn lanes shall be required where safety and capacity considerations warrant their use for vehicle deceleration and storage. The provision of auxiliary lanes shall be required under the following conditions unless an engineering study can demonstrate that safety hazards or capacity deficiencies will not exist. Auxiliary turn lanes shall be required at connections to all Major and Minor Collectors under the following criteria:
 - (a) Collector Roads With Posted Speed Limits of thirty-five (35) mph or Greater:
 - (1) Right Turn Lane. Development will generate two hundred fifty (250) Vehicles per day (VPD) on the intersecting Roadway or driveway connection; or the Gross Floor Area of a non-residential development is twenty-five thousand (25,000) square feet; or, development will generate ten (10) semi-trailer truck (WB-40 or larger) trips per day.
 - (2) Left Turn Lane. Development will generate five hundred (500) VPD on the intersecting roadway or driveway connection; or the gross floor area of a non-residential development is fifty thousand (50,000) square feet; or, the development will generate fifteen (15) semi-trailer truck (WB-40 or larger) trips per day.
 - (b) Collector Roads With Posted Speed Limits of thirty (30) mph or less:
 - (1) Right Turn Lane Development will generate five hundred (500) VPD on the intersecting roadway or driveway connection; or the gross floor area of a non-residential development is fifty thousand (50,000) square feet; or development will generate ten (10) semi-trailer truck (WB-40 or larger) trips per day.

- (2) Left Turn Lane Development will generate one thousand (1,000) VPD on the intersecting roadway or driveway connection; or the gross floor area of a non-residential development is one hundred thousand (100,000) square feet; or the development will generate fifteen (15) semi-trailer truck (WB-40 or larger) trips per day.
2. The geometric design of the auxiliary lanes shall be in accordance with FDOT Standards. The construction of auxiliary lanes shall meet other provisions of this Code. Pavement design requirements of the auxiliary lanes, including stabilized subgrade, base course, and surface course, shall be the same as the requirements of the adjacent roadway travel lane. The entire width of the road surface must be overlaid for the total length of the auxiliary lanes with a surface course of similar type as the adjacent roadway sections.
 3. A driveway shall not be constructed along acceleration or deceleration tapers connecting to interchange ramp terminals, intersecting roadways, bus bays or other driveways unless access would be unreasonably denied and the driveway can be made to function properly (i.e., safe and efficient traffic operation).
 4. Signing and pavement marking, traffic signal, and maintenance of traffic criteria and specifications are provided in **Section 7.10.04 of this Article**.

7.11.06 Use of Easements for Driveway Access.

- a. A recorded easement may be used for driveway access serving up to two (2) residential dwelling units, provided the driveway meets the following minimum standards:
 1. The minimum width of the easement shall be thirty (30) feet.
 2. A minimum twenty (20) foot wide stabilized surface with LBR 40 material to a depth of eight (8) inches. Native materials below the stabilized surface shall not contain significant amounts of unsuitable materials (i.e. muck, clay, organics, etc.).
 3. A forty (40) foot radius stabilized turnaround or equivalent turnaround area (i.e. a “T” section).
 4. Any such easement and turning radius created shall extend into or onto any property or properties taking access from the easement a distance sufficient for such lots to meet the lot frontage requirement of this Code.
- b. Recorded easements for access serving unmanned sites (e.g. antenna towers, relay stations and similar facilities) shall meet the following minimum standards:
 1. The minimum width of the recorded easement shall be thirty (30) feet.
 2. There shall be a minimum sixteen (16) foot wide stabilized surface with LBR 40 material to a depth of eight (8) inches.
 3. There shall be a forty (40) foot radius stabilized turnaround or equivalent turnaround area (i.e. a “T” section).

SECTION 7.12 -- SUBDIVISION DESIGN STANDARDS AND GUIDELINES

7.12.01 -- Access

a. Access to Public Road Required.

1. These regulations shall be supplemental to and interpreted in accordance with roadway standards found in **Section 7.10** of this Article.
2. Unless expressly approved for private streets under Article 12 of this Code, all lots within a subdivision shall have access to a street dedicated to public use that has been accepted for maintenance by Putnam County, a municipality, or the Florida Department of Transportation. Regardless of whether the internal roadway of the subdivision is public or an approved private road under Article 12, the internal road of any new subdivision shall have immediate access to a public road.
3. Adequate vehicular and pedestrian access shall be provided to each parcel. The primary function of local streets is service to abutting properties. Street widths, placement of sidewalks, pattern of streets and number of intersections are related to safety and efficiency of access to abutting lands.
4. Local circulation systems and land development patterns shall not detract from the efficiency of bordering Minor and Major Collectors and Arterials. This principle may involve control of driveway, intersection placement, and full or partial control of access. Land development should occur so as to minimize direct access to Minor and Major Collectors and Arterials.
5. Design of residential streets should clearly reflect their local function. These streets should have an appearance commensurate with their function as local streets. They should not be over-designed or over-built so as to allow for high speed travel, excessive width, etc.
6. Subdivisions shall be designed so as to conform to and take advantage of the topographic and other natural features of the land. Local, state, or federal laws, rules, or regulations in this Code may require development to avoid or minimize impacts to existing trees, wetlands, high aquifer recharge areas, areas of special flood hazard, natural water bodies, potable water supplies, wildlife habitat, and other environmentally sensitive areas.

b. Access to Existing or Proposed Adjoining Roadway System.

1. Arrangement of Roadways. The arrangement of roadways in new subdivisions shall make provisions for the continuation of existing arterial and collector roadways from adjoining areas, or for their projection where adjoining land is not subdivided. Where the subdivision is adjacent to another subdivision, Putnam County School Board property or a neighborhood or community commercial use, direct access shall be provided for non-motorized traffic where feasible. Residential neighborhoods shall be designed to include an efficient system of internal circulation and roadway stub-outs to connect into adjacent developments and link neighborhoods together.

2. Access to Arterial or Collector Roadways. Unless otherwise approved by the Board of County Commissioners prior to the adoption of this Section or for good cause shown, individual residential lots in subdivisions shall not have direct access to an Arterial or Collector Roadway. Residential lots in subdivisions that abut an Arterial or Collector Roadway shall not front on said Roadway and access shall be blocked by a non-access buffer as provided under **Paragraph 7.12.05.c.5.**

3. Access to Local Roads. Residential lots in subdivisions shall front on and have direct access to Local Roads. Local Roads shall be arranged and designed so as to restrict their use by through traffic or high-speed traffic.

7.12.02 -- Medians and Islands.

- a. Allowed. Medians and islands within the road rights-of-way are allowed when warranted by traffic conditions and are in conformance with the requirements of the roadway design requirements of the County.
- b. Designation of Medians as Park or Recreation Area Prohibited. Medians, islands, and islands in cul-de-sacs shall not be designated as park or recreation areas.
- c. Landscaping. Landscaping of medians, islands, and islands in cul-de-sacs shall be in compliance with the landscaping requirements of this Article.
- d. Maintenance. Medians and islands shall be shown as separate Parcels/Tracts on the Site Plan and annotated in one of the following ways:
 - “Parcel/Tract _____ is dedicated to and will be maintained by Putnam County.”
 - “Parcel/Tract _____ is private property of _____ and is to be maintained by that Owner.”
 - “Parcel/Tract _____ is dedicated to and will be maintained by the Homeowners Association”.

7.12.03 -- Street Names.

1. The E911 Division shall name streets from a bank of names established by the E911 Division. Consideration will be given to coordinating the name with other streets in the area.
2. All new street names shall use the commonly accepted spelling, according to Merriam-Webster's Standard Collegiate Dictionary.
3. Names with the same theme (i.e., flowers, states) are encouraged for naming streets in an entire subdivision, as a means of general identification.
4. All new street names must use only accepted suffix designations as shown in the table below.
5. Historically used street names shall be retained where possible.
6. Streets running continuously in one direction will have one name only throughout its entire length.
7. Where there is a series of long and short roadways accessed from the same intersecting through street, each roadway shall have separate names.
8. Streets may bear the same name as its intersecting through street with a different suffix designation without being considered a street name duplication.
9. Streets located on the same alignment in the same geographical region shall bear the same name and directional prefix even though they are not connected, if, in the discretion of the 911 Coordinator, there is a reasonable expectation that they can connect in the future.
10. Major arterials and highways that change direction for a significant distance, crossing into a new Quadrant, shall change directional prefixes at the most logical and convenient break point.
11. All of the following shall be prohibited:
 - a. Numerical names (i.e., 1st, 2nd, etc.) or single alphabetical (i.e., A, B, etc.) as street names.
 - b. Spaces between initials (i.e., E F K Drive will be EFK Drive) used in a street name.
 - c. Punctuation in a street name including periods, hyphens and apostrophes (i.e., O'Brien)
 - d. The use of similar-sounding street names (i.e., Peach and Beach; Lynwood and Linwood; Pinetree and Pine Tree)
 - e. The use of a directional or suffix as street names (i.e., East First, East West, Drive CT).
 - f. Any street name containing the word "and", however an ampersand (&) may be used (i.e., Seek & Find Lane)
 - g. Any street named after a person, living or dead, without the consent of the Board of County Commissioners.
 - h. Any duplication of street names, regardless of its suffix, except cases as described in subsection 8 above.

12. Accepted Suffix Designations and Abbreviations:

Accepted Suffix Designation	Standard Abbreviation	Description
Avenue	AV	A roadway or thoroughfare lying in a North/South Direction, not ending in a cul-de-sac, and the future extension in either direction is possible.
Boulevard	BLVD	A major thoroughfare with a landscaped median dividing the roadway.
Circle	CIR	Discouraged but allowed, at the discretion of the 911 Coordinator. Specifically, a looped street that terminates on the same road at two points is discouraged, particularly in situations where confusion may arise to emergency responders due to duplicate intersection descriptions.
Court	CT	Permanently dead-end street or terminating in a cul-de-sac lying in an East/West Direction.
Drive	DR	A roadway or thoroughfare lying in a Northwest/Southeast Direction, not ending in a cul-de-sac, and the future extension in either direction is possible.
Highway	HIGHWAY	Used to designate State or Federal roads only.
Lane	LN	A roadway or thoroughfare lying in a Northeast/Southwest Direction, not ending in a cul-de-sac, and the future extension in either direction is possible.
Loop	LOOP	A street that begins and ends at the same cross street, such as a semi-circle.
Place	PL	Permanently dead-end street or terminating in a cul-de-sac lying in a North/South Direction.
Road	RD	A winding main thoroughfare extending the length of a subdivision or complex which continues through to other rights-of-ways.
Street	ST	A roadway or thoroughfare lying in an East/West Direction, not ending in a cul-de-sac, and the future extension in either direction is possible.
Way	WAY	A short connecting street between two main roadways or thoroughfares.
Trail	TRL	Limited to use on non-vehicular trails and recreational trails. An exception would be for historical uses that include the suffix of trail, such as "Overland Trail."
DO NOT USE!! Plaza, Square, Walk	DO NOT USE!! PLZ, SQ, WALK	Not allowed for new vehicular streets.

7.12.04 Natural Resources and Landscaping. The Subdivision shall be designed in compliance with the applicable standards of **Article 6** of this Code and **Section 7.03** of this Article.

7.12.05 Roadway Layout

a. Local Roads

1. The maximum length of a block shall be one thousand (1,000) feet, unless otherwise approved.
2. Loop roads, cul-de-sac and curvilinear designs are encouraged.
3. The use of "T" intersections (with a minimum offset of two hundred fifty (250) feet between intersections) are desirable.

b. Subdivision Collector Roads. For subdivision collector roads, curvilinear roads are encouraged.

c. Right-of-Way.

1. Generally. Right-of-Way design standards shall comply with right-of-way, drainage and utility regulations of this Article.
2. Existing Roads. Additional right-of-way adjacent to existing Putnam County and State Roads shall be dedicated to the County or the Florida Department of Transportation where needed to provide sidewalks, drainage improvements, auxiliary lanes, storage lanes, and other such improvements necessitated by the development.
3. Intersections. Sight distance shall be provided at all intersections by either providing rounded right-of-way lines or straight corner cuts (sight distance triangles). Rights-of-way at subdivision intersections shall be rounded with a minimum twenty-five (25) foot radius, or as otherwise required by traffic conditions or geometric requirements. Corner cuts shall meet or exceed the limits of the twenty-five (25) foot radius. The developer shall consider sight distance requirements in determining the amount of right-of-way to provide at roadway intersections.
4. Dead-end Streets. The maximum length for a dead-end street shall be eighteen hundred (1,800) feet. A cul-de-sac shall be constructed at the end of a dead-end street and shall be in accordance with the roadway, drainage and utilities standards of this Section. Where a street is to be continued, or is part of a phased construction, a "T" type turnaround will be required when the street is one hundred (150) feet or more in length, as measured from the nearest intersection. The "T" type turnaround will be in accordance with the roadway standards of this Section.
5. Buffer Walls. Buffer walls shall be constructed along all Arterial and Major Collector Roadways abutting residential land uses. As an alternative to masonry buffer walls, vegetated earthen berms shall be allowed meeting the provisions of the buffer/screening requirements of **Article 7** of this Article.

7.12.06 Sidewalks

- a. Generally. Sidewalk design requirements and standards shall be in compliance with **Subsection 7.10.08** of this Article.
- b. Types.
 1. External (Outside The Proposed Site)
 - (a) External sidewalks shall be located on Major or Minor Collectors adjacent to a subdivision. Sidewalks shall be constructed on the subdivision side of an existing Major or Minor Collector from boundary to boundary of the subdivision and shall extend to the edge of the adjacent roadways. Sidewalks shall be constructed prior to final acceptance of the improvement facilities. The Developer shall be responsible for the construction of sidewalks.
 - (b) The Public Works Director may grant an administrative waiver for the construction of sidewalks within its right-of-way; however, the developer shall be required to provide funds for the cost of sidewalk to the County. The unit price for sidewalk shall be established by the Director of Public Works.
 2. Internal (Within The Proposed Site). The Developer shall be responsible for the construction of sidewalks prior to certificate of completion and release of bond, unless a separate bond for completion of sidewalks has been provided.
 3. Internal (Other). Sidewalks along unbuildable lots, common areas, and stormwater ponds shall be constructed prior to final acceptance of the improvement facilities. The developer shall be responsible for the construction of sidewalks.

7.12.07 Lots

- a. Minimum Dimensions. Lots shall be designed to conform to the standards set forth in this Code.
- b. Municipal Limits and Lot Lines. Lots shall be designed so that municipal boundary lines do not divide them, except where unavoidable and upon approval of the Board of County Commissioners.

7.12.08 Stormwater Management. Subdivisions shall comply with requirements of the St. Johns River Water Management District (SJRWMD) and **Section 7.08** of this Article.

7.12.09 Water, Wastewater, Reclaimed Water Utilities

- a. Generally. Subdivisions shall be in compliance with roadway, drainage and utility standards of this Article.
- b. Water and Wastewater. All new subdivisions shall be required to install water lines, wastewater lines and provide a lift station site with a wet well within the subdivision with the following exceptions:
 1. Subdivisions containing less than twenty (20) lots, or
 2. Subdivisions where all lot sizes are greater than or equal to one (1) acre in size.

Where service with a central utility provider is not immediately available, these water and wastewater lines shall be installed as dry lines in compliance with the standards contained in this Code for future connection to the central utility provider when it becomes available.

- c. Golf Courses. Subdivisions containing golf courses shall be required to install on-site central water and sewer systems for the entire subdivision, where a central utility provider is not available to provide service to the development. In addition, such development shall install lines for reclaimed water or on-site surface water to be used as the primary irrigation for the golf course.

7.12.10 Fire Protection.

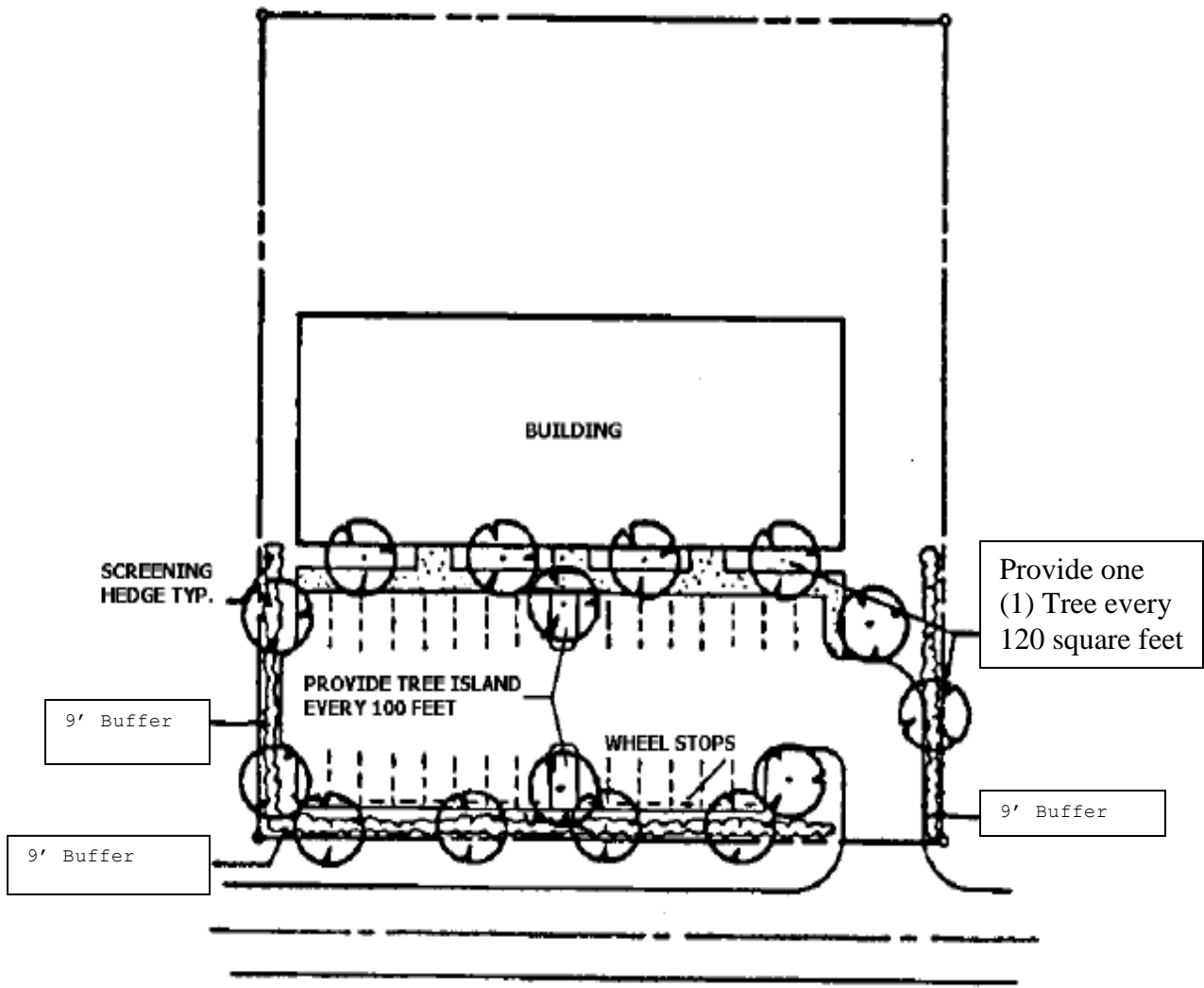
Subdivisions shall be protected in accordance with Florida Fire Prevention Code and the regulations provided in **Section 7.06 of this Article.**

7.12.11 Underground Utility Service.

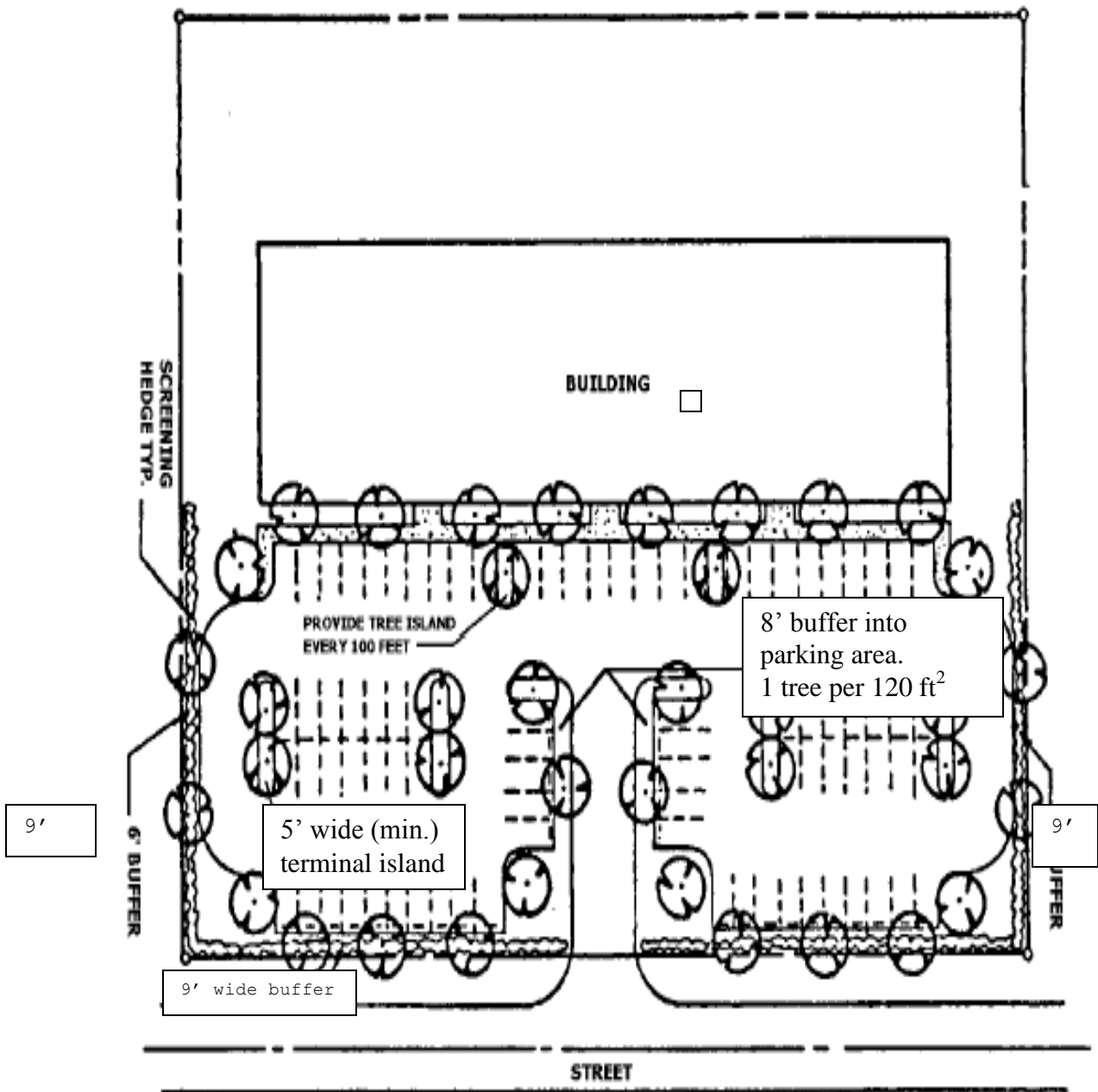
When underground electric service is proposed, the pad mounted transformers shall not be located within the road right-of-way, unless authorized by the Board of County Commissioners.

APPENDIX VII

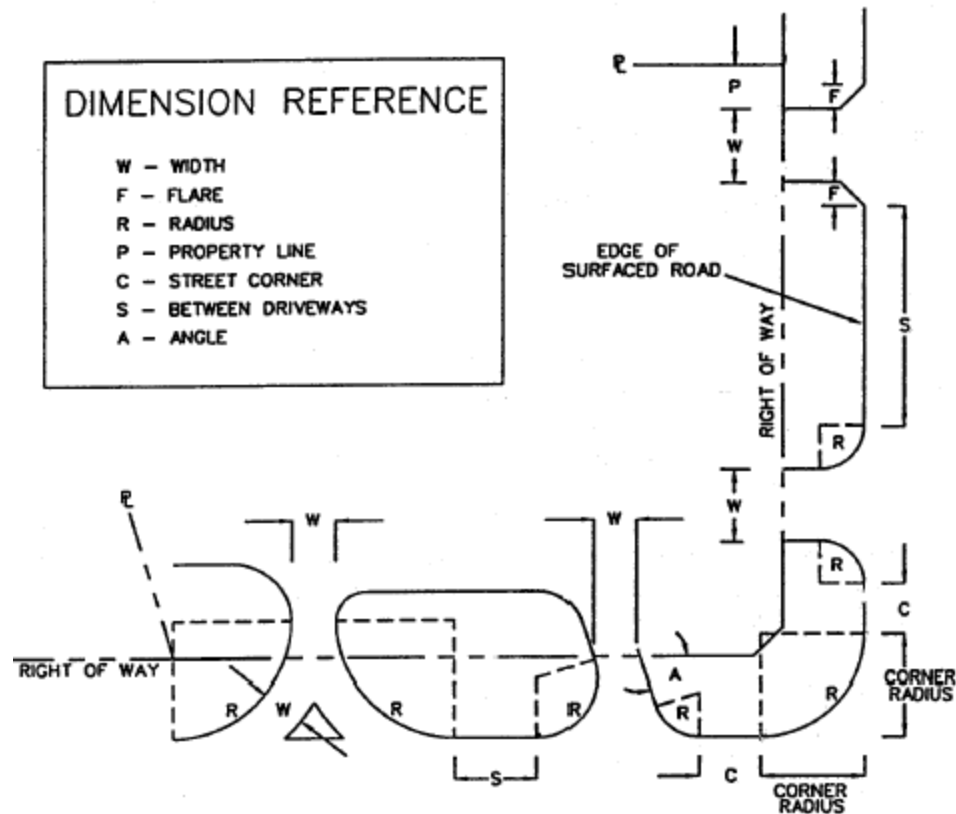
Figures



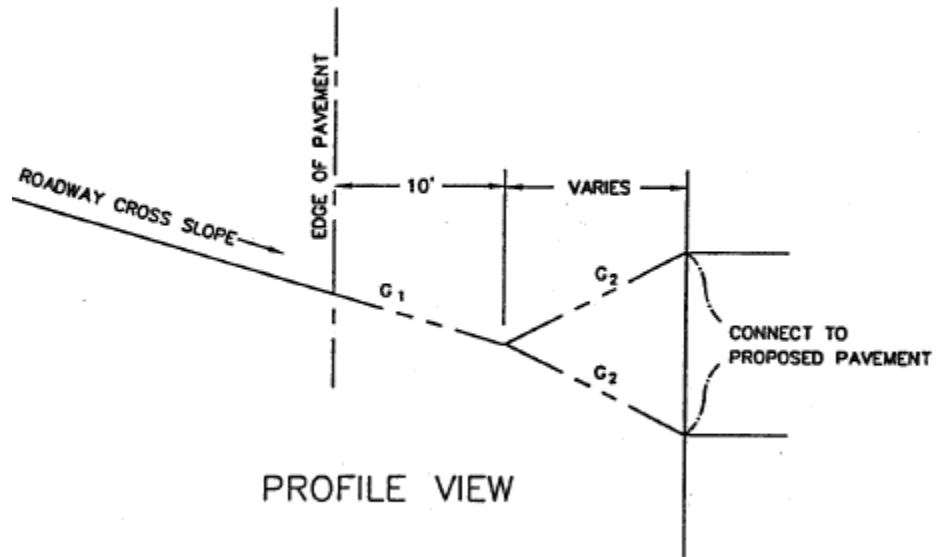
**FIGURE 7.1
PERIMETER LANDSCAPING**



**FIGURE 7.2
INTERIOR AND PERIMETER LANDSCAPING**



**FIGURE 7.3
DRIVEWAY DESIGN STANDARDS**



**FIGURE 7.4
DRIVEWAY PROFILE**

Tables

Table 7.4 – List of Approved Plant Species

H	High water use plant species associated with wetlands or moist soils; requires supplemental irrigation in addition to natural rainfall. This zone includes most manicured turfgrass areas.			
M	Moderate water use, drought tolerant plant species that survive on natural rainfall; requires supplemental irrigation during seasonal dry periods to maintain attractive appearance. This zone includes St. Augustine, Bahia and other turf grass areas.			
L	Low water use drought tolerant plant species; will survive on natural rainfall without supplemental irrigation.			
NATIVE CANOPY TREES (Mature size 40' or more in height)				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Acer rubrum</i>	Red Maple	H,M	Yes	No
<i>Betula nigra</i>	River Birch	H	Yes	No
<i>Carya aquatica</i>	Water Hickory	H	No	No
<i>Carya cordiformis</i>	Bitternut Hickory	M	No	No
<i>Carya glabra</i>	Pignut Hickory	M,L	No	No
<i>Carya tormentosa</i>	Mockernut Hickory	H	No	No
<i>Celtis laevigata</i>	Sugarberry	M,L	*	Yes
<i>Diospyros virginiana</i>	Common Persimmon	M	No	No
<i>Fraxinus americana</i>	White Ash	M	*	No
<i>Fraxinus caroliniana</i>	Carolina Ash	H	No	No
<i>Fraxinus pennsylvanica</i>	Green Ash	M	Yes	Yes
<i>Liriodendron tulipifera</i>	Tuliptree	H	No	No
<i>Liquidambar styraciflua</i>	Sweetgum	M,L	No	No
<i>Magnolia grandiflora</i>	Southern Magnolia	M,L	Yes	No
<i>Magnolia virginiana</i>	Sweetbay Magnolia	H	Yes	No
<i>Morus rubra</i>	Red Mulberry	L	No	No
<i>Nyssa aquatica</i>	Water Tupelo	H	No	Yes
<i>Nyssa sylvatica</i>	Black Tupelo	H	Yes	Yes
<i>Persea borbonia</i>	Red Bay	L	*	No
<i>Pinus clausa</i>	Sand Pine	L	No	No
<i>Pinus elliotii</i>	Slash Pine	L	No	No
<i>Pinus glabra</i>	Spruce Pine	H	*	Yes
<i>Pinus palustris</i>	Longleaf Pine	M,L	No	No
<i>Pinus taeda</i>	Loblolly Pine	L	No	No
<i>Platanus occidentalis</i>	Sycamore	H,M,L	*	Yes

NATIVE CANOPY TREES (Mature size 40' or more in height)				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Quercus falcata</i>	Southern Red Oak	L	No	No
<i>Quercus hemispherica</i>	Laurel Oak	M,L	No	Yes
<i>Quercus laevis</i>	Turkey Oak	L	No	No
<i>Quercus laurifolia</i>	Diamondleaf Oak	L	No	No
<i>Quercus michauxii</i>	Swamp Chestnut Oak	H,M	*	Yes
<i>Quercus nigra</i>	Water Oak	H,M	No	No
<i>Quercus phellos</i>	Willow Oak	L	*	Yes
<i>Quercus shumardii</i>	Shumard Oak	H,M,L	*	Yes
<i>Quercus stellata</i>	Post Oak	M,L	No	Yes
<i>Quercus virginiana</i>	Southern Live Oak	M,L	*	Yes
<i>Taxodium ascendens</i>	Pond Cypress	L	*	Yes
<i>Taxodium distichum</i>	Bald Cypress	L	*	Yes
<i>Tilia floridana</i>	Florida Basswood	H	No	No
<i>Ulmus alata</i>	Winged Elm	M,L	Yes	Yes
<i>Ulmus americana</i>	American Elm	H,M	No	No
<i>Ulmus crassifolia</i>	Cedar Elm	L	*	No

NON-NATIVE CANOPY TREES (Mature size 40' or more in height)				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Carya illinoensis</i>	Pecan	H,M	No	No
<i>Phoenix canariensis</i>	Canary Island Date Palm	L	Yes	Yes
<i>Phoenix dactylifera</i>	Date Palm	L	Yes	Yes
<i>Salix babylonica</i>	Weeping Willow	H	No	No
<i>Ulmus parvifolia</i>	Chinese (Drake) Elm	M,L	Yes	Yes
<i>Washingtonia robusta</i>	Washington Palm	L	Yes	No

NATIVE UNDERSTORY TREES (Mature size 12' to 40' height) AND PALMS:				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Acer barbatum</i>	Florida Maple	M	Yes	No
<i>Acer leucoderme</i>	Florida Sugar Maple	M	No	Yes
<i>Aesculus pavia</i>	Red Buckeye	M	No	No

NATIVE UNDERSTORY TREES (Mature size 12' to 40' height) AND PALMS:				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Bumelia tenax</i>	Tough Bumelia	L	Yes	No
<i>Carpinus caroliniana</i>	American Hornbeam	H,M	Yes	No
<i>Cercis canadensis</i>	Eastern Redbud	L	Yes	No
<i>Chamaecyparis throides</i>	Atlantic White Cedar	H	No	No
<i>Chionanthus virginicus</i>	Fringetree	M,L	No	No
<i>Cornus florida</i>	Flowering Dogwood	H,M	No	No
<i>Crataegus spp.</i>	Hawthorn	M,L	No	No

NATIVE UNDERSTORY TREES (Mature size 12' to 40' height) AND PALMS:				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Halesia carolina</i>	Carolina Silverbell	M	Yes	Yes
<i>Halesia diptera</i>	Two-Winged Silverbell	M,L	Yes	Yes
<i>Ilex spp.</i>	Hollies	L	Yes	Yes
<i>Juniperus silicicola</i>	Southern Redcedar	L	Yes	No
<i>Juniperus virginiana</i>	Eastern Redcedar	L	Yes	No
<i>Myrica cerifera</i>	Wax Myrtle	M,L	No	No
<i>Ostrya virginiana</i>	American Hophornbeam	M,L	Yes	Yes
<i>Persea palustris</i>	Swampbay	H	No	No
<i>Pinckneya pubens</i>	Fevertree	H	No	No
<i>Prunus angustifolia</i>	Chickasaw plum	M,L	No	No
<i>Quercus austrina</i>	Bluff Oak	M	*	Yes
<i>Quercus chapmanii</i>	Chapman Oak	L	No	No
<i>Quercus incana</i>	Bluejack Oak	L	No	No
<i>Quercus myrtifolia</i>	Myrtle Oak	L	No	No
<i>Quercus nuttallii</i>	Nuttall Oak	L	*	Yes
<i>Sabal palmetto</i>	Cabbage Palm	L	Yes	Yes
<i>Salix caroliniana</i>	Willow	H	No	No
<i>Tilia caroliniana</i>	Carolina Basswood	M	No	No
<i>Vaccinium arboreum</i>	Sparkleberry	L	No	No
<i>Viburnum rufidulum</i>	Viburnum	M	No	No

NON-NATIVE UNDERSTORY TREES (Mature size 12' to 40' height) AND PALMS:				
Botanical Name	Common Name	Water Zone	Street	Parking
<i>Butia capitata</i>	Pindo Palm	M,L	Yes	Yes
<i>Callistemon rigidus</i>	Bottlebrush	M	No	No
<i>Cupressocyparis leylandii</i>	Levland Cypress	M,L	No	No
<i>Eriobotrya japonica</i>	Loquat	M	Yes	No
<i>Ilex spp.</i>	Treeform Holly	M,L	Yes	Yes
<i>Lagerstromia indica</i>	Crape Myrtle	M,L	Yes	Yes
<i>Ligustrum japonicum</i>	Waxleaf Privet	M,L	No	No
<i>Magnolia spp.</i>	Deciduous Magnolia	H,M	No	No
<i>Ulmus parvifolia</i>	Chinese Elm	M,L	No	No

NATIVE SHRUBS, SMALL PALMS AND CYCADS:		
Botanical Name	Common Name	Water Zone
<i>Callicarpa americana</i>	Beautyberry	H,M,L
<i>Calycanthus floridus</i>	Sweetshrub	H,M
<i>Forestiera segregata</i>	Florida Privet	M,L
<i>Ilex glabra</i>	Gallberry	M,L
<i>Ilex vomitoria</i>	Yaupon Holly	L
<i>Illicium parviflorum</i>	Star Anise	H,M
<i>Myrica cerifera</i>	Wax Myrtle	M,L
<i>Rhapidophyllum hystrix</i>	Needle Palm	M,L

NATIVE SHRUBS, SMALL PALMS AND CYCADS:		
Botanical Name	Common Name	Water Zone
<i>Sabal minor</i>	Bluestem Palmetto	H,M,L
<i>Serenoa repens</i>	Saw Palmetto	M,L
<i>Viburnum obovatum</i>	Walters Viburnum	H,M

NON-NATIVE SHRUBS, SMALL PALMS AND CYCADS:		
Botanical Name	Common Name	Water Zone
<i>Abelia grandiflora</i>	Abelia	M
<i>Beloperone guttata</i>	Shrimp Plant	H,M
<i>Buxus microphylla</i>	Japanese Boxwood	M
<i>Buxus sempervirens</i>	English Boxwood	M
<i>Camellia japonica</i>	Camellia	M
<i>Camellia sasanqua</i>	Sasanqua Camellia	H
<i>Chamaerops humilis</i>	European Fan Palm	L
<i>Codiaeum variegatum</i>	Croton	H,M,L
<i>Cycas revoluta</i>	King Sago	L
<i>Eleagnus pungens</i>	Silverthorn	M,L
<i>Fatsia japonica</i>	Fatsia	H,M
<i>Gardenia jasminoides</i>	Gardenia	H,M
<i>Hibiscus syriacus</i>	Rose of Sharon	M
<i>Hydrangea spp.</i>	Hydrangea	H,M
<i>Ilex spp.</i>	Shrubform Holly	M
<i>Juniperus spp.</i>	Juniper	M,L
<i>Ligustrum japonica</i>	Waxleaf Privet	M,L
<i>Loropetalum chinense</i>	Chinese Witch Hazel	H,M
<i>Michelia figo</i>	Banana Shrub	H,M
<i>Nerium oleander</i>	Oleander	M,L
<i>Osmanthus fragrans</i>	Sweet Olive	M
<i>Pittosporum tobira</i>	Pittosporum	H,M
<i>Platyclusus orientalis</i>	Arborvitae	L
<i>Plumbago auriculata</i>	Plumbago	H,M,L
<i>Podocarpus macrophyllus</i>	Podocarpus	M,L
<i>Pyracantha coccinea</i>	Firethorn	M,L
<i>Raphiolepis indica</i>	Indian Hawthorn	M,L
<i>Rhododendron spp.</i>	Azalea	H,M
<i> Ternstroemia gymnanthera</i>	Clevera	M,L
<i>Trachycarpus fortunei</i>	Windmill Palm	L
<i>Viburnum odoratissimum</i>	Sweet Viburnum	H,M
<i>Viburnum tinus</i>	Laurustius Viburnum	M,L

NATIVE GROUNDCOVERS:		
Botanical Name	Common Name	Water Zone
<i>Borrchia frutescens</i>	Sea Oxeve Daisy	L
<i>Ceratiola ericoides</i>	Rosemary	M,L
<i>Crinum spp.</i>	Crinum Lily	M

NATIVE GROUNDCOVERS:		
Botanical Name	Common Name	Water Zone
<i>Gelsemium sempervirens</i>	Carolina Jessamine	M
<i>Helianthus debilis</i>	Beach Sunflower	L
<i>Iva imbricata</i>	Seashore Elder	L
<i>Licania michauxii</i>	Gopher Apple	L
<i>Muhlenbergia capillaris</i>	Muhly Grass	L
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	H,M
<i>Paspalum spp.</i>	Paspalum	H,M
<i>Serenoa repens</i>	Saw Palmetto	M,L
<i>Sesuvium portulacastrum</i>	Sea Purslane	L
<i>Sisyrinchium spp.</i>	Blue-eyed Grass	M
<i>Sorghastrum secundum</i>	Lopsided Indian Grass	L
<i>Spartina patens</i>	Saltmeadow Cord Grass	M,L
<i>Stachytarpheta jamaicensis</i>	Blue Porter Weed	L
<i>Tripsacum dactyloides</i>	Fakahatchee Grass	L
<i>Uniola paniculata</i>	Sea Oats	L
<i>Yucca filamentosa</i>	Beargrass	L
<i>Zamia pumila</i>	Coontie	M

NON-NATIVE GROUNDCOVERS:		
Botanical Name	Common Name	Water Zone
<i>Agapanthus africanus</i>	Blue Lily of the Nile	M
<i>Ajuga reptans</i>	Bugleweed	H
<i>Aloe spp.</i>	Aloe	M,L
<i>Aspidistra elatior</i>	Cast Ironplant	M
<i>Catharanthus roseus</i>	Periwinkle, Vinca	H,M
<i>Convolvulus 'Blue Daze'</i>	Blue Daze	M
<i>Cyrtomium falcatum</i>	Holly Fern	M
<i>Dichondra micrantha</i>	Dichondra	H,M
<i>Dietes bicolor</i>	Butterfly Iris	H
<i>Dietes vegeta</i>	African Iris	M,L
<i>Ficus pumila</i>	Creeping Fig	M,L
<i>Gerbera jamesonii</i>	Gerbera Daisy	M
<i>Hedera canariensis</i>	Algerian Ivy	L
<i>Hedera helix</i>	English Ivy	L
<i>Hemerocallis spp.</i>	Daylily	M,L
<i>Juniperus spp.</i>	Juniper	M,L
<i>Liriope muscari</i>	Liriope spp.	M
<i>Miscanthus spp.</i>	Miscanthus	L
<i>Nandina domestica</i>	Dwarf Nandina	M,L
<i>Ophiopogon japonicus</i>	Mondo Grass	L
<i>Pittosporum tobira</i>	Dwarf Pittosporum	H,M
<i>Trachelospermum asiaticum</i>	Asiatic Jasmine	L
<i>Trachelospermum jasminoides</i>	Confederate Jasmine	L
<i>Tulbaghia violacea</i>	Society Garlic	M,L

NON-NATIVE GROUNDCOVERS:		
Botanical Name	Common Name	Water Zone
<i>Vinca major</i>	Bigleaf Periwinkle	M
<i>Trachelospermum jasminoides</i>	Confederate Jasmine	L
<i>Tulbaghia violacea</i>	Society Garlic	M,L
<i>Vinca major</i>	Bigleaf Periwinkle	M

NATIVE VINES:		
Botanical Name	Common Name	Water Zone
<i>Ipomoea pescaprae</i>	Railroad Vine	M
<i>Ipomoea stolonifera</i>	Beach Morning Glory	L
<i>Gelsemium sempervirens</i>	Carolina Jessamine	M
<i>Lonicera sempervirens</i>	Coral Honeysuckle	L
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	H,M
<i>Passiflora incarnata</i>	Passion Flower	M

NON-NATIVE VINES:		
Botanical Name	Common Name	Water Zone
<i>Antigonon leptopus</i>	Coral Vine	M,L
<i>Ficus pumila</i>	Creeping Fig	M,L
<i>Hedera helix</i>	English Ivy	L
<i>Hemerocallis spp.</i>	Daylily	M,L
<i>Trachelospermum asiaticum</i>	Asiatic Jasmine	L
<i>Trachelospermum jasminoides</i>	Confederate Jasmine	L

Table 7.5 – Prohibited Plantings

Botanical Name	Common Name
<i>Albizia julibrissin</i>	Mimosa
<i>Broussonetia papyrifera</i>	Paper Mulberry
<i>Cinnamomum camphora</i>	Camphor
<i>Melia azedarach</i>	Chinaberry
<i>Sapium sebiferum</i>	Chinese Tallow