

## **ARTICLE VI - REQUIRED IMPROVEMENTS**

### **SECTION 6.1 GENERAL**

No development shall be approved by the Town without the developer having first provided, as hereafter set forth, all improvements, dedications, and maintenance guarantees required by these Regulations. The Town Engineer shall be responsible for assuring adequate inspection of construction of all improvements, except private utilities, for compliance with the approved plans and specifications. He shall issue a certificate of completion upon the approved completion of the work subject to the maintenance period provided for.

The Engineer of Record shall certify in writing that the required improvements have been completed in accordance with the approved plans and specifications. No certificates of occupancy shall be issued within the development until after a certificate of completion has been issued for the development.

### **SECTION 6.2 ROADWAY AND UTILITY IMPROVEMENTS**

The following improvements are required within all developments. In addition, any unpaved streets which provide access to a development from a paved street shall be improved by the developer in accordance with the specifications set forth herein:

- A. Survey reference markers
- B. Street grading, base preparation, surface course, and curb and gutter.
- C. Storm drainage/retention systems
- D. Sidewalks
- E. Potable water distribution systems
- F. Street name markers and traffic control signs
- G. Bridges
- H. Street lighting

### **SECTION 6.3 MAINTENANCE GUARANTEE FOR IMPROVEMENTS TO BE DEDICATED TO THE TOWN**

Following acceptance by the Town of the construction of improvements which are to be dedicated to the Town, the developer shall be required to maintain the improvements in first class condition until the Town Council accepts the improvements for Town maintenance. Said developer's maintenance period shall be a minimum of one (1) year. The Town Council shall require cash in escrow or a first mortgage (or some other type of cash guarantee as recommended by the Town Attorney) guaranteeing all improvements against defects in design, material and workmanship, and further guaranteeing that the developer shall maintain all said improvements in first class condition for the required period of time. This guarantee shall be in the amount of 10 percent (10%) of the construction cost of the improvements.

Should the developer fail to maintain any of the improvements in first class condition during the developer's maintenance period as herein specified, the Town Engineer shall notify the developer, in writing, giving the developer fifteen (15) days to take corrective actions. Should the developer fail to take the appropriate corrective action, the Town may correct the problem, deducting the cost from the developer's guarantee.

The developer may request the Town Council to accept the improvements for maintenance at the time of or after the acceptance of the construction improvements, but prior to the expiration of the developer's one year maintenance period. When this occurs, it shall be the responsibility of the developer to sod all areas

of the constructed improvements, where the potential for erosion exists because of an inadequate stand of grass. Such areas which may require sodding shall include, but not be limited to, shoulders, swales, and drainage retention areas. When such sodding is completed in a manner acceptable to the Town Engineer, the Town Council may accept the improvements for maintenance by the Town, provided that all improvements are in first class condition. However, the cash guarantee will be retained for the full one-year maintenance period to guarantee all improvements against defects in design, materials, and workmanship.

The Town Council shall not accept the improvements for maintenance by the Town nor release the cash guarantee until it has been determined that all improvements are in first class and acceptable condition.

## **SECTION 6.4 STANDARDS FOR DESIGN AND CONSTRUCTION OF REQUIRED IMPROVEMENTS**

All improvements shall be installed in accordance with the standards and specifications set forth herein.

### **6.4.1 Permanent Survey Reference Monuments**

Permanent Survey Reference Monuments shall be installed in all subdivisions in accordance with Chapter 177, Florida Statutes, and the following requirements:

A. Subdivision corner tie - At least one corner of the subdivision shall be designated by course and distance (tie) from a readily discernible reference marker such as a U.S. Government marker, section corner, or quarter-section corner. When such a monument or station is not available, the tie shall be made to some permanent and readily recognizable landmark or identifiable point, physical object or structure.

B. Monuments - At least two (2) monuments, shall be installed as control corners within each block within the subdivision. The surveyor shall install additional monuments if required by the Town Engineer. All monuments shall be constructed of concrete and shall be at least four (4) inches in diameter or square and not less than two (2) feet in length. Each monument shall have embedded in its top or attached by a suitable means a non-corrosive metal plate marked plainly with the point, the surveyor's registration number, and the month and year it was installed, and the words "Permanent Reference Monument" or the initials "P.R.M.". Monuments shall be set securely in the ground so that the top is flush with the finish grade.

C. Property markers - Property markers shall be installed on all corners and at all points of curvature changes on lands dedicated for public use, and on all properties prior to deeding or building constructions. A three-fourths (3/4) inch diameter steel pipe at least thirty (30) inches in length shall be used for this purpose. Markers shall be set securely in the ground so that the top is flush with the finish grade.

D. Subdivision benchmark - The surveyor shall establish the elevation in feet above the National Geodetic Vertical Datum (NGVD) for at least two (2) permanent reference monuments in the subdivision.

### **6.4.2 Survey Accuracy**

The allowable angular error of closure and linear error of closure for surveys shall be as follows:

A. Angular error - The angular error of closure shall not exceed fifteen (15) seconds times the square root of the number of angles turned.

B. Linear error - The linear error of closure shall not exceed one (1) foot per ten thousand (10,000) feet measured on the perimeter (1:10,000).

### **6.4.3 Access Control**

No curb, parkway, or sidewalk shall be cut or altered and no point of access or opening for vehicles onto a public street shall be established without a permit issued by the Development Code Administrator. For

any point of access or opening onto a state- or county-maintained road, a permit issued by the state or county shall also be required.

A. Application and Plans.

Applications for driveway or access to a public street shall be made to the Development Code Administrator and shall furnish plot plans of the property to be used for driveway and parking purposes.

B. Number of Access Points.

The maximum number of points of access permitted onto any one (1) street shall be as follows:

Lot Width Abutting Street.....	Number of Points of Access
Less than 100 feet .....	1
100 feet to 300 feet.....	2
Over 300 feet.....	2, plus one for each additional 300 feet or fraction thereof

C. Access to Business Uses.

Where business district property abuts two (2) streets, and where that portion of such street abutting business district property also abuts any residential district, access to such business district property shall be provided only from the street not abutting a residential district, or, where both streets abut residential districts, access shall be permitted from only one street.

D. Location of Driveways.

There shall be a minimum distance of fifty (50) feet between any two (2) openings on the same street for any one (1) use. No point of access shall be allowed within thirty (30) feet of the intersection of the right-of-way lines of two (2) public streets. Where right-of-way lines intersect in the form of an arc, the required thirty (30) feet shall be established as near as practical to the center of the arc. The location and width of driveways required by this Code shall be established by measurements taken along the right-of-way line. Driveway entrances shall have no less than a thirty (30) degree flare between the right-of-way line and the curb, or if no curb, the traveled street, to provide for the turning arc of vehicles entering and leaving the abutting property.

E. Single Family Residential Driveway Widths.

Driveways serving individual single family residences shall not be greater than twenty-four (24) feet in width measured at the curb line, or if no curb, the traveled street.

F. Multi-Family and Non-Residential Driveway Widths.

Driveways serving multi-family developments and any non-residential development or use shall be at least twenty (20) feet in width, but not more than thirty (30) feet, measured at the curb line, or if no curb line, the traveled street.

G. Driveway Materials.

That portion of any driveway which is on the public right-of-way shall be constructed of concrete or other approved permanent paving material, in accordance with specifications established by the Town Engineering Department, provided that said driveway opens onto a paved street.

**6.4.4 General Street Layout**

Proposed streets within developments shall be laid out with consideration of existing and planned streets in the surrounding area, topographical conditions, public convenience and safety, and the proposed use of land to be served by such streets.

A. Streets shall conform to the Traffic Circulation Element of the Town's Comprehensive Plan and other official maps or plans.

B. Where the Town Council determines it desirable to provide street access to an adjoining property, proposed streets shall be extended by dedication to the boundary of such property, and the temporary turn-around provided.

C. The proposed arrangement of streets shall provide for the continuation of existing streets in adjoining areas.

**6.4.5 Private Streets**

Private streets may be allowed within developments that will remain under single ownership, provided they are designed and constructed in accordance with the standards in these Regulations.

**6.4.6 Public Streets**

All streets shall be public unless private streets are permitted in accordance with Section 6.4.4 or as may otherwise be approved by the Town Council upon recommendation of the Town Planner, Town Engineer and Town Attorney. The Town Council shall not approve a private street in a proposed development if it can be reasonably assumed that such street will be needed to serve the area adjoining the proposed development. All public streets shall be dedicated to the perimeter of the proposed subdivision unless they are permanently terminated by a cul-de-sac or an intersection with another street.

**6.4.7 Street Names**

A proposed street which is obviously in alignment with another existing and named street, shall bear the assigned name of such existing street. In no case, except as provided for in the preceding sentence, shall the name of a proposed street duplicate or be phonetically similar to the assigned name of an existing street in Volusia County, irrespective of the use of a suffix (e.g., street, avenue, boulevard, drive, place, court, etc.). Such suffix shall be determined according to the guidelines set forth in the Street Naming Chart (Appendix A). Street names shall require approval by the Town Council.

**6.4.8 Design Standards for Streets**

The standards set forth here below shall be considered the minimum standards for design of streets. The classification of streets shall be as specified in the Pierson Comprehensive Plan.

**A. Right-of-Way Widths (with Curb and Gutter)**

- 1. Principal Arterial..... 120 feet
- 2. Secondary Arterial ..... 108 feet
- 3. Minor Arterial ..... 80 feet
- 4. Collector..... 70 feet
- 5. Local ..... 50 feet

**B. Right-of-Way Widths (with Swale Drainage)**

- 1. Principal Arterial..... 140 feet
- 2. Secondary Arterial ..... 140 feet
- 3. Minor Arterial ..... 100 feet
- 4. Collector..... 84 feet
- 5. Local ..... 60 feet

C. Centerline Grade - Minimum centerline grade for all streets shall be two-tenths (0.2) percent. Maximum centerline grade shall not exceed five (5) percent for arterial streets and eight (8) percent for collector and local streets.

D. Cul-De-Sacs (Permanent and Temporary)

1. Maximum length - No cul-de-sac shall exceed one thousand (1,000) feet in length (as measured along the centerline from the nearest right-of-way line of the intersecting street to the center point of the turn-around.)
2. Turn-around area shall have a right-of-way diameter of at least one hundred (100) feet and a minimum paved surface diameter of eighty-four (84) feet including curbs. A landscaped island may be permitted in the center of the turnaround (maximum diameter of thirty-two (32) feet).

E. Horizontal Curves - Where a centerline deflection angle of more than two (2) degrees occurs, a circular curve shall be inserted having a centerline radius of not less than the following:

1. Principal Arterial..... 500 feet
2. Secondary Arterial ..... 500 feet
3. Minor Arterial ..... 300 feet
4. Collector..... 200 feet
5. Local ..... 100 feet

F. Intersections

1. Streets shall intersect at an angle of approximately ninety (90) degrees, unless circumstances make it necessary to allow a lesser angle of intersection. In no case shall the angles of intersection be less than sixty (60) degrees.
2. Street jogs or centerline offsets between streets shall not be less than one hundred fifty (150) feet.
3. Street curb lines (or pavement edge) at all typical intersections approximately right angle shall be rounded with a minimum radius as follows:
  - a) local street intersecting local street - 30 feet.
  - b) local street intersecting collector - 35 feet.
  - c) local street intersecting arterial - 35 feet.
  - d) collector intersecting collector - 40 feet.
  - e) collector intersecting arterial - 40 feet.

The Town Council may, upon a recommendation from the Town Engineer, require other appropriate radii for other than right-angle intersections.

G. Bridges

Bridges shall be designed and constructed to comply with the standards and criteria for geometry and loading set forth in the latest edition of the American Association of State Highway and Transportation Officials, "Standard Specifications for Highway Bridges". The load criteria shall also comply with the State of Florida "Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways". Prior to design of bridges, the subdivider shall submit design load criteria to the Town Engineer for approval.

Bridges shall be constructed with curbs along the pavement edge. Sidewalks at least four (4) feet wide shall be constructed on both sides. Approach guard rails shall be provided where deemed by the Town Engineer to be necessary for safety.

**6.4.9 Street Construction Standards**

All streets shall be constructed in accordance with the following minimum standards:

A. Grading and landscaping - All rights-of-way other than the roadway area shall be sodded. Unless special ditch protection is required due to high velocities, the following will be the standard protection for ditches unless engineering calculations indicate the need for an exception:

<u>Swales Grade</u>	<u>Protection Required</u>
0.0% - 2.0% .....	Sodding
Greater than 2.0% .....	Ditch Paving

B. Pavement Sub-grade

1. Sub-grade shall be defined as that portion of the roadbed immediately below the base course of pavement including below the curb and gutter. The limits of sub-grade shall be considered to extend to a depth of six (6) inches below the bottom of the base for local streets and twelve (12) inches below the bottom of the base for collector streets and outward to twelve (12) inches beyond the curb.
2. The stabilizing material, if any is required, shall be high-bearing value soil, sand-clay, limerock, shell, or other material approved by the Town Engineer. Where the existing soils to be used in the roadway sub-grade have the required bearing value, no additional stabilizing material need be added or mixed in.
3. A stabilized sub-grade shall be constructed to support the curb and pavement base and shall be stabilized to not less than seventy-five (75) pounds Florida Bearing Value (FBV) or not less than forty (40) pounds Limerock Bearing Ratio (LBR) to a six-inch minimum depth. A compaction of ninety-eight (98) percent of maximum density (AASHTO T-180) shall be required.
4. Tests for the sub-grade bearing capacity and compaction shall be located no more than three hundred (300) feet apart and shall be staggered to the left, right and on the centerline of the roadway. When, in the judgment of the Town Engineer, conditions warrant additional testing to assure compliance with the specifications, the developer's engineer will be advised in writing that additional tests will be required and the extent of such additional tests. Test results shall be submitted to the Town Engineer.

C. Pavement Base

1. Bases for all local streets shall have a six-inch (6") depth. Bases for all collector streets shall have an eight-inch (8") depth. Portland cement, concrete, limerock, or full-depth asphalt pavement may be used. Soil cement shall not be permitted.
2. Mix designs shall be submitted to the Town Engineer for approval prior to the start of sub-grade preparation. Cement delivery tickets shall be provided for the Town Engineer at the time of placement.
3. Testing of the in-place base shall be at intervals equivalent to sub-grade testing and shall consist of a minimum of moisture content tests and compaction tests. Test results shall be submitted to the Town Engineer.
4. All base and roadway designs shall be subject to the approval of the Town Engineer.

5. The pavement base shall be crowned a minimum of one-quarter (1/4) inch per foot.
6. Design mixes shall be submitted to the Town Engineer no less than three (3) working days prior to any construction roadway bases, and will be subject to his approval.

#### D. Pavement Surface

1. Asphalt specifications shall be submitted by the developer's engineer with final plans. Florida State Certified Batch Plants must certify that approved specifications have been met. The developer shall furnish all required street striping and markings on all roadways.
2. Pavement crown shall be one-quarter (1/4) inch per foot or greater. Finish pavement shall be one-quarter (1/4) inch higher than the lip of any concrete gutter. Asphalt concrete surface course thickness shall be one and one-quarter (1-1/4) inches after compaction.
3. Testing of the density of the asphalt surface shall be at intervals as given under pavement sub-grade. Gradation and asphalt extraction test results shall also be provided to the Town Engineer. Core borings shall be required to verify the thickness of the base and surface courses.

#### E. Concrete Curb

1. A curb shall be provided on both sides of all streets.
2. Valley curbs shall be twenty-four (24) inches wide, and designed by a registered engineer, licensed by the State of Florida. Minimum thicknesses shall be six (6) inches.
3. Ribbon curbs, provided in association with swale drainage, shall be six (6) inches wide and eighteen (18) inches deep.
4. Concrete shall have a minimum twenty-eight day compressive strength of two thousand five hundred (2,500) pounds per square inch.
5. Curbs shall be saw-cut at intervals of ten (10) feet with expansion joints at intervals of twenty-five (25) feet. In addition, an "X" shall be cut in the curb to mark the location of all water distribution system valves, a "V" shall be cut in the curb to mark the location of all sewer services and an inverted "V" shall be cut to marks the location of all water services.
6. Four (4) concrete cylinders shall be taken and tested (two (2) at seven (7) days and two (2) at twenty-eight (28) days) for each seventy-five (75) cubic yards of concrete placed or fraction thereof. Test results shall be provided to the Town Engineer.

#### F. Sidewalks

1. Four-foot wide sidewalks shall be constructed along both sides of all streets. Double frontage lots shall have sidewalks constructed on both frontages. Sidewalks shall be constructed within the right-of-way.
2. Sub-bases for sidewalks shall be of good clean acceptable material compacted to ninety-five (95) percent (AASHTO T-180) of maximum density. Sidewalks shall be constructed of at least two thousand five hundred (2,500) pounds per square inch twenty-eight-day, natural concrete with a minimum thickness of four (4) inches.
3. A one-half-inch expansion joint shall separate the sidewalk and driveway, the sidewalk and driveway apron, and the driveway apron and curb. In addition, an expansion joint shall be installed along the sidewalk length at spacings not to exceed twenty-five (25) feet. Tooled contraction joints shall be cut at four-foot intervals for four-foot wide sidewalks and at five-foot intervals for five-foot wide sidewalks.

**6.4.10 Off-Street Parking and Loading Facilities**

Where required by these Regulations, every use or structure shall have an adequate number of off-street parking and loading spaces for use of occupants, employees, customers, visitors, patrons or suppliers. The following regulations shall apply to the design and construction of all required off-street parking and loading areas:

**A. Surfacing, Drainage, Lighting and Access.**

Every required off-street parking and loading area shall be surfaced with brick, asphalt, bituminous, concrete or packed shell or marl material, and maintained in a smooth, well-graded condition. If lighted, no artificial lighting shall be directed upon adjacent property. All areas shall be designed for the safety and convenient access of pedestrians and vehicles.

**B. Location.**

Required off-street parking and loading spaces shall be located no less than five (5) feet from any lot lines on the same lot they are intended to serve. If the required off-street parking spaces cannot reasonably be provided on the same lot on which the principal building or use is located, such required off-street parking spaces may be located on another lot properly zoned for the permitted principal use it is intended to serve, owned or leased by the owner on which the principal structure or use is located, provided that the parking is located within two-hundred (200) feet of the premises to be served.

**C. Plan Requirement.**

An application for a building permit shall be accompanied by an off-street parking or loading space plan. The plan shall accurately illustrate the number, location and dimensions of parking spaces, access aisles, driveways, vehicle turnarounds, or backup areas, areas designated for trash collection, off-street loading spaces, if required, and any required landscaped buffer areas.

**D. Dimensional Requirements for Off-Street Parking Areas.**

Off-street parking areas shall be designed to meet the following angles, dimensions and requirements:

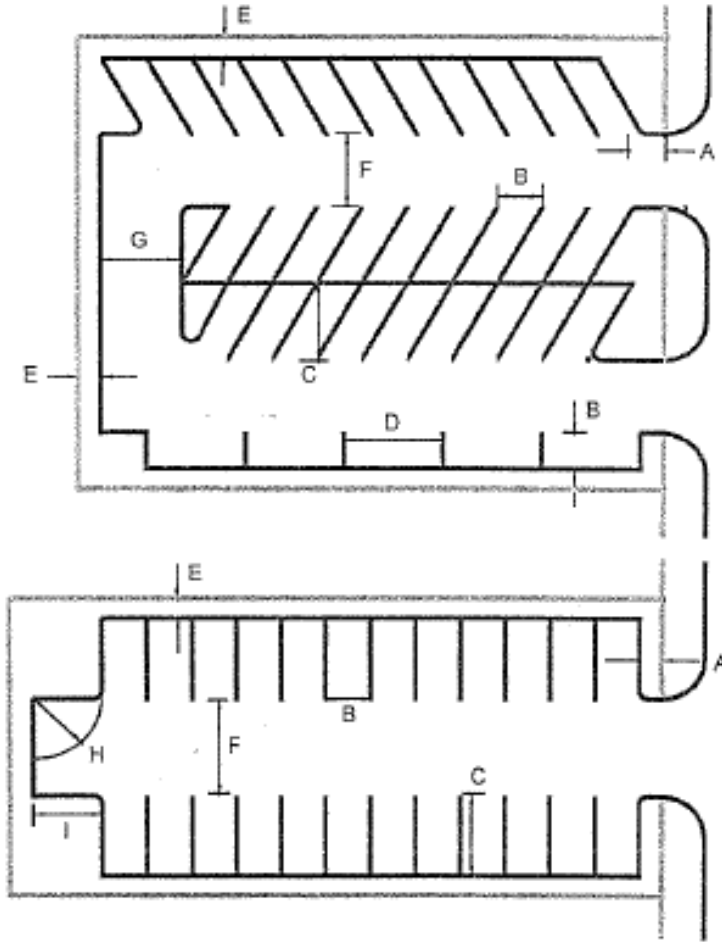
**DIMENSION TABLE**

Dimensions for parking at any of these angles are:

		45°	50°	55°	60°	90°	180°
Offset	A*	18'	16'	13'	10'	5'	15'
Car Space	B	12'	11'	10'	9'	9'	9'
Stall Depth	C	18'	18'	19'	19'	19'	
Stall Depth	D						22'
Buffer	E	5'	5'	5'	5'	5'	5'
Driveway	F	13'	15'	16'	18'	24'	15'
Turnaround	G	17'	16'	15'	14'	14'	14'
Maneuver Radius	H				15'		
Maneuver Depth	I				15'		

\* Letters refer to the figure on next page.





**FIGURE VI-1**  
Parking Lot Dimensions

**E. Minimum Off-Street Parking Spaces**

The minimum number of off-street parking spaces shall be determined from the following table. Numbers of spaces for any use not specifically mentioned shall be the same as for the use most similar to the one sought. Fractional spaces shall be rounded to the closest number. In houses of worship and other assembly places where occupants sit on bench-type seats without dividing arms, each eighteen (18) linear inches of such seat shall be counted as one seat.

USE	NUMBER OF PARKING SPACES
Bowling alleys	2 for each alley, plus 1 for each 2 employees
House of Worship	1 for each 5 seats
Library, community center, recreation center	1 for each 200 square feet of floor area
Manufacturing industries	1 for each employee on the largest shift, plus 1 for each additional 1,000 square feet of floor area; additional reserved spaces shall be provided for visitors
Medical offices, clinics and laboratories	5 for each doctor, dentist, or other practicing professional, plus 1 for each employee
Multi-family dwellings	2 for each dwelling unit
Municipal, county, state, federal and community buildings	1 for each employee, plus 1 for each 150 square feet of seating area (includes aisles in any room for

----- Article VI- Required Improvements -----

USE	NUMBER OF PARKING SPACES
	public meetings)
Office buildings, banks and similar institutions	1 for each 200 square feet of floor area
Pool halls and billiard parlors	2 for each table
Restaurants, nightclubs or bars	1 for each 3 seats, plus 1 for each 2 employees
Retail sales and service establishments	1 for each 250 square feet of floor area
Service Stations	1 for each gas pump, plus 3 for each grease rack or other working bay
Shopping centers	5.5 for each 1,000 square feet of floor area
Single family dwellings	2 for each dwelling unit
Theaters	1 for each 4 seats
Transportation Centers	1 for each 4 estimated average daily passengers
Pinball and video game arcades	1 for each 4 pinball machines or video games
Wholesale, retail and commercial storage (in addition to those required for the primary retail, wholesale, or commercial use)	1 for each employee, plus 1 for each 1,500 square feet devoted to wholesale, retail and commercial storage

F. Required Off-Street Loading Spaces

Every motel, hospital, institution, commercial or industrial building or similar use having a floor area of ten thousand (10,000) square feet or greater shall provide sufficient space for loading and unloading operations in order that the free movement of vehicles and pedestrians over a sidewalk, street or alley shall not be impaired. Every off-street loading space shall have direct access to a public street, and shall have the following minimum dimensions:

Length - 20 ft.

Width - 12 ft.

Unobstructed overhead clearance - 14 ft.

**6.4.11 Block and Lot Layout**

A. Block lengths shall not exceed fourteen hundred (1,400) feet nor be less than seven hundred (700) feet.

B. The width of any block shall be sufficient to accommodate two (2) tiers of lots except where one (1) tier of lots abuts an area of non-residential development, an arterial street, a utility right-of-way, or a land fill finger.

C. Where land is subdivided into larger parcels than ordinarily expected for building lots, such parcels shall be arranged to allow for the opening of future streets and drainage, and logical further subdivision.

D. The size, shape and orientation of lots shall be appropriate for the type of development and use contemplated.

E. No lot or lots fronting on an existing street shall be subdivided so as to permit new structures to conflict with the orientation of the majority of existing structures.

F. Lot dimensions shall comply with the requirements of Section 5.5.

G. Side lot lines shall be substantially at right angles or radial to street right-of-way lines.

H. All lots fronting on a curve shall have a minimum width at the street line of thirty-five (35) feet, and shall be platted to provide the required lot width at the building line.

I. Corner lots shall be fifteen (15) percent greater in width and area than the minimum requirements for interior lots, unless otherwise approved by the Town Council. This provision shall not apply when the

applicable minimum lot area requirement is one-half (1/2) acre or greater.<sup>1</sup>

#### **6.4.12 Design and Construction Standards for Potable Water and Stormwater Management Systems**

The subdivider shall construct a potable water distribution system and a stormwater management system in accordance with the provisions of this section, the Department of Environmental Regulations requirements and manufacturers' recommended guidelines as may be applicable. Such systems shall be designed by a Florida registered engineer.

##### **A. Potable Water Facilities**

1. A looped water distribution system of four-inch (4") water mains, or larger as determined by the Town Engineer, connected to the Town's potable water distribution system shall be provided in all subdivisions. This distribution system shall be capable of delivering, in addition to domestic requirements at peak demand, residual pressures of not less than twenty (20) pounds per square inch, fire flows of at least five hundred (500) gallons per minute in single family residential subdivisions, and one thousand (1,000) gallons per minute in commercial and industrial areas.
2. Water main material shall be polyvinyl chloride (PVC) integral bell pipe, SDR 18, approved for potable water systems or ductile iron pipe. PVC pipe shall be in accordance with the requirements of AWWA C-900. Fittings for either PVC or ductile iron pipe shall be ductile iron class 250.
3. Fire hydrants shall be breakaway flange type, five-foot (5'), four-inch (4") valve seat (Mueller Centurion or equivalent approved by the Town Engineer) with shut-off valve. Hydrants shall be generally located at all street intersections and at points which provide a maximum hose lay of three hundred seventy-five (375) feet in single family residential areas, two hundred fifty (250) feet in multi-family residential and commercial areas, and one hundred seventy-five (175) feet in industrial areas. The barrel of the fire hydrant shall be set perpendicular to the ground with the lowest discharge outlet center point a minimum of twenty-four (24) inches above the finished grade.
4. Mechanical joint gate valves conforming to American Water Works Association standard (AWWA) C500 shall be installed at all water main intersections and at intervals not greater than one thousand (1,000) feet along straight runs. The number of valves to be installed at intersections shall be one less than the number of legs of the intersection. Valves shall be equipped with cast iron valve boxes and shall be located outside the pavement area where possible.
5. Water service taps shall be located on side lot lines. A three-quarter (3/4) inch tap shall be provided for single services; a one (1) inch tap for double services. The location of the end of all services shall be marked with a piece of wood stake, two (2) inches by four (4) inches minimum size, which shall extend from one (1) foot below the service to four (4) feet above grade.

##### **B. Design and Construction Standards for Stormwater Management Systems**

1. A complete stormwater management system shall be provided in order to suitably drain all lots, streets, and other areas of the subdivision which are required to be drained. In addition, where stormwater run-off from outside the subdivision passes over or through the area of the subdivision, such run-off shall be included in the stormwater management system design.
2. The design of the stormwater management system shall comply with provisions of the

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<sup>1</sup> As amended per Ordinance 05-09, January 10, 2006.

----- Article VI- Required Improvements -----

Article VII and any applicable regulations of Volusia County, the St. Johns River Water Management District, the Florida Department of Environmental Regulation and the U.S. Army Corp of Engineers.

3. The system shall be designed for long life, and shall require only low-cost maintenance by normal maintenance methods.
4. All natural drainage ways shall be preserved at their natural gradient and shall not be filled or interfered with in any way except as approved by the Town Engineer.
5. If the added run-off from the subdivision will, in the judgment of the Town Engineer, overtax or overload existing stormwater management facilities, then the subdivider shall upgrade such facilities to accommodate the additional run-off.
6. Roadside swales within street rights-of-way shall have side slopes and back slopes no steeper than four (4) to one (1) (ratio of run to rise). Normal swale sections shall be no deeper than necessary; but in no case shall they exceed eighteen (18) inches in depth below the outside edge of the street pavement. Run-off may be accumulated and carried in the street right-of-way up to but not above the point where flooding of the roadway would occur. Water in excess of this quantity shall be diverted from roadside swales and carried away by storm sewers or other approved means.
7. Where, in the judgment of the Town Engineer, a potential for erosion exists, the subdivider shall provide erosion control by the use of culvert pipes, concrete swales, sandbag riprap, headwalls with spillways, or other suitable means approved by the Town Engineer.
8. Storm sewers and culverts shall be constructed of reinforced concrete or corrugated metal. Where pipe will be subjected to vehicular traffic loads, reinforced concrete pipe shall be used. Pipe class, gauge, corrosion resistant coating, and joint material shall be approved by the Town Engineer.
9. Inlets, manholes and catch basins shall be either poured-in-place or pre-cast, reinforced concrete. A structure shall be required at each change of pipe grade or alignment.
10. The stormwater management system shall be designed as a minimum to accommodate the stormwater run-off within the street rights-of-way and all other anticipated impervious surfaces within the subdivision.
11. Where a stormwater retention area is to be used outside the normal limits of the street right-of-way, dedication of a suitable area shall be made to accommodate the retention area.

C. Excavation and Backfill

The Contractor installing potable water, sanitary sewer and stormwater management systems shall do so in accordance with the following:

1. An adequate excavation or sheeting and bracing shall be provided to insure the safety of workmen, as well as the representatives of the Town, the design engineer and the developer.
2. During pipe laying, groundwater shall be kept a minimum of six (6) inches below the bottom of the trench.
3. All pipes shall be laid on a firm foundation. Soft or spongy bedding for pipes will not be accepted. Any unsuitable material shall be removed and replaced with a dry, compacted material approved by the Town Engineer.
4. All trenches shall be backfilled with material approved by the Town Engineer. Backfill material shall be compacted to a minimum compaction of ninety-eight (98) percent maximum density (AASHTO T-180) under roadways and ninety-five (95) percent maximum

density in all other places. The contractor shall employ an independent testing laboratory to ensure compaction of backfill material at points one foot above the pipe and at two-foot vertical intervals, or fraction thereof.

5. The Contractor shall install a metallized foil core pipe location tape, or similar device as may be approved by the Town Engineer, for the full length of all non-metallic water mains and sewage force mains. This pipe location aide shall be installed fifteen (15) inches below grade or as directed by the manufacturer.

#### **6.4.13 Traffic Control Devices, Street Name Signs**

A. Traffic signals, signs, striping and other control devices shall be installed by the subdivider at locations determined by the Town Engineer in accordance with the U.S. Department of Transportation's "Manual on Uniform Traffic Control Devices".

B. Street name signs shall be installed by the subdivider at all intersections in the locations approved by the Town Engineer.

#### **6.4.14 Street Lights**

Street lights providing 9,500 lumens or such lumens as otherwise established by resolution of the Council shall be installed by the subdivider at all intersections and at points along the road, such as sharp curves and turnarounds on cul-de-sacs, where street lights would in the judgment of the Town Engineer, reduce the potential for accidents. The subdivider shall prior to commencement of construction pursuant to an approved preliminary plat pay to the Town in advance the total cost of the street lights in an amount equal to 110% of the charge by Florida Power Corporation per month per street light times 36. The payment prescribed herein shall be in lieu of the subdivider's installation of the street lights.

#### **6.4.15 Other Utilities**

Utility lines for electricity (except primary transmission and subdivision feeder lines), telephone, gas, and television communications shall be installed underground unless otherwise approved by the Town Council.

#### **6.4.16 Easements**

A. Drainage Easements - Where a proposed subdivision is traversed by a watercourse, drainageway, canal or stream, dedication shall be made of an easement suitable to accommodate stormwater and drainage through and from the proposed subdivision. Said dedication or easement shall conform substantially with the lines of said watercourse, and be of sufficient width to allow maintenance.

B. Lot Line Easements - Easements shall be provided on all front, rear and side lot lines for drainage and utility purposes. Front lot line easements shall be a minimum of ten (10) feet in width. Said Rear and side lot line easements shall be a minimum of fifteen (15) feet in width, measured seven and one-half (7.5) feet on either side of the lot line. Wherever utility easements are planned adjacent to the subdivision boundary, the full width necessary shall be provided within the proposed subdivision.

C. Dedications for Retention Areas - Areas dedicated for retention or detention areas shall allow for access by maintenance equipment, and a continuous twenty (20) foot maintenance berm around the perimeter, graded away from the edge of the retention or detention area.

D. Pedestrian Easements - Pedestrian easements shall be provided through the interior of blocks where such easements are required by the Town to facilitate pedestrian circulation. Said easements shall be at least ten (10) feet wide, and shall be laid out along side or rear property lines.

E. Private Easements - Private easements or reserve strips are prohibited along the perimeter of a subdivision or at the ends of street rights-of-way.

F. Maintenance of Easements - The Town will maintain only those easements, rights-of-way and public

----- *Article VI- Required Improvements* -----

sites which it accepts for maintenance.