

LAND DEVELOPMENT STANDARDS MANUAL



**City of Fairburn, Georgia
2008**

ADOPTED BY COUNCIL APRIL 28, 2008

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CITY OF FAIRBURN, GEORGIA
LAND DEVELOPMENT STANDARDS

May 2008

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**THE LAND DEVELOPMENT STANDARDS
OF THE
CITY OF FAIRBURN, GEORGIA**

ARTICLE I - AUTHORITY AND TITLE

AN ORDINANCE ESTABLISHING RULES, REGULATIONS AND STANDARDS GOVERNING THE DEVELOPMENT OF LAND WITHIN THE INCORPORATED CITY OF FAIRBURN, GEORGIA; DEFINING STANDARDS FOR STREET, UTILITY AND DRAINAGE IMPROVEMENTS; PROVIDING FOR THE METHOD OF ADMINISTRATION AND AMENDMENT; PRESCRIBING PENALTIES FOR THE VIOLATION OF ITS PROVISIONS; AND FOR OTHER PURPOSES.

SECTION 1.1 AUTHORITY

This Ordinance is adopted under the authority of the Constitution of the State of Georgia and laws enacted pursuant thereto.

SECTION 1.2 SHORT TITLE

This Ordinance shall be known and may be cited as "The Land Development Standards of the City of Fairburn, Georgia."

SECTION 1.3 INTENT AND APPLICATION

It is the intent of this Ordinance that it will apply to and provide guidance for the development of lands within the incorporated limits of the City of Fairburn, Georgia, whether the developments involve the subdivision of land or the construction of buildings and/or other improvements on a single parcel. Any land development activity must first comply with this Ordinance. This ordinance is considered to be complementary to both the Zoning Ordinance and the Subdivision Regulations. The City Administrator shall provide the final, authoritative interpretation of any apparent conflicts that may be presented.

ARTICLE II - DEFINITIONS

SECTION 2.1 USE OF WORDS AND INTERPRETATION

- (a) For the purposes of this Ordinance, the following shall apply to the use of all words:
- (1) Words used in the present tense shall include the future tense,
 - (2) Words used in the singular number include the plural and words in the plural number include the singular,
 - (3) Words in masculine gender shall include the feminine and words in feminine gender shall include the masculine,
 - (4) The term "shall" is mandatory and not discretionary,
 - (5) The word "may" is permissive,
 - (6) Use of the word "and" is inclusive and requires that all of the component phrases so connected must be present or fulfilled for sufficiency,
 - (7) Use of the word "or" is not exclusive and requires that at least one of the component phrases so connected must be present or fulfilled for sufficiency. The word "or" may allow more than one component phrase to be present or fulfilled, as in the term, "and/or".
- (b) In this Ordinance the following shall control the interpretation of words and phrases:
- (1) Words and phrases defined in this Article shall be interpreted as defined herein without regard to other meanings in common or ordinary use, unless the context of the word indicates otherwise.
 - (2) Words or phrases not defined herein shall be interpreted as defined in the Zoning Ordinance of Fairburn, Georgia, as defined in the Subdivision Regulations of the City of Fairburn, Georgia, as defined in the Soil Erosion and Sedimentation Control Ordinance of Fairburn,

Georgia, as defined in the Sewer Use Ordinance of the City of Fairburn, Georgia, or the Flood Plain Ordinance of Fairburn, Georgia, as applicable to the use of the word or phrase within the context of this Ordinance.

- (3) Words or phrases not defined herein or in any other applicable code, Regulations or ordinance of the City of Fairburn, Georgia shall be construed to have the meaning customarily assigned to them.

SECTION 2.2 DEFINITIONS OF WORDS AND PHRASES

City - The City of Fairburn, Georgia, a municipal corporation.

City Administrator – The City Administrator of the City of Fairburn, Georgia.

City Council - The legally constituted and elected governing body of the City of Fairburn, Georgia.

City Engineer – The City Engineer of the City of Fairburn, Georgia.

Clearing - The removal of trees, other vegetation and/or above ground improvements including, but not limited to, buildings and structures, walls, fences, steps, walks, curbs, gutters, concrete slabs, pavements (including bases for pavements) and surfacing.

Developer - Any person, individual, firm, partnership, association, corporation, estate, trust, or any other group or combination acting as a unit who directs the undertaking or proposes to undertake development activities as herein defined, whether the development involves the subdivision of the land for sale to individual users, the construction of buildings or other improvements on a single land ownership or both.

Develop(ment) - 1. (noun) A specific subdivision or project which is a single entity or intended to be constructed as an interrelated whole, whether simultaneously or in phases. 2. (verb) All activities associated with the conversion of land or the expansion or replacement of an existing use to any new use intended for human operation, occupancy or habitation other than for agricultural purposes. Such activities include land disturbance and the construction of improvements such as, but not limited to, streets, driveways, parking areas, sidewalks, buildings, structures, utilities, or storm drainage facilities.

Development Plans - The detailed and professional plans showing the layout and design, site work and construction activities proposed for a project (other than architectural/engineering buildings plans); including, but not limited to, Site Plans, Grading Plans, Erosion and Sedimentation and Pollution Control Plans, Tree Protection Plans, Landscape Plans, Street Plans and Profiles, Water Supply Plans, Sanitary and Storm Sewer Plans and Profiles, Stormwater Management Plans, Other Site Improvement Plans and Other Appropriate Sections, Details, Notes, Schedules, Legends and Diagrams.

Drainage Improvements - Those facilities, structures, or other stormwater storage/conveyance mechanisms intended to control and direct the passage of storm waters and other surface water flows from and across property; including but not limited to, modified natural drainageways, modified creeks, modified streams, channels, swales, ditches, flumes, culverts, cross drains and other piping, catch basins, area drains, drop inlets, junction boxes, headwalls, flared end sections, detention ponds and basins, rip rap, drainageway lining systems, and energy dissipation devices.

Erosion Control Regulations - The City of Fairburn, Georgia Soil Erosion and Sedimentation Control Ordinance.

Georgia DOT - The Department of Transportation of the State of Georgia.

Grading - The movement, removal, or addition of soil, earth, sand, silt or rock on a site by use of mechanical equipment.

Grubbing - The removal of stumps, roots, and abandoned underground facilities including, but not limited to, utilities, structures, walls, footings, foundations, wells, septic tanks, storage tanks, and pipe.

Health Department - The Health Department of Fulton County, Georgia.

Mean Sea Level - The average height of the sea for all stages of the tide. For purposes of these Regulations, the term is synonymous with National Geodetic Vertical Datum.

Planning Commission - The City of Fairburn, Georgia Planning & Zoning Commission.

Project - A principal building or structure, or a group of buildings or structures, planned as an interdependent unit together with all accessory uses of structure, utilities, drainage, access, and circulation facilities, whether built in whole or in phases. Examples include, but are not limited to, a principal building on a lot, a residential subdivision, a multi-family development, an industrial plant, an institutional building, a shopping center or an office complex.

Public Works Department - The Public Works Department of the City of Fairburn, Georgia.

Sewer Use Regulations - The City of Fairburn, Georgia, Sewer Use Ordinance.

Stormwater Design Manual – Volumes 1 & 2 (Technical Handbook) of the Georgia Stormwater Management Manual, current edition, as published by the Atlanta Regional Commission and any local design standards maintained by the City.

Street, Substandard - a street which does not comply to at least the standards for the designated street classifications as contained in these Regulations and the Subdivision Regulations.

Subdivision Regulations - The City of Fairburn, Georgia, Land Subdivision Regulations.

Zoning Regulations - The City of Fairburn, Georgia, Zoning Ordinance.

ARTICLE III - GENERAL PROVISIONS

SECTION 3.1 ZONING ORDINANCE, SUBDIVISION REGULATIONS AND OTHER REGULATIONS

Whenever there is a discrepancy between minimum standards or dimensions required under this Ordinance and those contained in zoning regulations, subdivision regulations, building codes or other ordinances or regulations, the most restrictive or the City Engineer's interpretation shall apply.

SECTION 3.2 REQUIRED PUBLIC IMPROVEMENTS

Every developer of lands within the jurisdiction of this Ordinance shall provide the public improvements included in this Ordinance, in accordance with these Land Development Standards and other pertinent ordinances, codes, and regulations of the City of Fairburn, Georgia. These public improvements together with associated rights-of-way, easements, and other lands shall be provided at no cost to the City and shall be dedicated or otherwise transferred, as required, to the public in perpetuity and without covenant or reservation.

SECTION 3.3 PLAN REVIEW AND APPROVAL

Any developer of land within incorporated Fairburn, Georgia, shall first submit to the City such plans, plats, or construction drawings as may be required by these Regulations and receive approval of those documents by the City prior to the initiation of development activities. Approval of plans, plats, or construction drawings by the City shall not imply nor transfer acceptance of responsibility for the application of the principles of engineering, surveying, architecture, landscape architecture, or any other profession, from the professional corporation or individual under whose hand or supervision the plans, plats, or construction drawings were prepared and sealed.

SECTION 3.4 OTHER PERMITS

Nothing in these Regulations shall impose any obligation on the City to obtain or assist in obtaining permits, approvals, and/or clearances from other local, state or Federal agencies having jurisdiction over elements of a project. It is solely the developer's responsibility to obtain all such required permits, approvals, and/or clearances. The developer shall furnish the City with copies of all such permits, approvals and/or clearances before authorization to proceed with development is requested.

SECTION 3.5 STANDARD SPECIFICATIONS

The City will maintain on file for consultation and distribution a series of standard specifications for construction of roadways, utilities and drainage facilities for the development of land in accordance with these Land Development Standards.

The standard specifications describe minimum acceptable standards for street, utility, drainage, and other infrastructure construction associated with land development activities authorized under this Ordinance, but shall not supercede more restrictive prudent design requirements or good engineering practice as applied to specific situations on a case- by-case basis.

The standard specifications are included in this Ordinance as Appendix B and are subject to the modifications and appeal provisions of Articles VIII and IX.

SECTION 3.6 STANDARD DRAWINGS

The City will maintain on file for consultation and distribution a series of standard drawings illustrating details of construction and design of streets, utilities, drainage facilities, site improvements and other elements related to the development of land in accordance with these Land Development Standards.

The standard drawings illustrate minimum acceptable standards for land development activities authorized under this Ordinance, but shall not supersede more restrictive prudent design requirements or good engineering practice as applied to specific situations on a case-by-case basis.

The standard drawings are included in this Ordinance as Appendix C and are subject to the modification and appeal provisions of Articles VIII and IX. If a discrepancy exists between Standard Drawings and Standard Specifications, the more restrictive requirement shall prevail. In lieu of a more restrictive requirement, the Standard Specifications requirements shall prevail.

ARTICLE IV - STREET IMPROVEMENT STANDARDS

SECTION 4.1 STREET IMPROVEMENTS

Streets, whether abutting or internal, existing or new, shall be constructed or improved under those circumstances and to the standards as established in these Regulations. Roadway improvements shall be in accordance with the street classification system defined in Appendix D of the Zoning Regulations. Specific street classification designations shall be as shown in adopted transportation plans of the City or as established by the Planning & Zoning Commission.

SECTION 4.2 MINIMUM RIGHT-OF-WAY AND ROADWAY WIDTHS

Minimum widths for construction (new streets or widening sections) shall be as given in the following Table 5-A or on standard drawings.

TABLE 4-A

<u>Street Category</u>	<u>Minimum Right-of-way</u>	<u>Minimum Roadway</u> ⁽¹⁾
Arterial		
Primary	100 feet	66 feet
Secondary	80 feet	52 feet
Collector		
Primary	80 feet	52 feet
Secondary	60 feet	42 feet
Local		
Non Residential	60 feet	36 feet
Non Residential Cul-de-sac	60 foot radius	50 foot radius
Residential	50 feet	28 feet
Residential Cul-de-sac	50 foot radius	40 foot radius

⁽¹⁾ Roadway width dimensions are back of curb to back of curb.

On any existing street having a right-of-way less than the minimum which abuts a property being developed, a minimum of one-half of the required width of right-of-way shall be dedicated at no cost to the City along the entire property boundary abutting the existing street.

Additional street right-of-way width may be required to be dedicated at intersections or other locations fronting the property where turning lanes, storage lanes, medians, islands, or realignments are required for traffic safety and minimum right-of-way standards would be inadequate to accommodate the improvements.

SECTION 4.3 STREET WIDENING

When property fronting on an existing City street is to be developed or when the property is to be accessed from the existing City street, the developer shall cause to be constructed roadway improvements (pavement, signing, striping,

curb and gutter and drainage) which are required along the existing road across the entire property frontage at no cost to the City. Required improvements shall not be less than provided in these Regulations for the designated street classification.

Widening, curb and gutter and drainage shall be provided by the developer from the centerline of the existing roadway along the side of the road upon which the property abuts. In lieu of installation of curbs and gutters and/or related drainage improvements, the developer must have presented to and received approval by the City for a Street Improvements and Storm Water Drainage Plan for the development and its affected environs. Said plan must provide for adequate storm water drainage, and will further address as a minimum, street grading, paving, and curbs and gutters, and or other innovative provisions for said drainage. This plan must conform to the applicable standards and specification established by the City and be prepared, signed, and sealed by a Georgia registered professional engineer.

The developer shall be responsible for the cost of relocation and/or modifications of public and/or private utilities as necessitated by the required street improvements.

SECTION 4.4 NEW STREETS

All public streets proposed to be constructed in a subdivision or other development shall be designed and constructed at least to the standards contained in these Regulations in accordance with the appropriate street classification of said streets.

Access:

A maximum number of 125 residential units shall be allowed per street outlet to a public street with at least a collector road classification. Any secondary access points shall be separated by at least 500 feet from the primary entrance and meet the intent of this section as determined by the City Engineer and the Fire Marshal.

Street Jogs:

Street jogs with centerline offsets of less than 125 feet shall not be permitted.

Street Gradients:

- (a). The minimum street gradient shall be one percent without special approval from the City Engineer. A minimum street gradient of one half percent to one percent may be approved by the City Engineer, based on adequate engineering designs provided by the subdivider's engineer, where at least one percent cannot reasonably be achieved due to topographical limitations imposed by the land.

- (b). The maximum street gradient for primary arterial streets shall be eight percent. The maximum street gradient for secondary arterial, primary and secondary collector and nonresidential local streets shall be ten percent. The maximum street gradient for residential local streets shall be 14 percent. Grades between 12 percent and 14 percent shall not exceed a length of 150 feet measured as the tangent length between points of vertical curvature.

- (c). The maximum gradient on any cul-de-sac shall be eight percent.

Vertical Street Alignment:

All changes in street profile grades having an algebraic difference greater than one percent shall be connected by a parabolic curve having a minimum length (L) equal to the product of the algebraic difference between the grades in percent (A) and the design constant (K) assigned to the street according to its category (i.e., $L = A * K$).

Constant (K) values are shown in the following Table 4-B for both desirable and minimum acceptable conditions. In all cases, the desirable value shall be used, unless it cannot be achieved due to topographical conditions beyond the subdivider's control. In such conditions, the City Engineer may approve a lesser value to the extent required by the unique situation, but in no event less than the minimum value shown in Table 4-B.

TABLE 4-B

<u>Street Category</u>	<u>Crest Curves</u>		<u>Sag Curves</u>	
	<u>Minimum</u>	<u>Desirable</u>	<u>Minimum</u>	<u>Desirable</u>
Arterial				
Primary	110	160	90	110
Secondary	90	120	70	90
Collector				
Primary	60	80	60	70
Secondary	60	80	60	70
Local				
Non Residential	30	30	40	40
Non Residential Cul-de-sac	20	30	30	30
Residential	20	20	30	30
Residential Cul-de-sac	20	20	30	30

Horizontal Street Alignment:

All new streets shall conform to the horizontal centerline curvature and superelevation criteria shown in the following Table 4-C.

TABLE 4-C

<u>Street Category</u>	<u>Minimum Centerline Radius (Ft)</u>	<u>Maximum Superelevation (ft/ft)</u>
Arterial		
Primary	1,146	0.06
Secondary	955	0.06
Collector		
Primary	600	0.00
Secondary	415	0.00
Local		
Non Residential	275	0.00
Non Residential Cul-de-sac	165	0.00
Residential	165	0.00
Residential Cul-de-sac	165	0.00

Superelevation runoff shall be provided on each end of horizontal curves to rotate pavement section from normal crown section to full superelevation section and to rotate pavement section from full superelevation section to normal crown section in accordance with design standards of the Georgia Department of Transportation.

Tangents between reverse horizontal curves shall not be less than those shown in the following Table 4-D.

TABLE 4-D

<u>Street Category</u>	<u>Minimum Tangent Length</u>
Arterial	
Primary	200 feet
Secondary	150 feet
Collector	
Primary	120 feet
Secondary	120 feet
Local	
Non Residential	100 feet
Non Residential Cul-de-sac	75 feet
Residential	75 feet
Residential Cul-de-sac	50 feet

Street Intersections:

Intersection Angle:

Intersecting streets shall meet at approximately right angles and shall not be at an angle of less than 80 degrees unless approved by the City Engineer.

Intersection Vertical Approaches:

For all but local streets, street intersections, including approaches, shall have a maximum vertical grade of two percent.

For local streets, street intersections, including approaches, shall have a maximum vertical grade of five percent. The minimum approach length (distance from extended outer edge of the nearest through lane of the intersecting street to the point of vertical curvature in the approaching street) shall be provided in accordance with the following Table 4-E.

TABLE 4-E

<u>Approaching Street Category</u>	<u>Minimum Approach Length</u>
Arterial	
Primary	100 feet
Secondary	100 feet
Collector	
Primary	75 feet
Secondary	50 feet
Local	
Non Residential	25 feet
Non Residential Cul-de-sac	25 feet
Residential	25 feet*
Residential Cul-de-sac	25 feet*

*For intersections of local residential streets, the minimum approach length is zero unless the approaching street grade is five percent or more, in which case the indicated minimums apply.

Intersection Radii:

Intersection radii for streets, measured at the back of the curb, and for rights-of-way shall be as shown in the following Table 4-F. For intersecting streets of different classifications, the larger radii shall be provided. In all cases, sufficient right-of-way shall be provided to maintain at least ten feet from the back of curb. For intersecting rights-of-way, lines may be joined by either an arc having the minimum radius shown in Table 4-F or by a chord connecting the end points of an arc having the minimum radius shown in Table 4-F. Larger radii may be required for streets intersecting at angles less than 90 degrees.

TABLE 4-F

<u>Street Category</u>	<u>Minimum Back of Curb Radius (Ft)</u>	<u>Minimum Right-of-way Radius (Ft)</u>
Arterial		
Primary	40	23
Secondary	35	21
Collector		
Primary	30	21
Secondary	30	11
Local		
Non Residential	30	18
Non Residential Cul-de-sac	25	14
Residential	25	14
Residential Cul-de-sac	25	14

Turning Lanes:

Turning lanes shall be required by the City to meet projected traffic demand and/or safe operations, as determined by the City Engineer. When provided, turning lanes shall meet the following criteria:

- (a). Provide not less than 150 feet of storage length for arterial roadways. Provide not less than 100 feet of storage length for collector roadways.
- (b). Provide taper lengths of not less than 100 feet.
- (c). Longer storage and taper lengths may be required when traffic projections indicate they are justified.

Cul-de-sac Streets:

Cul-de-sacs are not approved as standard street design, and may only be approved by the City Engineer. The desire for “privacy” and/or “seclusion” is not grounds for approval. In order to be approved, the design for a proposed cul-de-sac must meet the following criteria:

- (a). The street length may not exceed 800’;
- (b). Special geographic constraints prevent a normal street design from being used; Or,
- (c). The proposed cul-de-sac is located in a Green Communities Overlay.

SECTION 4.5. SUBSTANDARD STREETS

In the event that a development has access to a substandard street and if that substandard street provides the primary means of access to the development, the substandard street, except as indicated below, shall be fully upgraded and the full width of the roadway overlaid with asphaltic concrete surface course along the entire property frontage and continuing to the nearest standard paved road along the route of primary access.

In the event that a development has access to a substandard street and if that substandard street is other than the primary means of access to the development, the substandard street, except as indicated below, shall be fully upgraded only

along the entire property frontage and shall be paved on the opposite side of the road from the development, 12 feet from the street centerline.

The upgrading of substandard streets used for access will not be required if any of the following conditions are met:

- (a) The development consists of a single, one or two family residence on an existing recorded lot within the City;
- (b) The development is a small business with ingress/egress of less than 100 vehicles per day.

SECTION 4.6 ACCELERATION/DECELERATION LANES

Except as indicated, acceleration and deceleration lanes shall be provided for new street and driveway connections to existing streets. The lanes will not be required if any of the following conditions are met:

- (a) The driveway is for a one or two family residence;
- (b) Total traffic on the existing roadway is less than 2000 vehicles per day including traffic projected as a result of the proposed development, (count of existing traffic must have been made within one year of the development plan submittal date);
- (c) The driveway is for a small business with ingress/egress of less than 100 vehicles per day; or
- (d) Construction cost of the lanes exceeds 25 percent of the estimated development cost.

SECTION 4.7 IMPROVEMENTS ALONG STATE AND FEDERAL HIGHWAYS

For any development which abuts a State or Federal highway, improvements to the highway and the location and design of any street or driveway providing access from the highway shall comply with the current standards, regulations, and requirements of the Georgia Department of Transportation for Driveway and Encroachment Control. A copy of the approved Georgia DOT permit shall be provided to the City prior to issuance of building permits.

SECTION 4.8 SPECIFICATIONS

Unless otherwise specifically set forth herein, all of the materials, methods of construction, and workmanship for street construction shall conform to the latest edition of the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction including all amendments.

SECTION 4.9 SUBGRADE PREPARATION

- (a) Clear and grub entire street right-of-way before commencing street earthwork construction. For specific technical requirements reference is made to Georgia DOT Specifications Section 201-Clearing and Grubbing Right-of-Way. Combustible material generated from clearing and grubbing operations may be burned only when authorized and permitted by the Georgia Environmental Protection Division and the City of Fairburn Fire Chief.
- (b) Conduct street earthwork construction in accordance with Georgia DOT Specification Sections 205 - Roadway Excavation and 208 - Embankments. For purposes of these Regulations, the maximum density of soil material shall be determined by ASTM D 698 (Standard Proctor) test procedures.
- (c) Complete utility and drainage earthwork before starting street subgrade construction.
- (d) Perform subgrade construction in accordance with Georgia DOT Specification section 209 - Subgrade Construction.
- (e) The developer shall provide quality control testing during earthwork and subgrade construction as necessary to assure the entire earthwork, including all fill layers and subgrades, meet the minimum requirements of these Regulations. The minimum quality control testing to be provided consists of the following:
 - (1) Moisture - density relationship curve for each type soil encountered.
 - (2) One in-place density test (ASTM D 1556 or other recognized method).

- (3) One in-place density test (ASTM D1556 or other recognized method) per 1,000 cubic yards or fraction thereof of fill placed.
- (f) Earthwork which falls below specified minimum quality control limits shall be removed, reconstructed and retested until compliance with specified requirements is achieved.
- (g) After completing street earthwork operations and before beginning street base construction, the developer shall request and pass a proof-roll demonstration with a fully loaded tandem-axle dump truck as observed and as determined by a City Development Inspector. In addition, the developer shall file a copy of the quality control test results demonstrating compliance with these requirements with the City Engineer. At any time during the construction process, representatives of the City may request to review and the developer shall provide quality control test results.

SECTION 4.10 MINIMUM STREET SECTIONS AND DESIGN SPEEDS

- (a) The minimum street sections are defined in the Subdivision Regulations and in Appendix C, Standard Details, of these Regulations. Specific Details and required design speeds for the standard street classifications are as follows:

<u>Street Classifications</u>	<u>Design Speed Detail in MPH</u>
(1) Major Thoroughfares With Medians -	R010 50
(2) Major Thoroughfares (Industrial/Commercial) -	R020 45
(3) Collector Streets -	R030 40
(4) Local Streets -	R040 30
(5) Interior Streets -	R050 30
(6) Alleys -	R060 20

- (b) Construct street and alley bases in accordance with Georgia DOT Specification Section 300 - Specifications Applying to All Base and Subbase Courses. The following Georgia DOT Specification Sections shall apply to base materials indicated on the Standard Detail Typical Street Sections:

- (1) Graded Aggregate Base - Section 310 - Graded Aggregate Construction.

- (c) Construct surface and binder asphaltic paving courses, including prime, in accordance with Georgia DOT Specification Section 400 - Hot Mix Asphaltic Concrete Construction.
- (d) When street earthwork and paving are complete, the developer shall backfill all curbs and edges of pavement, finish grade, compact, grass and stabilize all disturbed areas including roadway shoulders which are not covered by paving or other improvements. It shall be the developer's responsibility to maintain grassed areas by watering, fertilizing, weeding, mowing, trimming, regrading and replanting as required to establish a smooth, acceptable stand of grass free of eroded or bare areas. Grassed areas will be considered acceptable when a viable stand of grass covers at least 90 percent of the total area with no bare spots exceeding one square foot and the ground surface is fully stabilized against erosion. Grassing operations shall meet the technical requirements of Georgia DOT Specification Section 700 - Grassing for Planting Zone 1A.
- (e) The developer shall provide quality control testing during base and pavement construction as necessary to assure the entire pavement structure meets the minimum requirements of these Regulations. The minimum quality control testing to be provided consists of the following:
 - (1) Moisture-density relationship curve for each base material used on project.
 - (2) For soil cement base, conduct mix design to determine Portland cement content (percent of dry weight of the soil) to achieve a minimum compressive strength of 300 psi at seven days when testing in accordance with ASTM D 1632 and D 1633.
 - (3) One in-place density test (ASTM D 1556 or other method acceptable to the City) per 1,200 square yards or fraction thereof of base.
 - (4) One thickness measurement normal to base surface per 1,200 square yards or fraction thereof of base.
 - (5) One surface tolerance measurement using a 15-foot straight edge per 250 square yards or fraction thereof of base.
 - (6) One asphalt extraction (ASTM D 2172) and aggregate gradation analysis (ASTM C 136) per 2,400 square yards or fraction thereof of surface course and per 2,400 square yards or

fraction thereof of binder course (if any). Obtain samples for extraction and gradation tests in accordance with ASTM D 979.

- (7) One density and compacted thickness measurement per 1,200 square yards or fraction thereof of each course placed. Density determined to be made in accordance with ASTM D 1188. Remove not less than 3-inch diameter nor larger than 12-inch square test specimens. Repair test specimen holes with full depth application of fresh hot asphaltic plant mix.
 - (8) One surface tolerance measurement using 15-foot straight edge per 250 square yards or fraction thereof of surface course.
- (f) Base and/or paving construction which falls below specified minimum quality control limits shall be removed, reconstructed and retested until compliance with specified requirements is achieved.
 - (g) After completing base and paving construction, the developer shall file a copy of the quality control test results demonstrating compliance with these Regulations with the City Engineer. At any time during the construction process, representatives of the City may request to review and the developer shall provide quality control test results.
 - (h) In the event the developer desires to utilize base or paving materials or systems not included in these Regulations, the developer shall provide an engineering study prepared by a Georgia registered professional engineer comparing the proposed material or system to the appropriate system which is included in these Regulations. The engineering study will include a pavement structural design based on the AASHTO "Guide for Design of Pavement Structures" and suggested specifications for the materials and construction of the proposed system. The City will treat the developer's request through the appeals process described elsewhere in these Regulations.

SECTION 4.11 CURB AND GUTTER

- (a) All new streets or street widening sections shall be provided with curb and gutter, except as provided herein under. All gutters shall drain smoothly with no areas of ponding. In lieu of installation of curbs and gutters and/or related improvements, the developer must have presented to and received approval by the City for a Street Improvements and Storm Water Drainage Plan for the development and its affected environs. Said plan must provide for adequate storm water drainage, and will further

address as a minimum, street grading, paving, and curbs and gutters, and or other innovative provisions for said drainage. This plan must conform to the applicable standards and specifications established by the City and be prepared, signed, and sealed by a Georgia registered professional engineer.

- (b) Concrete used for curb and gutter construction shall have a minimum 3,000 psi compressive strength at 28 days (ASTM C 39); a 2-inch to 4-inch slump (ASTM C 143) and, 3 to 6 percent air content (ASTM C 231 or C 173) and shall comply with ASTM C 94.
- (c) In residential developments, the developer shall use either a standard curb and gutter section or a roll back curb and gutter section (if approved by the City). In other developments, the developer shall use a standard curb and gutter section. Both sections are shown in Appendix C, Standard Details.
- (d) Construct curb and gutter true to line, grade and cross section on properly prepared subgrade. Apply Georgia DOT Type 2 membrane curing compound.
- (e) Protect completed curb and gutter work from damage until acceptance by the City. As soon as the curb and gutter will not be damaged, backfill, compact, stabilize and grass adjacent ground to achieve design line and grade. Replace broken or defective curbs and gutters.

SECTION 4.12 SIDEWALKS

Sidewalks shall be provided for all developments within reasonable walking distance from an existing or proposed school, park, retail development, transit stop, pedestrian destination, or community center. Sidewalks shall be provided along public streets for all multi-family, commercial and industrial developments and in such other locations as deemed necessary by the City for safe pedestrian movement.

SECTION 4.13 TRAFFIC CONTROL DEVICES

Traffic control devices consisting of street name signs, traffic control signs, traffic markings and traffic signals shall be provided by the developer as appropriate to serve each development. All traffic control devices and installation thereof shall conform to the specifications of the Federal Highway Administration publication, Manual on Uniform Traffic Control Devices, current edition and ANSI D6.1e.

For residential developments, minimum traffic control devices shall consist of street name signs on at each street intersection, stop or yield signs at each intersection, one speed limit sign per block, school or pedestrian crossing signs where appropriate, and limited pavement marking such as crosswalk lines for school or pedestrian crossings.

Minimum traffic control devices for non-residential developments shall include those devices for residential developments and lane and centerline markings, stop lines, and parking space markings. Additionally, appropriate other signs and signals shall be provided by the developer.

SECTION 4.14 STREET LIGHTING

The developer shall provide all necessary street lighting in accordance with the standards of the American National Standard Practice for Roadway Lighting, current edition, but in no case less restrictive than one fixture at each street intersection and at an interval not exceeding one fixture for every 400 feet of roadway. The design calculations shall be submitted with the construction plans, consider the presence of older-aged drivers, and be approved prior to installation. The developer shall provide such lighting at no cost to the City.

SECTION 4.15 PREPARATION OF STREET IMPROVEMENT PLANS

Street improvement plans for all new streets, street widenings and existing street upgrades shall be prepared by a Georgia registered professional engineer. At least three copies of the plans shall be submitted to the City Engineer for review and comment. Within thirty days of submittal of the plans, the City will either approve the plans or make comment on items requiring changes and/or additional information. When not approved, the cycle of plan submittal and review will be repeated until the plans can be approved by the City.

Information to be shown on the plans shall consist of not less than the following:

- (a) Profiles of existing ground levels along street centerlines and each right-of-way. Field determined elevations shall be indicated at intervals not exceeding 100 feet. Where cross sections are provided at least every 100 feet, only centerline elevations need be shown on the profile.

- (b) Existing facilities and features within and adjacent to rights-of-way which affect or could be affected by street improvement construction. Items include, but are not limited to, streets, rights-of-way, buildings, parking lots, driveways, fences, tree lines, drainage structures, and railroads.
- (c) All drainageways, lakes, streams, creeks, channels, wetlands, and drainage facilities.
- (d) All existing utilities and appurtenances within and adjacent to rights-of-way which affect or could be affected by street improvement construction. The utility type, size, depth, material and location in relation to street improvements should be indicated.
- (e) Existing and proposed property and easement lines and land lot and land district lines intersecting street rights-of-way.
- (f) Limits of new construction.
- (g) New road improvements, including but not limited to, curbs and gutters, sidewalks, pavements, driveways, wheel chair ramps, traffic control devices, and street lights.
- (h) Profiles of each pavement edge or line of curb and gutter with new finished grade elevations at intervals not exceeding 100 feet.
- (i) Horizontal and vertical street geometry including street centerline angles of deflection, radii, degree of curvature, design speed, tangent lengths, arc lengths, bearings street grades, and lengths of vertical curves. Stations for all points of curve, points of tangency, points of intersection, both horizontal and vertical, should be shown.
- (j) Benchmarks for vertical control.
- (k) Name of the development, names, addresses and telephone numbers of developer and developer's engineer, engineer's seal, north arrow, scale, and date.

Plans shall be prepared in conformance with the following:

- (a) Where specific design guidance is not given, in these regulations or other regulations, rules, ordinances, of the City, the AASHTO publication "A Policy on Geometric Design of Highways and Streets", latest edition shall be followed.
- (b) All elevations shall be based on and tied to U.S. Coast and Geodetic Survey mean sea level datum.
- (c) Plan drawings shall be at a scale of at least 1 inch equals 50 feet. In developed or congested areas, a scale of 1 inch equals 20 feet or less shall be utilized.
- (d) For profile drawings, the horizontal scale shall be the same as that used for associated plan drawings. The vertical scale shall be at least 1 inch equals 10 feet. A 1 inch equals 5 feet vertical scale may be used to properly depict grade changes in flat areas.
- (e) The desired drawing size is 24 inches by 36 inches. In no case shall drawings be larger than 30 inches by 42 inches nor smaller than 11 inches by 17 inches.

ARTICLE V - UTILITIES

SECTION 5.1 PLACEMENT OF UTILITIES

All utility lines within the City of Fairburn in Residential, Office and Commercial zoning districts shall be placed underground within the following exceptions:

1. Those lines that were existing overhead as of January 1, 2003;
2. Those lines, temporary in nature, which are intended to provide service to an area for a period not to exceed 180 days, subject to the approval of the City Administrator; and
3. Major transmission lines which do not provide service to adjoining properties, subject to the approval of the City Administrator.

All authorized public and private underground or overhead utilities shall be located within the right-of-way of a public street or within an easement designated for such use. Within public street rights-of-way, placement of the various authorized utilities (water, sanitary sewer, natural gas, power, telephone, and cable TV) shall conform to the specific locations for such use designated by the City, as illustrated in Appendix C - Standard Details. Private

underground utilities such as lawn sprinkler systems, septic tanks and drain fields, exterior lighting systems and heating and cooling piping are not permitted within public street rights-of-way. No open cuts on roadways will be permitted except by special written permission of the City Engineer.

SECTION 5.2 EASEMENTS

Permanent easements for public electrical, water and sanitary sewer facilities shall be dedicated to the City. The minimum width permanent easements for a single utility shall be 20 feet. Where more than one utility has a common easement, the minimum easement width shall be increased by 10 feet for each additional utility. Before dedication, the developer shall grass and stabilize all disturbed areas within and adjacent to easements which are not covered by paving or other improvements. An acceptable stand of grass free of eroded or bare areas as defined in paragraph 4.10(d) of these Regulations must be achieved before the City will consider dedication.

SECTION 5.3 UTILITY LINE EXTENSION REQUIREMENTS

If existing water mains and or sanitary sewers must be extended to serve a development, the developer shall install or have installed the necessary extensions at no cost to the City under the existing City policy and procedures at plan approval time.

SECTION 5.4 WATER DISTRIBUTION SYSTEM DESIGN CRITERIA

- (a) Pressure: All water mains, including those not designed to provide fire protection, shall be sized after hydraulic analysis to maintain a minimum pressure of 20 psi at ground level under all conditions of design flow.

- (b) Design flow: The design flow is to consist of projected peak demand plus fire flow (where applicable). To determine projected peak flow for residential developments, utilize values in Table 5.1. For developments other than residential, utilize AWWA "Manual of Water Supply Practices M22, Sizing Water Service Lines and Meters" to estimate peak demand. For fire flow, select proper value from Table 5.2.

Table 5.1

Peak Water Demands For Residential Developments

<u>NUMBER OF DWELLING UNITS</u>	<u>GPM PER DWELLING UNIT</u>
5	8.0
10	5.0
20	4.3
30	3.8
40	3.4
50	3.0
60	2.7
70	2.5
80	2.2
90	2.1
100	2.0
150	1.6
200	1.3
300	1.2
400	0.9
500	0.8
750	0.7
1000	0.6

Table 5.2

Minimum Design Fire Flows ⁽¹⁾

<u>ZONING DISTRICT</u>		<u>GPM</u>
AG	Agricultural	500
R-0	One Family Residential	750
R-1	One Family Residential	750
R-2	Two Family Residential	750
R-3	Multi Family Residential	1000
R-4 / CT	Condominium/Townhouse Residential	1000
RPI	Residential Professional & Institutional	1000
C-1	Retail Business	1250
C-2	Highway Service Business	1000
RSC	Regional Shopping Center	1250
M-1	Light Industrial	1500
M-2	Heavy Industrial	1500

⁽¹⁾ Values given in this table represent minimum requirements. Should Fire Chief or Insurances Services Office, Inc. recommend higher fire flows, use the largest values.

- (c) Sprinkler connections: For each fire protection sprinkler connection to the City's water system, the developer must provide a double detector check valve installation consisting of not less than two detector check valves with by-pass meter on the second unit and two gate valves all enclosed in an accessible concrete or masonry pit. The pit is to have an aluminum access hatch.
- (d) State Approval: It is the developer's responsibility to obtain the approval of the City, and if necessary, the Environmental Protection Division of the Georgia Department of Natural Resources of for all water distribution system additions and extensions. In addition to the other requirements, the City must receive a copy of the approval before the developer will be allowed to proceed with construction.

SECTION 5.5 LOCATION OF WATER MAINS, FIRE HYDRANTS AND OTHER FIXTURES.

- (a) Water Mains: Locate water mains along City or County streets on the south and west side of the street, five feet from the back of the curb or along ditch centerline where there is no curb. The minimum cover is to be 42 inches. Locate water service laterals with a minimum cover of 24 inches within street rights-of-way. Within 5 feet of the water meter, service lateral cover may be reduced to not less than 18 inches.
- (b) Fire Hydrants Spacing: Provide fire hydrant spacing as requested by the Fire Chief and as follows:
 - (1) One and Two Family Residential: Space fire hydrants not more than 500 feet apart with additional fire hydrants located as necessary so that the maximum hose lay from a hydrant to the furthestmost part of any building does not exceed 500 feet.
 - (2) Multiple-Unit Residential: Space fire hydrant not more than 500 feet apart with additional fire hydrants located as necessary so that the maximum hose lay from a hydrant to the farthermost part of any building does not exceed 400 feet.
 - (3) Office-Institutional, Commercial and Industrial: Space fire hydrants not more than 400 feet apart so all portions of buildings can be reached by hose lays of not more than 400 feet.
 - (4) Except when waived by the Fire Chief, a fire hydrant shall be located at all street intersections in all Zoning Districts.

- (5) Locate fire hydrants between the water mains and right-of-way and within 5 feet of the back of the right-of-way.

- (c) Valves: Locate valves at not more than 1,000 foot intervals in residential and agricultural zoned areas and 500 foot intervals in high density residential and non-residential zoned areas. At water main junctions, the minimum number of valves to be provided shall equal the number of pipes extending from the junction minus one.

- (d) Meters: Locate water meters in public rights-of-way within six inches of the right-of-way except where alternate location is approved by the Public Works Department. Water meters will be furnished and installed by the City upon payment of appropriate fees.

SECTION 5.6 SANITARY SEWER DESIGN CRITERIA

- (a) Design Capacity: Design sewer systems for the estimated ultimate development tributary population and/or area. In establishing design capacity, the following factors must be considered.
 - (1) Maximum hourly residential sewage flow.
 - (2) Maximum hourly commercial/institutional sewage flow.
 - (3) Maximum hourly industrial sewage flow.
 - (4) Ground water infiltration.
 - (5) Topography of the area.
 - (6) Pumping requirements.

Design new sewers in residential areas on the basis of an average daily flow of sewage of not less than 400 gallons per household per day. A peaking factor of not less than 3.0 must be applied to the average daily flow to establish peak design flow. Sewers shall be designed to carry peak design flow when flowing one-half full.

In non-residential developments, base sewer design on the estimated peak flow from the development but in no case less than 0.4 gallon per square foot of gross building areas. Sewers shall be designed to carry peak flow when flowing one-half full.

- (b) **Size and Shape:** The minimum size sanitary sewer shall be 8 inches. Design sewers to give mean velocities, when flowing half full, of not less than 2.0 feet per second based on the Manning formula using an "n" value of 0.013. Table 5.3 gives the minimum slopes which must be provided, however, where possible greater slopes are desirable.

Place sewers with a uniform slope between manholes.

TABLE 5.3
MINIMUM SEWER SLOPES

<u>NOMINAL SEWER SIZE IN INCHES</u>	<u>MINIMUM SLOPE IN FEET PER 100 FEET</u>
8	0.70
10	0.28
12	0.22
15	0.15
18	0.12
21	0.10
24	0.08
27	0.067
30	0.058
36	0.046

(c) Manholes: Install manholes at the following locations:

- (1) End of each sewer.
- (2) At all changes in grade, size, or alignment.
- (3) At all sewer intersections
- (4) At distances not greater than 400 feet for sewer 15 inches and smaller.

When changing pipe sizes at a manhole, align the 0.8 depth point of both sewers at the same elevation. When the same size pipe enters and leaves a manhole, provide at least a 0.1 foot drop in elevation between the entering and the exiting inverts. Construct a U shaped flow channel through manholes.

(d) Relation to Water Mains: Whenever possible, lay sewers at least 10 feet horizontally from any existing or proposed water main. Should conditions prevent a separation of 10 feet, lay the lines in separate trenches. In either case, construct the elevation of the crown of the sewer at least 18 inches below the bottom of the water main.

When sewers cross under water mains, lay the sewer so that the top of the sewer is at least 18 inches below the bottom of the water main. Install the two pipes such that a full length of pipe will be centered over the crossing so that all joints will be separated as much as possible. Install ductile iron pipe for both lines when the crossing is less than two feet of separation.

(e) When sewers are laid in public streets, construct the sewer along the centerline of the street at a depth of not less than 5 feet from the road surface to the top of the pipe. In curved streets, install the sewer between gutter lines to avoid conflicts with other utilities.

(f) State Approval: It is the developer's responsibility to obtain the approval of the City, and if necessary, the Environmental Protection Division of the Georgia Department of Natural Resources for sanitary sewer collection system additions and extensions. In addition to other requirements, the City must receive a copy of the approval before the developer will be allowed to proceed with construction.

SECTION 5.7 ELECTRICAL SYSTEM

The electrical system to serve a development will be designed and installed by the City. The City's responsibility will terminate on the customer's side of the transformer. The transformer bank will be furnished and installed by the City upon payment of appropriate fees.

SECTION 5.8 SPECIFICATIONS AND DETAILS FOR UTILITY CONSTRUCTION

Specifications for Utility construction details are included herein as Appendix B and Appendix C--City of Fairburn Standard Specifications for Utility and Drainage Construction and Standard Details.

SECTION 5.9 PREPARATION OF UTILITY PLANS

Utility plans for all extensions, additions, improvements and/or modifications for the water distribution and sanitary sewer collection systems shall be prepared by a Georgia registered professional engineer.

At least three copies of the plans shall be submitted to the City for review and comment. Within thirty days of submittal of the plans, the City will either approve the plans or make comment on items requiring changes and/or additional information. When not approved, the cycle of plan submittal and review will be repeated until the plans can be approved by the City.

Information to be shown on the plans shall consist of not less than the following:

- (a) Existing facilities and features in the vicinity of utility construction which affects or could be affected by such construction. Items include but are not limited to streets, rights-of-way, buildings, driveways, parking lots, fences, tree lines and railroads.
- (b) All drainageways, lakes, streams, creeks, channels, wetlands, and drainage facilities.
- (c) All existing utilities and appurtenances in the vicinity of utilities construction which affect or could be affected by such construction. The utility type, size, depth, material and location in relation to utilities improvements should be indicated.

- (d) Existing and proposed property and easement lines and land lot and land district lines intersecting utility line construction.
- (e) New utilities construction including as applicable, but not limited to, pipelines, manholes, lift stations, force mains, valves, fittings, fire hydrants, meters, casings, services facilities, special construction and details for connections to existing utilities. Pipe sizes and materials shall be indicated on the plans. Include horizontal geometry as necessary to define location of new utilities.
- (f) Profiles of sanitary sewers showing existing ground surface, sewers, manholes with top and invert elevations, line lengths and grades, crossing utilities, and limits for special construction.
- (g) Benchmarks for vertical control.
- (h) Name of the development, names, addresses and telephone numbers of developer and developer's engineer, engineer's seal, north arrow, scale and date.

Plans shall be prepared in conformance with the following:

- (a) All elevations shall be based on and tied to U.S. Coast and Geodetic Survey mean sea level datum.
- (b) Plan drawing shall be at a scale of at least 1 inch equals 100 feet. In developed or congested areas, a scale of 1 inch equals 20 feet or less shall be utilized.
- (c) For profile drawings, the horizontal scale shall be the same as that used for associated plan drawings. The vertical scale shall be at least 1 inch equals 10 feet. A 1 inch equals 5 feet vertical scale is often necessary to properly depict pipeline conditions.
- (d) The desired drawing size is 24 inches by 36 inches. In no case shall drawings be larger than 30 inches by 42 inches nor smaller than 11 inches by 17 inches.
- (e) Utilities construction may be shown on street improvement plans provided the resulting drawings are clear, legible and plainly show all necessary information.

SECTION 5.10 CONSTRUCTION RECORD DRAWINGS

At the completion of utilities construction and before dedication to the City, the developer shall furnish two diazo or electrostatic copies, one mylar sepia, and one electronic (CAD) drawn copy of construction record drawings for the development to the City to the specifications identified in the Appendix. The record drawings shall be made from the original tracings of the approved development drawings revised to reflect actual construction and shall be marked AS-BUILT on each sheet within the set. Electronic CAD files shall be tied and rotated to the City's survey control network.

ARTICLE VI - GRADING AND DRAINAGE

SECTION 6.1 SITE GRADING

Site grading shall be completed in accordance with the finished grades shown on the approved development drawings and shall be designed to accomplish the project objectives while minimizing clearing activities. Clearing and grading activities shall be limited to the phase of construction under consideration at the time of review and mass grading methods are generally prohibited where alternative methods exist. Phase limitations as outlined in the Subdivision Regulations and Code of Ordinances apply. Site grades shall direct surface drainage away from buildings without causing adverse impact on adjacent properties.

The maximum slopes for soil cut from existing grade (cut slopes) shall be two feet of horizontal run for each foot of vertical rise or fall except for stable rock slopes not intended to be maintained. Fill areas (fill slopes) intended to be mowed or otherwise maintained by mechanical means shall not exceed a slope of three feet of horizontal run for each foot of vertical rise or fall. If actual soils encountered require a flatter slope for stability or for ease of maintenance, a lesser slope shall be used.

Soil erosion and sediment control measures shall be provided as required in the Soil Erosion and Sediment Control Ordinance.

SECTION 6.2 DRAINAGE

Provisions for storm water drainage and detention designs are given in the Post Development Stormwater Management Ordinance and/or Stormwater Design Manual which is incorporated in these Regulations as Appendix D.

SECTION 6.3 SPECIFICATIONS FOR DRAINAGE CONSTRUCTION

Specifications for drainage construction are included herein as Appendix B, City of Fairburn Standard Specifications for Utility and Drainage Construction.

SECTION 6.4 PREPARATION OF GRADING AND DRAINAGE PLANS

Grading and drainage plans for all developments except individual one and/or two family dwelling units, shall be prepared by a Georgia registered professional engineer or landscape architect. At least three copies of the Stormwater Management Plans and hydrology studies shall be submitted to the City for review and comment. Within thirty days of submittal of the plans, the City will either approve the plans or make comment on items requiring changes and/or additional information. When not approved, the cycle of plan submittal and review will be repeated until the plans can be approved by the City.

Information to be shown on the plans shall meet the requirements of the Post-Development Stormwater Management Ordinance and consist of not less than the following:

- (a) Topographic map of the existing conditions for the development showing existing facilities and features which affect or could be affected by grading and drainage improvements. Utilize a contour interval of not greater than two feet with spot elevations as necessary to define existing ground surfaces.
- (b) All drainageways, lakes, streams, creeks, swales, ditches, channels, wetlands, and drainage facilities.
- (c) All existing utilities and appurtenances which affect or could be affected by grading and drainage improvements. The utility type, size and location in relation to grading and drainage improvements should be indicated.

- (d) Existing and proposed property and easement lines and land lot and land district lines intersecting or bounding grading and drainage improvements.
- (e) Finished grades depicted by finished contours and/or spot elevations as necessary to define finished grade surfaces.
- (f) New drainage improvements including, but not limited to, pipes, culverts, catch basins, area drains, drop inlets, junction boxes, headwalls, berms, dikes and detention basins with outlet works. The drainage areas tributary to each drainage structure, design flow, and time of concentration shall be indicated.
- (g) Profiles of storm drains showing existing and finished ground surfaces, pipes, drainage structures with top and flow line elevations, distances from centerline to centerline of drainage structures, pipe and ditch grades, crossing utilities, and limits of special construction.
- (h) Benchmarks for vertical control.
- (i) Name of the development, names, addresses and telephone numbers of developer and developer's design professional, design professional's seal, north arrow, scale and date.

Plans shall be prepared in conformance with the following:

- (a) All elevations shall be based on and tied to U.S. Coast and Geodetic Survey mean sea level datum.
- (b) Plan drawings shall be at a scale of at least 1 inch equals 100 feet. In developed or congested areas, a scale of 1 inch equals 20 feet or less shall be utilized.
- (c) For profile drawings, the horizontal scale shall be the same as that used for the associated plan drawings. The vertical scale shall be at least 1 inch equals 10 feet. A 1 inch equals 5 feet vertical scale is often necessary to properly depict drainage conditions.
- (d) The desired drawing size is 24 inches by 36 inches. In no case shall drawings be larger than 30 inches by 42 inches nor smaller than 11 inches by 17 inches.

- (e) Drainage construction may be shown on street or utilities improvements plans provided the resulting drawings are clear, legible and plainly show all necessary information.

ARTICLE VII - SCHEDULE OF FEES

The schedule of fees for development plan review, copies of these Regulations, appeals, waivers, reinspections, and other items are on file with the City Clerk and may be altered or amended from time-to-time by the City Council to help defray the costs of the administration of these Regulations.

Development plan review fees, if any, shall be paid at the time development plans are submitted for review. A development plan review fee shall be paid each and every time development plans or parts thereof are submitted or resubmitted.

ARTICLE VIII – GENERAL ADMINISTRATION

SECTION 8.1 ADMINISTRATION AND ENFORCEMENT

These Land Development Standards shall be administered, interpreted, and enforced by the City Engineer or the Engineer’s designated representative.

In any case in which activities are undertaken in violation of these Regulations, not in compliance with the provisions of a permit issued by the City, or without authorization of a permit which would otherwise be required, the City Engineer is hereby authorized to order that all unauthorized or improper work be stopped, direct correction of deficiencies, or take any other legal or administrative action appropriate to the severity of the violation and degree of threat to the public health, safety and welfare.

SECTION 8.2 APPEAL AND WAIVER OF THE REGULATIONS

It is the intention of this Ordinance that all questions arising in connection with the interpretation and enforcement of these Regulations first be presented to the City Engineer in writing and that such questions shall be presented to the City Administrator only on appeal from the decision of the City Engineer.

Requests of waivers of the requirements of these Regulations shall be submitted in a form as prescribed by the City Engineer along with such fee as shall be established by the City Council. The City Engineer shall coordinate the review of each waiver request by all other affected City departments and shall summarize such comments and/or recommendations as may be received to the City Administrator for final action.

SECTION 8.3 VIOLATION AND PENALTY

Any person, firm or corporation violating any provision of this Ordinance shall be guilty of a misdemeanor and, upon conviction, shall be fined as determined by the Judge of Criminal Court, of the City of Fairburn, for each offense. Each day such violations continues shall constitute a separate offense.

Nothing herein contained shall prevent the City from taking such other lawful action as is necessary to prevent or remedy any violation.

ARTICLE IX - APPEALS PROCEDURE

SECTION 9.1 APPEALS, HEARINGS, AND NOTICE

Appeals to the City Administrator may be taken by any person aggrieved in accordance with section 9.6 of the Land Subdivision Regulations.

SECTION 9.2 CERTIORARI FROM DECISIONS

Any person aggrieved by any decision of the City Administrator shall have the right of certiorari to the Superior Court within thirty (30) calendar days after the decision of the City Administrator is rendered.

ARTICLE X - LEGAL STATUS PROVISIONS

SECTION 10.1 CONFLICT WITH OTHER REGULATIONS

Whenever the regulations of this Ordinance require or impose more restrictive standards than are required in or under any other statutes, the requirements of this Ordinance shall govern. Whenever the provisions of any other statute require more restrictive standards than are required by this Ordinance, the provisions of such statute shall govern.

SECTION 10.2 SEVERABILITY

Should any section, subsection, sentence, clause, phrase or provision of this Ordinance be declared invalid or unconstitutional by any court of competent jurisdiction, such declaration shall not affect the validity of the Ordinance as a whole or any part thereof which is not specifically declared to be invalid or unconstitutional.

SECTION 10.3 EFFECTIVE DATE

These Regulations shall be in full force and effective on May 1, 2008, following adoption by the City Council and shall apply to any development for which the first submittal of development plans is received after the effective date of these Regulations.

ENACTED AND ADOPTED this _____ day of _____, 2008.

By: _____
Betty Hannah, Mayor

Attested to: _____
Nancy Faulkner, City Clerk

(Seal)

Digital As-Built Submittal Standards

City of Fairburn

INTRODUCTION

As of January 1, 2005, all as-built plans submitted to the City of Fairburn must be provided in electronic computer aided design (CAD) format. The following standards must be followed for all plans. Final Plats will not be approved or Certificates of Occupancy will not be issued until these standards are met.

GENERAL REQUIREMENTS

1. All as-built drawings must be referenced to the City of Fairburn control network. All drawings must contain four-reference survey markers (pins) tied to the City of Fairburn monument network. Each marker should have coordinates established on the drawing. A copy of the City's survey monument locations can be found on the City's website at: www.fairburn.com or may be obtained in person at Fairburn City Hall.
2. All features depicted in the as-built drawings must be surveyed *after* construction. The City may at its discretion spot check coordinates to ensure accuracy.
3. The following feature types are acceptable: Line, Polyline, and Polygon. Any other features such as Leaders, Blocks, etc. should not be present on the standard City of Fairburn CAD feature layers.
4. The City of Fairburn will provide a template (or seed) drawing files upon request.

LAYERING

1. Layer names for required layers must match City of Fairburn standard layer names.
2. All required layers listed in the City of Fairburn CAD layers must contain only the features that are described for that layer. For example, the BOUNDARY_LINE layer must only contain the boundary line and not such features as north arrows or parcels.
3. All required layers must be present in the drawing except for features that do not pertain to a particular project. For example, some commercial projects or apartment complexes may not contain sewer taps as part of the construction and should not be included in the drawing.
4. All layers must be clearly differentiated from each other.
5. Two layers having the names "WATER_LINE" and "WATER_LINES" should not exist in the same drawing.
6. SEWER_LINE_TEXT and SEWER_TEXT shall not exist in the same drawing.
7. All text must appear on separate layers from the layers they annotate. For example, text describing a sewer line must be on the SEWERLINE_TEXT layer, not the SEWERLINE layer.
8. Text leaders should be placed on the text layer, not the feature layer. For example, the leader for the diameter of a water pipe should be on the WATER_LINE_TEXT layer, not the WATER_LINE layer. Leaders should be drawn using Line features not Leaders.

City of Fairburn Standard Layers

Layer Name	Layer Description
Survey_Marker	Permanent Survey Marker or Property Corner Pin
Survey_Marker_Text	Permanent Survey Marker or Property Corner Pin Description / Text
San_Sewer_Manholes	Sanitary Sewer Manholes
San_Sewer_Pipes	Sanitary Sewer Pipes
San_Sewer_Taps	Sanitary Sewer Tap at Right of Way or Stub Out Location
San_Sewer_Laterals	Sanitary Sewer Lateral
San_Sewer_Text	Water System Descriptions / Text
Water_Features	Water Valves, Water Meters, Fire Hydrants, Tees, Caps, etc.
Water_Pipes	Water Mains
Water_Laterals	Water Laterals
Water_Text	Water System Descriptions / Text
Storm_Features	Catch Basins, Headwalls, Drop Inlets, Outlet Structures, etc.
Storm_Pipes	Storm Drain Pipes and Culverts
Storm_Text	Storm Drain Descriptions / Text
Road_Polygon	Roadway Polygons
Road_Centerline	Roadway Centerline
Road_Text	Roadway Descriptions / Text
Property_Boundary	Closed Property Boundary Polygons
Property_Easement_Boundary	Closed Easement Boundary Polygons
Property_Text	Property / Easement Descriptions / Text
Impervious_Surface	Impervious Surface Features
Impervious_Surface_Text	Impervious Surface Descriptions / Text

ANNOTATIONS

1. Any non-standard water and sewer lines must be annotated as such. Line diameter, material, ownership, etc. that does not conform to standard practice should be noted in the corresponding annotation layer.
2. All required text must be single line text.
3. All annotation for polyline (polygon) features must be bounded by the polyline it annotates.

FILING NAMING AND REVISIONS

1. File names should correspond exactly to the subdivision or project name and should be consistent from one version to the next. The file name should contain the drawing revision date (in YYMMDD format) as part of the name. There should be no blank spaces in the name, only underscores. An example file name for the May 5, 2005 revision for the third phase of the Apple Valley subdivision is "Apple_Valley_3_050513".

2. File revision dates should only be updated by the contractor/developer and not by the City of Fairburn or Fulton County.

DELIVERABLE FORMAT

1. All files will be delivered on single disk media in AutoCAD (release 2000 or higher). CDs, 3½ floppies, and Zip disk are all acceptable media. Files should not be spanned over more than one disk. Other formats may be acceptable, but the preparer of the plan should consult the City Engineer prior to submittal.
2. All tables shall be delivered in Microsoft Excel format.
3. All deliverables will be labeled with the file name, company name, contact name, and phone number. A transmission letter stating this information along with a statement requesting as-built review will also accompany the disk.

SANITARY SEWER SPECIFICATIONS

Survey Accuracy Requirements for Sanitary Sewer Infrastructure

Coordinate data for sanitary sewer manholes shall be established at the center of the top of the lid. Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft and a vertical accuracy of ≤ 0.1 ft.

Coordinate data for sanitary sewer lines shall be established through the use of the sanitary sewer manhole coordinate data. Invert elevations shall be established by direct measurement of the distance from the lid elevation to the invert of each pipe. Vertical accuracy of ≤ 0.1 ft shall apply to all sanitary sewer inverts.

Coordinate data for sanitary sewer taps at the right-of-way or stub out shall be a horizontal accuracy of ≤ 0.5 ft. Coordinate data for the connection of the tap to the sewer line shall be based on computed coordinates utilizing the distance from the upstream or downstream manholes and the sewer line geometry. The vertical coordinate (i.e. elevation) shall not apply to sanitary sewer taps.

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to the sanitary sewer system.

- a) Sewer Lines shall be drawn with proper directionality: lines must be drawn from the upstream manhole to the downstream manhole.
- b) All Sewer Lines shall be drawn from the center point of the upstream manhole to the center point of the downstream manhole with a single line. No gaps should exist between the sewer lines. Lines must not continue for more than one manhole.
- c) Manholes shall be drawn consistently with a circle centered exactly on the sewer line endpoints.
- d) Sewer tap locations shall be drawn with a single line from the location of the intersection of the right-of-way or stub out (if applicable) to a point intersecting the sewer line.
- e) All Manholes shall be labeled with a unique identifier (Sanitary Sewer Manhole #1, SSMH_1, etc.)
- f) All Sewer Lines shall be labeled with a unique identifier (Sanitary Sewer Pipe #1, SSPipe_1, etc.), pipe diameter (8 inch, etc.) and pipe material (PVC, DIP, etc.)
- g) All sewer taps shall be labeled with a unique identifier (Sanitary Sewer Tap #1, SSTap_1, etc.)

Table Specifications

The following specifications shall apply to the development of all digital as-built attribute data pertaining to the sanitary sewer system.

1. A table with the following attribute data for each manhole
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Lid Elevation (z) coordinate
 - e. Manhole diameter measured in feet
 - f. Manhole Material (Pre-Cast Concrete, Brick, etc.)
 - g. Grade Height measured in feet (height of lid above adjacent grade)
 - h. Manhole depth measured in feet
 - i. Manhole Lid Type (Traffic Bearing, Bolt Down, etc.)

Example Table

MH_ID	Northing	Easting	Lid Elevation	Manhole Diameter	Manhole Material	Grade Height	Manhole Depth	Manhole Lid
SSMH #1	1251008.52	2213889.92	914.58	4	Precast Concrete	2.0	6.10	Traffic
SSMH #2	1251410.95	2213486.14	912.88	4	Precast Concrete	1.4	7.10	Traffic
SSMH #3	1251413.63	2213247.90	915.43	4	Precast Concrete	1.0	8.00	Traffic
SSMH #4	1251358.94	2213213.00	916.77	4	Precast Concrete	0.0	7.90	Traffic

2. A table with the following attribute data for each sewer line
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Unique identifier matching upstream manhole identifier in the as-built drawing
 - c. Upstream Measure Down - Distance from the upstream manhole lid top to invert of pipe as measured in feet
 - d. Upstream Invert – Elevation (z) of the invert of the upstream end of the pipe
 - e. Unique identifier matching downstream manhole identifier in the as-built drawing
 - f. Downstream Measure Down - Distance from downstream manhole lid top to invert of pipe as measured in feet
 - g. Downstream Invert – Elevation (z) of the invert of the downstream end of the pipe
 - h. Pipe diameter measured in inches
 - i. Pipe Material (PVC, DIP, etc.)
 - j. Pipe Length measured in feet
 - k. Pipe Slope measured in feet per foot (ft/ft)

Example Table

Pipe ID	Upstr. MH ID	Upstr. Measure Down	Upstr. Invert	Downstr. MH ID	Downstr. Measure Down	Downstr. Invert	Pipe Diameter	Pipe Material	Pipe Length	Pipe Slope
Pipe #1	SSMH #1	6.1	906.78	Pump Station	10.2	905.06	8	PVC	291	0.0058
Pipe #2	SSMH #2	7.1	908.33	SSMH #1	6.05	906.83	8	PVC	238	0.0062
Pipe #3	SSMH #3	8	908.76	SSMH #2	7.1	908.33	8	PVC	64	0.0066

3. A table with the following attribute data for each tap
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Address of the property the tap serves
 - c. Sewer Pipe that the tap connects to

Example Table

Tap ID	Address Served	Sewer Pipe ID
SS Tap 1	100 Any Street	Pipe #1
SS Tap 2	105 Any Street	Pipe #1
SS Tap 3	110 Any Street	Pipe #2

WATER SYSTEM SPECIFICATIONS

Survey Accuracy Requirements for Sanitary Sewer Infrastructure

Coordinate data for fire hydrants, valves and water meters shall be established at the center of the top of the fire hydrant, valve cover or water meter. Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft and a vertical accuracy of ≤ 0.1 ft.

Coordinate data for water line tees, caps, bends and reducers shall be established at a point on the ground surface directly above the tee, cap, bend or reducer as determined by a utility locate. Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft and a vertical accuracy of ≤ 0.1 ft. Alternatively, tees, caps, bends and reducers can be surveyed directly prior to back filling. If this alternative method is utilized, a note should be added to the drawing indicating that these features were surveyed as such.

Coordinate data for water lines shall be established at points on the ground surface directly above the water line as determined by a utility locate and data collected for valves, meters, tees, caps, bends and reducers. Coordinates should be gathered for points along the water line averaging every 50-feet or closer if appropriate. Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft and a vertical accuracy of ≤ 1 ft. Alternatively, water lines can be surveyed directly prior to back filling. If this alternative method is utilized, a note should be added to the drawing indicating that these features were surveyed as such.

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to the sanitary sewer system.

1. All water lines shall be drawn from valves, tees, caps, etc. to the next valve, tee, cap etc. and be continuous between these features. No gaps should exist between water lines
2. Water meters, valves, hydrants, reducers, caps, etc. shall be drawn consistently with approved symbology centered exactly at the coordinates provided for the feature.
3. Water line laterals shall be drawn from the location of the water meter to a point intersecting the water line.

4. All water meters, valves, hydrants, reducers, caps, etc. shall be labeled with a unique identifier (water meter #1, WM_1, etc.)
5. All water lines shall be labeled with a unique identifier (Water Line #1, WL_1, etc.), pipe diameter (8 inch, etc.) and pipe material (PVC, DIP, etc.)

Approved Water Symbology








						
Water Meter	Water Line Valve	Water Line Reducer	Water Line Bend	Water Line Tee	Water Line Cap	Fire Hydrant

Table Specifications

The following specifications shall apply to the development of all digital as-built attribute data pertaining to the sanitary sewer system.

1. A table with the following attribute data for each water meter
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Address of the property the meter serves

Example Table

WM_ID	Northing	Easting	Elevation	Service Address
WM #1	1251008.52	2213889.92	914.58	100 Any Street
WM #2	1251410.95	2213486.14	912.88	105 Any Street
WM #3	1251413.63	2213247.90	915.43	110 Any Street
WM #4	1251358.94	2213213.00	916.77	115 Any Street

2. A table with the following attribute data for each water valve
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Valve Type
 - f. Water line size measured in inches

Example Table

WV_ID	Northing	Easting	Elevation	Valve Type	Valve Size
WV #1	1251008.52	2213889.92	914.58	Gate Valve	8-inch
WV #2	1251410.95	2213486.14	912.88	Gate Valve	8-inch
WV #3	1251413.63	2213247.90	915.43	Ball Valve	6-inch
WV #4	1251358.94	2213213.00	916.77	Ball Valve	6-inch

3. A table with the following attribute data for each fire hydrant
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate

Example Table

FH_ID	Northing	Easting	Elevation
FH #1	1251008.52	2213889.92	914.58
FH #2	1251410.95	2213486.14	912.88
FH #3	1251413.63	2213247.90	915.43
FH #4	1251358.94	2213213.00	916.77

4. A table with the following attribute data for each water line cap
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Water line size measured in inches

Example Table

WC_ID	Northing	Easting	Elevation	Cap Size
WC #1	1251008.52	2213889.92	914.58	8-inch
WC #2	1251410.95	2213486.14	912.88	8-inch
WC #3	1251413.63	2213247.90	915.43	8-inch
WC #4	1251358.94	2213213.00	916.77	8-inch

5. A table with the following attribute data for each water line reducer
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Water line size measured in inches for the larger water line
 - f. Water line size measured in inches for the smaller water line

Example Table

WR_ID	Northing	Easting	Elevation	Large Water Line Size	Small Water Line Size
WR #1	1251008.52	2213889.92	914.58	10-inch	8-inch
WR #2	1251410.95	2213486.14	912.88	10-inch	8-inch
WR #3	1251413.63	2213247.90	915.43	10-inch	8-inch
WR #4	1251358.94	2213213.00	916.77	10-inch	8-inch

6. A table with the following attribute data for each water line tee
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Tee Size as measured in inches

Example Table

TEE_ID	Northing	Easting	Elevation	Tee Size
TEE #1	1251008.52	2213889.92	914.58	8-8-8
TEE #2	1251410.95	2213486.14	912.88	8-8-6
TEE #3	1251413.63	2213247.90	915.43	8-8-8-8
TEE #4	1251358.94	2213213.00	916.77	8-6-8-6

7. A table with the following attribute data for each water line bend
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate
 - e. Bend Angle measured in degrees
 - f. Bend Size measured in inches

Example Table

Bend_ID	Northing	Easting	Elevation	Bend Angle	Bend Size
Bend #1	1251008.52	2213889.92	914.58	45 deg	8-inch
Bend #2	1251410.95	2213486.14	912.88	22.5 deg	8-inch
Bend #3	1251413.63	2213247.90	915.43	45 deg	6-inch
Bend #4	1251358.94	2213213.00	916.77	45 deg	6-inch

8. A table with the following attribute data for each water line
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Pipe diameter measured in inches
 - c. Pipe Material (PVC, DIP, etc.)
 - d. Pipe Length measured in feet

Example Table

Pipe ID	Pipe Diameter	Pipe Material	Pipe Length
WL #1	8	PVC	291
WL #2	8	PVC	238
WL #3	8	PVC	64

STORMWATER INFRASTRUCTURE DRAINAGE

Survey Accuracy Requirements for Storm Drainage Infrastructure

Coordinate data for storm drain surface structures shall be established at the center of the top of the access lid (catch Basins, junction boxes), center of the top of the grate (drop inlets, hooded grate inlets) or the invert of the pipe (headwalls, flared end sections). Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft and a vertical accuracy of ≤ 0.1 ft.



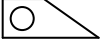



Coordinate data for storm drain pipes / culverts shall be established through the use of the storm drain surface structure coordinate data. Invert elevations shall be established by direct measurement of the distance from the lid or grate elevation to the invert of each pipe. Vertical accuracy of ≤ 0.1 ft shall apply to all storm drain pipe / culvert inverts.

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to the sanitary sewer system.

1. Storm lines shall be drawn with proper directionality: lines must be drawn from the upstream structure to the downstream structure with a single line.
2. All storm lines shall be drawn from the coordinates of the upstream structure to the coordinates of the downstream structure. No gaps should exist between the storm lines. Lines must not continue for more than one structure.
3. Headwalls, Drop Inlets, Catch Basins, etc. shall be drawn consistently with approved symbology centered exactly at the coordinates provided for the feature.
4. All structures shall be labeled with a unique identifier (Catch Basin #1, CB_1, HW 19, etc.)
5. All storm lines shall be labeled with a unique identifier (Storm Pipe #1, StmPipe_1, etc.), pipe diameter (36 inch, etc.) and pipe material (BCCMP, RCP, HDPE, etc.)

Approved Storm Drain Symbology

					
Drop Inlet	Hooded Grate Inlet	Single Wing Catch Basin	Double Wing Catch Basin	Raised Lid Yard Inlet	Junction Box




		
Headwall	Flared End Section	Outlet Structure

Table Specifications

The following specifications shall apply to the development of all digital as-built attribute data pertaining to the storm drain system.



1. A table with the following attribute data for each drop inlet
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Grate Elevation (z) coordinate
 - e. Manhole diameter measured in feet
 - f. Manhole Material (Pre-Cast Concrete, Brick, etc.)
 - g. Manhole depth measured in feet
 - h. Grate Width measured in feet
 - i. Grate Length measured in feet

Example Table

DI_ID	Northing	Easting	Grate Elevation	Manhole Diameter	Manhole Material	Manhole Depth	Grate Width	Grate Length
DI #1	1251008.52	2213889.92	914.58	4	Precast Concrete	6.10	2	3
DI #2	1251410.95	2213486.14	912.88	4	Precast Concrete	7.10	2	3
DI #3	1251413.63	2213247.90	915.43	4	Precast Concrete	8.00	2	3
DI #4	1251358.94	2213213.00	916.77	4	Precast Concrete	7.90	2	3

2. A table with the following attribute data for each hooded grate inlet
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Grate Elevation (z) coordinate
 - e. Manhole diameter measured in feet
 - f. Manhole Material (Pre-Cast Concrete, Brick, etc.)
 - g. Manhole depth measured in feet
 - h. Grate Width measured in feet
 - i. Grate Length measured in feet
 - j. Hood Depth measured in feet
 - k. Hood Width measured in feet

Example Table

HGI_ID	Northing	Easting	Grate Elevation	Manhole Diameter	Manhole Material	Manhole Depth	Grate Width	Grate Length	Hood Depth	Hood Width
HGI #1	1251008.52	2213889.92	914.58	4	Precast Concrete	6.10	2	3	0.5	3
HGI #2	1251410.95	2213486.14	912.88	4	Precast Concrete	7.10	2	3	0.5	3
HGI #3	1251413.63	2213247.90	915.43	4	Precast Concrete	8.00	2	3	0.5	3
HGI #4	1251358.94	2213213.00	916.77	4	Precast Concrete	7.90	2	3	0.5	3

3. A table with the following attribute data for each catch basin
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate

- d. Grate Elevation (z) coordinate
- e. Manhole diameter measured in feet
- f. Manhole Material (Pre-Cast Concrete, Brick, etc.)
- g. Manhole depth measured in feet
- h. Grate Width measured in feet
- i. Grate Length measured in feet
- j. Hood Depth measured in feet
- k. Hood Width measured in feet

Example Table

CB_ID	Northing	Easting	Lid Elevation	Manhole Diameter	Manhole Material	Manhole Depth	Catch Basin Type	Hood Depth	Hood Width
CB #1	1251008.52	2213889.92	914.58	4	Precast Concrete	6.10	Double Wing	3	0.5
CB #2	1251410.95	2213486.14	912.88	4	Precast Concrete	7.10	Single Wing	3	0.5
CB #3	1251413.63	2213247.90	915.43	4	Precast Concrete	8.00	Raised Lid Yard Inlet	3	0.5
CB #4	1251358.94	2213213.00	916.77	4	Precast Concrete	7.90	Single Wing	3	0.5

- 4. A table with the following attribute data for each junction box
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Lid Elevation (z) coordinate
 - e. Manhole diameter measured in feet
 - f. Manhole Material (Pre-Cast Concrete, Brick, etc.)
 - g. Grade Height measured in feet (height of lid above adjacent grade)
 - h. Manhole depth measured in feet
 - i. Junction Box Lid Type (Traffic Bearing, Bolt Down, etc.)

Example Table

JB_ID	Northing	Easting	Lid Elevation	Manhole Diameter	Manhole Material	Grade Height	Manhole Depth	Junction Box Lid
JB #1	1251008.52	2213889.92	914.58	4	Precast Concrete	2.0	6.10	Traffic
JB #2	1251410.95	2213486.14	912.88	4	Precast Concrete	1.4	7.10	Traffic
JB #3	1251413.63	2213247.90	915.43	4	Precast Concrete	1.0	8.00	Traffic
JB #4	1251358.94	2213213.00	916.77	4	Precast Concrete	0.0	7.90	Traffic

- 5. A table with the following attribute data for each headwall
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Invert Elevation (z) coordinate

Example Table

HW_ID	Northing	Easting	Invert Elevation
HW #1	1251008.52	2213889.92	914.58
HW #2	1251410.95	2213486.14	912.88
HW #3	1251413.63	2213247.90	915.43
HW #4	1251358.94	2213213.00	916.77

6. A table with the following attribute data for each flared end section
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Invert Elevation (z) coordinate

Example Table

FES_ID	Northing	Easting	Invert Elevation
FES #1	1251008.52	2213889.92	914.58
FES #2	1251410.95	2213486.14	912.88
FES #3	1251413.63	2213247.90	915.43
FES #4	1251358.94	2213213.00	916.77

7. A table with the following attribute data for each outlet structure
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing (y) coordinate
 - c. Easting (x) coordinate
 - d. Elevation (z) coordinate

Example Table

OS_ID	Northing	Easting	Elevation
OS #1	1251008.52	2213889.92	914.58
OS #2	1251410.95	2213486.14	912.88
OS #3	1251413.63	2213247.90	915.43
OS #4	1251358.94	2213213.00	916.77

8. A table with the following attribute data for each storm line
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Unique identifier matching upstream structure identifier in the as-built drawing
 - c. Upstream Measure Down - Distance from the upstream structure elevation to invert of pipe measured in feet
 - d. Upstream Invert – Elevation (z) of the invert of the upstream end of the pipe
 - e. Unique identifier matching downstream structure identifier in the as-built drawing

- f. Downstream Measure Down - Distance from downstream structure elevation to invert of pipe measured in feet
- g. Downstream Invert – Elevation (z) of the invert of the downstream end of the pipe
- h. Pipe Shape (Box, Elliptical, Circular, etc.)
- i. Pipe height measured in inches
- j. Pipe width measured in inches
- k. Pipe Material (BCCMP, RCP, HDPE, etc.)
- l. Pipe Length measured in feet
- m. Pipe Slope measured in feet per foot (ft/ft)

Example Table

Pipe ID	Upstr. ID	Upstr. Measure Down	Upstr. Invert	Downstr. ID	Downstr. Measure Down	Downstr. Invert	Pipe Shape	Pipe Height	Pipe Width	Pipe Material	Pipe Length	Pipe Slope
Pipe #1	DI #1	6.1	906.78	JB #3	10.2	905.06	Circular	24	24	BCCMP	291	0.0058
Pipe #2	CB #2	7.1	908.33	FES #1	6.05	906.83	Ellipse	36	24	BCCMP	238	0.0062
Pipe #3	HW #1	0	908.76	HW #2	0	908.33	Box	60	84	RCP	64	0.0066

ROADWAY SPECIFICATIONS

Survey Accuracy Requirements for Roadway Infrastructure

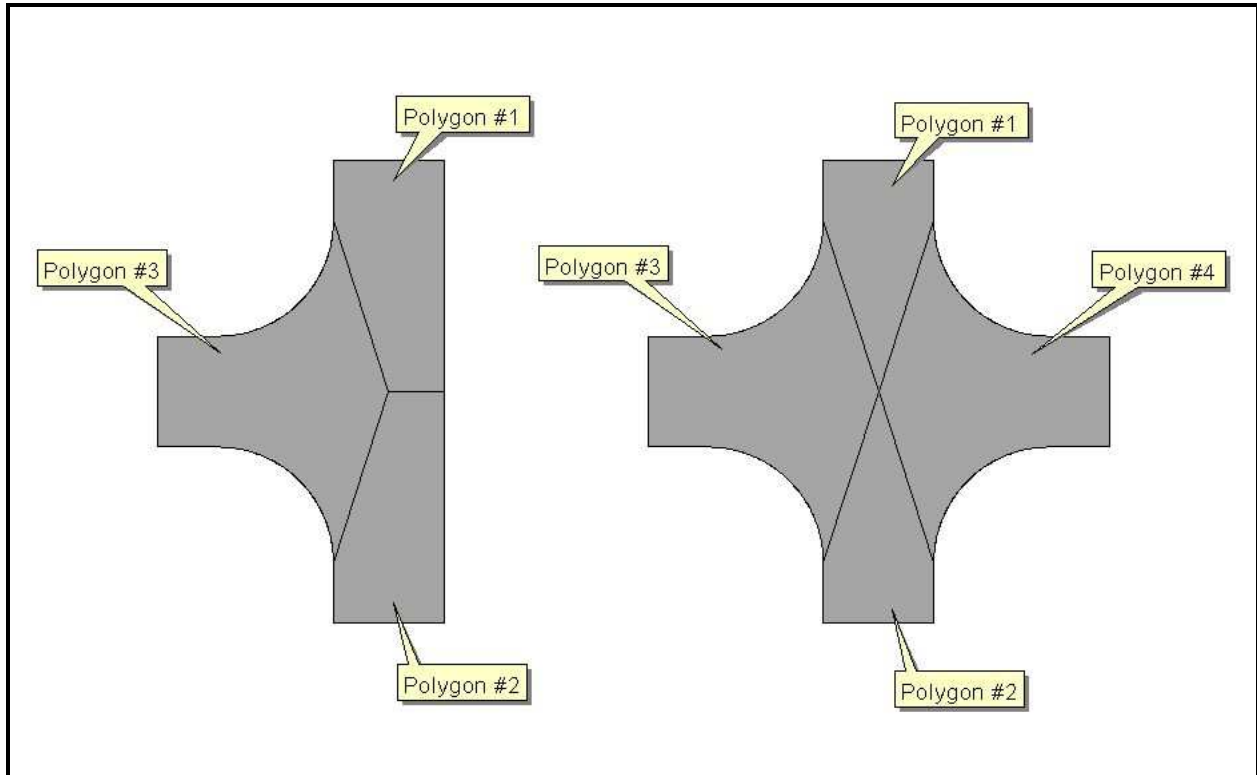
Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft for all roadway polygons and centerlines.

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to new roadways.

1. Roadway centerlines shall be drawn from intersection to intersection and should not continue beyond the intersection points
2. Roadway polygon edges should be drawn from back of curb to back of curb
3. Intersecting road polygons should meet at the point of roadway centerline intersection
4. All edges on polygons must be snapped together at the vertices. Gaps in polygon boundaries will not be accepted
5. Roadway polygons should be completely enclosed
6. All roadway centerlines shall be labeled with the road name

Proper Method of Segmenting Roadway Polygons



PROPERTY BOUNDARY / EASEMENT SPECIFICATIONS

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to property and easement boundaries.

1. Each property, lot, easement or greenspace parcel must be an enclosed polygon
2. Each enclosed polygon shall be labeled with a unique identifier (lot number, etc.)
3. All edges on polygons must be snapped together at the vertices. Gaps in polygon boundaries will not be accepted

Table Specifications

The following specifications shall apply to the development of all digital as-built attribute data pertaining to the parcels, easements and greenspaces.

1. A table with the following attribute data for each drop Inlet
 - a. Unique identifier matching the identifier in the as-built drawing
 - b. Northing of the center of the parcel
 - c. Easting of the center of the parcel
 - d. Parcel address (if applicable)
 - e. Lot number (if applicable)
 - f. Subdivision name

Example Table

ID	Northing	Easting	Parcel Address	Lot Number	Subdivision Name
Lot #1	1251008.52	2213889.92	100 Any Street	1	Georgia Heights
Lot #2	1251410.95	2213486.14	110 Any Street	2	Georgia Heights
Lot #3	1251413.63	2213247.90	120 Any Street	3	Georgia Heights
Lot #4	1251358.94	2213213.00	130 Any Street	4	Georgia Heights

IMPERVIOUS SURFACE SPECIFICATIONS (NON-SINGLE FAMILY RESIDENTIAL DEVELOPMENT ONLY)

Survey Accuracy Requirements for Impervious Surfaces

Accuracy requirements shall be a horizontal accuracy of ≤ 0.5 ft for all impervious surfaces.

Digital Drawing Specifications

The following specifications shall apply to the development of all digital as-built drawings pertaining to impervious surfaces.

1. Impervious surface edges should be drawn utilizing continuous polylines
2. All end points on polylines must be snapped together at the vertices. Gaps in polylines boundaries will not be accepted