

**VOLUME I**

**GENERAL REQUIREMENTS  
FOR  
WASTEWATER SYSTEMS**



For:

**CITY OF WINDER**

45 East Athens Street  
Winder, Georgia 30608  
Phone (770) 867-3106  
Fax (770) 307-0424

Prepared by:

**HSF Engineering, Inc.**

2910 Brookside Run  
Snellville, Georgia 30078  
Phone (770) 867-3545  
Fax (770) 867-3567

---

# TABLE OF CONTENTS

**SECTION 1: POLICIES AND PROCEDURES ..... 1-1**

- 1.01 Scope and Intent.....1-1
- 1.02 Purpose.....1-1
- 1.03 Definitions.....1-1
- 1.04 Variances.....1-2
- 1.05 Pre-Design Conference .....1-2
- 1.06 Trust Indenture .....1-2
- 1.07 Connection to Existing System .....1-2
- 1.08 Existing Subdivision Regulations.....1-3
- 1.09 Conveyance of Extension to City Utility System .....1-3
- 1.10 Fees .....1-3
- 1.11 Grant of Easement Rights .....1-4
- 1.12 Developer’s Right to Connect .....1-4
- 1.13 Underground Utility Contractor .....1-5
- 1.14 Developer’s Plans.....1-5
- 1.15 Installation and Inspection .....1-6
- 1.16 Test of Developer’s System .....1-6
- 1.17 Conditions Precedent to System Usage.....1-6
- 1.18 Right of Termination of Service .....1-7
- 1.19 Limitation of Liability of City .....1-7
- 1.20 Approval by Governmental Agencies .....1-7
- 1.21 No Prohibition of Further Extension.....1-7
- 1.22 Final Acceptance by City .....1-8
- 1.23 Warranty and Security.....1-8
- 1.24 Developer’s Liability for Damage.....1-9
- 1.25 Limited Reservation of Treatment Capacity.....1-9
- 1.26 Period of Construction.....1-9
- 1.27 Modification of Development Plans.....1-9
- 1.28 Notice of Connection to City Utility System .....1-10
- 1.29 Interruption of Facility Operations .....1-10
- 1.30 Connection of Buildings .....1-10
- 1.31 Application for Service.....1-11
- 1.32 Notice of Transfer of Developer’s Property .....1-11
- 1.33 Record Drawings and Video Requirements.....1-11

<b>SECTION 2: APPLICABLE WASTEWATER STANDARDS .....</b>	<b>2-1</b>
2.01 Applicable Standards .....	2-1
<b>SECTION 3: SANITARY SEWER SYSTEM – DESIGN REQUIREMENTS .....</b>	<b>3-1</b>
3.01 General .....	3-1
3.02 Design Flows .....	3-1
3.03 Design Period .....	3-1
3.04 Hydraulic Design .....	3-2
3.05 Location .....	3-2
3.06 Service Connections.....	3-3
3.07 Force Main Service Connections to Gravity Sewer System .....	3-3
3.08 Force Main Service Connections to Force Main Sewer System .....	<del>3-3</del> 4
3.09 Velocities.....	3-4
3.10 Minimum Gravity Sewer Pipe Slopes .....	3-5
3.11 Sewer Structural Integrity.....	3-5
3.12 Manholes .....	3-5
3.13 Grease Traps .....	3-6
3.14 Sewage Treatment Plants/Pumping Stations .....	3-6
3.15 Record Drawings.....	3-6
3.16 Environmental Impacts.....	3-7
<b>SECTION 4: WASTEWATER PUMPING – DESIGN REQUIREMENTS .....</b>	<b>4-1</b>
4.01 General .....	4-1
4.02 Pumping System Equipment and Appurtenances .....	4-1
4.03 Wetwells and Valve Vaults .....	4-2
4.04 Security Fence.....	4-2
4.05 Pump Station Site .....	4-2
<b>SECTION 5: EPD SUBMITTAL GUIDELINES .....</b>	<b>5-1</b>
5.01 General .....	5-1
5.02 Transmittal Letter .....	5-1
5.03 Drawings .....	5-2
5.04 Pump Stations.....	5-3
5.05 City Responsibilities .....	5-4

---

## **SECTION 1**

### **Policies and Procedures**

#### **1.01 Scope and Intent**

The intent of these Policies and Procedures is to establish minimum requirements and guidelines for sanitary sewer projects, including pumping stations and force mains, constructed in the City. The procedures will apply to all sewer development and construction projects, both public and private, within the jurisdiction of the City of Winder. The procedures shall also apply to all existing sanitary sewer facilities including septic tanks which are being upgraded or have failed and are being corrected, both public and private, within the jurisdiction of the City. Before any proposed project can be considered or reviewed for approval, verification must be provided to ensure the project is consistent with the current City of Winder Service Delivery Strategy.

#### **1.02 Purpose**

The City of Winder recognizes that water is a natural resource of limited supply and wastewater treatment and disposal is a necessity for public health. Thus, the water supply must be regulated and controlled and subjected only to reasonable and beneficial use to assure an adequate wastewater treatment capacity for all members of the public served by City Utility System. Therefore, the disposal service by the City Utility System to any development is subject to regulation, prohibition, limitation and restriction by local, state and federal governmental agencies, including the board of health, as well as the City of Winder.

#### **1.03 Definitions**

- A. City: City of Winder, Georgia or its authorized representative.
- B. City Utility System: The City of Winder public wastewater system, including sanitary sewers, pump stations and treatment facilities.
- C. Developer or Owner: Any person, firm, corporation, association or partnership or any agent thereof who undertakes or proposes to undertake the development of land so as to constitute a residential subdivision, apartment complex, condominium, or commercial/industrial/institutional establishment.
- D. EPD: Environmental Protection Division of the Georgia Department of Natural Resources.

#### **1.04 Variances**

Under special conditions with specific applications, the procedures and policies may be altered to meet certain conditions that are beyond the control of the Developer, provided such alterations or deviations are acceptable to the City. Final decisions concerning such alterations shall be made by the City Council or its designee.

#### **1.05 Pre-Design Conference**

It is recommended that each Developer or owner initiate a pre-design conference between himself, his engineer, and the City Utility Director or his designated representative.

#### **1.06 Trust Indenture**

A. To assure continuity of maintenance and operation of a non-governmentally owned community sewerage system, the Developer shall file a trust indenture or other legal contract or agreement with the Georgia State Department of Natural Resources (DNR), Environmental Protection Division (EPD) for their review and approval. For new or proposed systems, the legal document shall be submitted with the plans and specifications in accordance with DNR Rules and Regulations for Water Quality Control, Rule 391-3-6-.06(13). The City's participation in and supporting of any non-city owned utility system as trustee, is conditioned on:

1. The proposed sewer system being planned and designed in accordance with these city standards and specifications.
2. A trust deed or other legal contract being prepared by the Developer(s) in form and content acceptable to the City.
3. All costs associated with preparation of plans and specifications (including reviews by the City or its designated representative) and the trust deed or legal contract, being borne by the Developer.

#### **1.07 Connection to Existing System**

- A. New connections to the existing City Utility System are subject to all City standards, specifications, codes, and ordinances as they pertain to sewer systems and/or facilities.
- B. No private pump station, force mains or sewers will be allowed to connect to the City Utility system. Service laterals and connections serving only one customer (as defined in Sections 3.06, 3.07 & 3.08) are not considered private sewers and are the customer's responsibility for maintenance.

- C. Under no circumstances shall any storm water facilities be connected to the City Utility System.

### **1.08 Existing Subdivision Regulations**

The requirements of these Policies and Procedures for sewer systems shall be in addition to the requirements of the City of Winder Zoning Ordinance, and all amendments thereto.

### **1.09 Conveyance of Extension to City Utility System**

- A. The Developer shall construct and convey to the City, free and clear of all encumbrances and at no cost to the City, the extension to the City Utility System and the complete wastewater system on the Developer's property.
- B. Developer shall submit to the City, engineering plans based on the City Standard Sewer Specifications for the proposed extension prepared by the Developer's engineer, which shall be approved in writing by the City prior to any construction work being performed.
- C. Following conveyance by the Developer, the extension and any additions, repairs and replacements thereto shall at all times remain the sole, complete and exclusive property of and under the control of the City, and the Developer shall have no right or claim in or to the Developer's extension; provided however, that the extension shall provide required sewer service to the development. Any excess capacity may be utilized by the City for uses outside the development area.

### **1.10 Fees**

- A. Sewer Capacity fee: Sewer capacity fee shall be charged for each establishment, structure and use added to the City Utility System. The Developer and/or builder will pay the current Sewer Capacity Fee presently charged for connections to the City Utility System as stipulated in the pertinent City code establishing rates, charges and regulations for wastewater systems.
- B. Sewer Plan Review and Inspection Fees: The Developer shall pay an inspection and review fee in order to defray all actual costs to the City, including any attorneys' fees, of:
  - 1. Conducting the review of the engineering plans and specifications;
  - 2. Conducting the inspection and testing of the installation of the water and/or sewer extension; and

3. All other administrative costs incident to either accepting the extension into the City Utility System or becoming trustee of a non-City-owned system.
- C. Fees shall be paid in full prior to receiving City approval of plans.

### **1.11 Grant of Easement Rights**

- A. Developer shall grant to the City, its successors and assigns, the exclusive perpetual right, privilege and easement to construct, reconstruct, operate, maintain, repair, replace, improve, alter, remove, relocate and inspect sewage collection mains, sewage pumping stations, sewage treatment plants, pipelines, lateral lines, valves, connections and appurtenant equipment over, across and under the strip of land wherein system lies on the Developer's property, together with the right of ingress and egress to each of the building sites on Developer's property which are to be served by the City Utility System. The easement rights granted with respect to public places shall be subject to the authority of the public authority having jurisdiction over such public places.
- B. Prior to the City Utility System providing service to the development, the Developer shall execute a grant or grants of easement, in recordable form to be approved by the City, specifically granting to the City the above rights necessary, in the discretion of the City to provide sewer utility service to the Developer's property.
- C. Nothing shall prevent Developer or any subsequent owner of Developer's property from exercising itself or granting exclusive or non-exclusive rights, privileges and/or easements to any other parties for the furnishing of utility services other than sewerage, provided that the City's use, occupancy and enjoyment of its easements are not unreasonably interfered with. Use of the easement for any purpose other than sewer will require approval by the City.
- D. The City shall not be obligated to furnish any sewer service to any building which may be built on Developer's property to which it does not have access.

### **1.12 Developer's Right to Connect**

Provided that the Developer has complied with the terms of these Policies and Procedures and provided that the Developer's extension is installed with the approval of the City and in compliance with the requirements of all public, governmental or other agencies having supervision, regulation, direction or control of such sewage

utility systems, the City shall allow the Developer or its successor-in-title to connect the Developer's extension into the City Utility System.

### **1.13 Underground Utility Contractor**

- A. All extensions and additions to the City Utility System shall be performed by a Georgia Licensed Utility Contractor, or by the City's own work force.
- B. The City reserves the right to approve in writing the underground utility contractor and/or his subcontractor installing utility lines for the Developer under the terms of these Policies and Procedures.

### **1.14 Developer's Plans**

- A. All engineering plans prepared by Developer's engineer, as provided in Article 1.09 above, shall be reviewed and approved by the City prior to Developer submitting plans and specifications to any other governmental agencies. The Developer's engineering design and plans, shall conform to the applicable standards and specifications and Unified Development Code including applicable erosion and sedimentation control requirements of EPD.
- B. As a minimum for the following types of facilities, include the indicated information:
  - 1. Gravity Sewers
    - a. Plan and Profile at a scale no smaller than 1 inch = 100 feet horizontal and 1 inch = 10 feet vertical.
    - b. Stations on manholes and the length of pipe segments between manholes.
    - c. Angles between manholes and state plane coordinates of manholes.
  - 2. Force Mains
    - a. Plan and Profile at a scale no smaller than 1 inch = 100 feet horizontal and 1 inch = 10 feet vertical.
    - b. Locations of air release valves.
  - 3. Pump Stations
    - a. Site Plan at scale no smaller than 1 inch = 20 feet.
    - b. Location of wetwell, valve vault, by-pass valve, access road, parking area, and fence.
  - 4. Service lines



- a. Service lines extended from sewer main shall include a clean-out located at right-of-way line, easement line, or water meter location to City specifications with an additional 12" of 6" pipe (with reducer when applicable) extended beyond clean-out and be plugged.

C. Additional requirements of EPD are included in Appendix A of these General Requirements for Wastewater Systems.

### **1.15 Installation and Inspection**

The Developer's sewer system shall be constructed in accordance with the engineering plans approved by the City. The City shall have the right, but not the obligation, to make inspections as installation progresses. The City shall not accept Developer's sewer system and will issue no certifications until all manhole covers are exposed at proper finish grade. Field revisions to approved plans must be submitted in writing with documentation. The revisions must be reviewed and approved by the City Utility Director or his designated representative prior to construction of requested revision.

### **1.16 Test of Developer's System**

The City will not accept Developer's sewer system until new facilities have passed all pre-determined tests as stipulated in Section 8. All required tests must be arranged by the Developer and witnessed by the City, or its representative, to determine whether the facilities are constructed in accordance with the approved engineering plans and Standard City Sewer Specifications. Developer will pay all costs of locating leaks and their repairs deemed necessary by the City as a result of said tests.

### **1.17 Conditions Precedent to System Usage**

- A. Prior to the City accepting the sewer system, Developer shall comply with all terms of these Policies and Procedures and shall:
  - 1. Provide to the City releases of liens received by the Developer, or its agent, in connection with the construction of the facilities.
  - 2. Furnish the City with one set of Record Drawings as specified in Article 1.33.
  - 3. Furnish, in form and substance acceptable to the City, all of the following relating to the facilities:

- a. All permits and governmental approvals obtained by the Developer, its contractors and agents.
- b. Certification by Developer's engineer that the facilities have been constructed substantially in accordance with approved plans and specifications.

### **1.18 Right of Termination of Service**

The City shall refuse to provide service and reserves the right to terminate service to any lot or building within Developer's property, in the event Developer defaults or fails to comply with any of the terms and conditions of these Policies and Procedures in a timely manner and fails to cure such default or fails to comply within 30 consecutive calendar days following the receipt by Developer of City's notice of such default or failure to comply.

### **1.19 Limitation of Liability of City**

The City shall not be liable or responsible to the Developer as a result of injury to property or person, which injury was created by acts of God, strikes, lockouts, or other industrial disturbances, acts of public enemy, wars, blockades, riots, acts of armed forces, epidemics, delays by carriers, inability to obtain materials or right-of-way on reasonable terms, acts of public authorities, acts of vandals or other third parties, or any other causes whether or not of the same kind enumerated herein. In no event shall the City be liable to Developer or any customer for any consequential, incidental or punitive damages as a result of injury to property or person, regardless of whether said injury was the result of acts of or within the control of the City.

### **1.20 Approval by Governmental Agencies**

The City's obligations are contingent upon Developer obtaining all necessary approvals for sewer system from all concerned governmental agencies. Developer assumes the risk of loss as a result of the denial or withdrawal of the approval of any concerned governmental agency, or caused by an act of any governmental agency which affects the ability of the City to provide sewer service to Developer not within the sole control of the City and which, by exercise of due diligence, it is unable to overcome.

### **1.21 No Prohibition of Further Extension**

These Policies and Procedures shall not prohibit or prevent the City from extending the City Utility System in or to other areas to serve other Developers or customers, so

long as extensions and the furnishing of services do not interfere with the furnishing of the services to the Developer's establishment.

### **1.22 Final Acceptance by City**

Final acceptance by the City of the completed sewer system shall occur at such time as Developer has met all of the terms and conditions of these Policies and Procedures, all engineering tests and evaluations have been completed and approved by the City.

### **1.23 Warranty and Security**

- A. Developer shall warrant its extension and hold City harmless against all costs, expenses and losses, including, without limitation, incidental and consequential damages, resulting from any defects in the Developer's extension, including, without limitation, defects in material and workmanship, which are discovered or arise within a period of one year following the date of the final acceptance.
- B. As security for Developer's performance of this representation and warranty, simultaneously with the conveyance of the Developer's extension, Developer shall deliver to the City an executed contract bond in form and substance satisfactory to the City in the amount of 50 percent of total cost of the sewer construction. The contract bond shall have as the surety thereon such surety company, acceptable to the City, as is authorized to write bonds of such character and amount under the laws of the State of Georgia, is listed in the current edition of the U.S. Treasury Circular 570, and has an underwriting limitation in said document in excess of the required bond amount. The attorney-in-fact, or other officer who signs a contact bond for a surety company, must file with such bond a certified copy of his power of attorney authorizing him to do so.
- C. Subject to the approval of the City, the Developer may elect to deliver to the City a contract bond in compliance with all requirements herein and in a form acceptable to the City from the Developer's contractors as the principal with the Developer and City as co-obligees.
- D. The contract bond shall remain in force for one year following the date of final acceptance by the City. Should the Developer fail to make or commence timely repairs or replacements of any defects in the Developer's extension discovered or arising within said one year period, the Developer or his surety shall be liable to the City for all costs arising therefrom.

### **1.24 Developer's Liability for Damage**

Developer shall be responsible for, and make any repairs or replacement required as the result of, any breakage vandalism or other damage caused to his extension until final acceptance by the City. After the final acceptance the Developer shall indemnify and hold City harmless from the cost of any repairs for any breakage or other damage to his extension from time of completion of Developer's extension until completion of all buildings and houses, roads, paving, drainage, and other construction on Developer's property necessary to complete the development. If, within 10 days of the receipt of City notice of such breakage or other damage, Developer fails to make timely repairs and corrections, the City shall have the option to make such repairs or replacements at the Developer's cost.

### **1.25 Limited Reservation of Treatment Capacity**

The reservation of sewage treatment capacity will be limited to the actual number of equivalent residential units (ERU's) committed by the City to the development pursuant to preconstruction approval of the sewage system facilities.

### **1.26 Period of Construction**

Developer must begin construction of sewer facilities within 180 consecutive calendar days from the date of final City approval of drawings, and shall not cease for a continuing period of 180 consecutive calendar days or until final completion and acceptance of the constructed facilities whichever is sooner. Should the Developer not strictly adhere to these time frames, then any obligations or duties of the City shall be null and void.

### **1.27 Modification of Development Plans**

Should the Developer modify his development plans which would require greater sewage flows, or additional sewage facilities than the sewage service demands designed and approved under the engineering plans and City Standard Specifications, then Developer shall enter into a new agreement with the City providing for the construction of such additional sewer facilities meeting all City and governmental design requirements and shall pay all additional contributions and Fees as may be required.

### **1.28 Notice of Connection to City Utility System**

Developer shall deliver to the City written notice that he will be connecting the sewer facilities to the City Utility System no less than 24 hours prior to said connection to allow time for City inspection. If Developer fails to provide timely written notice, the City may require Developer to uncover and expose connection for inspection, at the sole cost of Developer.

### **1.29 Interruption of Facility Operations**

- A. The Developer shall provide the City with written notice at least five days prior to any proposed interruption in facility operations required by construction activity. The notice shall include the date and time of the scheduled interruption; the length of time the interruption will be in effect; the procedures to be followed in effecting the interruption; a complete identification of all those equipment and operations to be affected; and all other information the City may require. The Developer shall provide all equipment, piping, auxiliary power or other means necessary to sustain facility operations or function for the planned interruptions.
- B. The City must approve all proposed interruptions in facility operations. Such approval will be provided by the City to the Developer in writing.
- C. The Developer shall conduct operations in a manner and sequence which will provide for the continued transportation of wastewater flows during construction of the Developer's project. The Developer shall take all actions required to prevent discharge of sewer flow from the system to the ground or stream. Any construction actions that impede or interrupt flow shall be carefully executed and monitored to prevent surcharging and overflow.
- D. Any damages resulting from surcharging overflow or back-up caused by the Developer's operations shall be the Developer's responsibility. Fines charged the City for overflows caused by the Developer shall be paid for by the Developer along with other damages resulting from the overflow and other damages.

### **1.30 Connection of Buildings**

The Developer shall at his sole cost and expense connect the private property sewer pipes of each dwelling or other building constructed on Developer's property to the sewer laterals of Developer's extension as reflected in plans and specifications approved by the City.

### **1.31 Application for Service**

Developer, his successors, or the occupant(s) of the Developer's property, shall make written application to the City for the opening of account(s) for service. Application is to be made only after the payment of all sewer unit connection fees presently being charged by the City. At the time of making application for service, the applicant shall pay all service charges set forth in the current City code(s) establishing rates, charges and regulations pertaining to the City sewer system.

### **1.32 Notice of Transfer of Developer's Property**

Developer agrees to provide proper written notice to City of the actual date of the legal transfer of sewer services from Developer to any third party. Developer shall remain responsible for all costs and expenses, including utility bills, which arise as a result of Developer's failure to notify or improper notification to the City.

### **1.33 Record Drawings and Video Requirements**

- A. Record Drawings shall be submitted in the following format:
  - 1. Two sets of photo copy prints, and
  - 2. Digital plans in AutoCad *DWG* format and pdf format.
- B. Record Drawings shall be reproducible, shall have title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared.
- C. Legibly mark drawings to record actual construction, including:
  - 1. All Construction
    - a. Changes of dimension and detail.
    - b. Changes made by Requests for Information (RFI), field order, clarification memorandums or by change order.
    - c. Details not on original Drawings.
    - d. Dimensions to each lateral connection from the downstream manhole.
  - 2. Underground Utilities
    - a. For sewers, the Record Drawings shall include the horizontal angle and distance between manhole covers, the depth of each manhole and invert in and invert out elevations.
    - b. For force mains, the profile of the top of the pipe shall be provided. Elevations, not depths, shall be provided at a minimum 100-foot interval

and at all bends, high points, low points, air valves, and where elevations are called out on the Drawings.

D. Precision

1. Unless noted otherwise, Record Drawings shall provide horizontal dimensions, distances and coordinates to the nearest 0.1 foot.
2. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the Contractor. The Contractor shall employ a currently registered surveyor to prepare the Record Drawings from a post-construction, field run survey. For gravity sewers, the Record Drawings shall provide elevations to the nearest 0.01 foot for all manhole inverts, manhole frames and other pertinent items constructed by the Contractor. The Record Drawings shall provide dimensions, distances, and coordinates to the nearest 0.01 foot and horizontal angles to the nearest 10 seconds.
3. The cover of the Record Drawings shall include the following information:
  - a. Name and license number of the Georgia Utility Contractor.
  - b. Name of supplier and manufacturer of pipe.
  - c. Name of manufacturer of precast concrete manholes.
  - d. Name of Surveyor

E. Video Submittals

1. An electronic copy of the inspection video must be provided to the City before the sewer system can be accepted by the City.
2. The video shall record the footage as the camera progresses through the sewer pipe. The location of each lateral shall clearly be shown on the video by both lot number and linear footage from the manhole.
3. A field report of the video inspection must be submitted to City and shall include the following:
  - a. A diagram for each gravity sewer segment between manholes on a separate 8 ½ x 11 sheet.
  - a. The direction of flow for that segment of pipe.
  - b. The linear footage to each sewer lateral as measured from the same referenced manhole.
  - c. The linear footage to each sewer lateral as measured from the same referenced manhole.

END OF SECTION

---

## SECTION 2

### APPLICABLE WASTEWATER STANDARDS

#### 2.01 Applicable Standards

It is intended that the Developer and/or Owner be responsible for the design of an adequate wastewater system as necessary for the development. The methods of design and construction shall be covered by the applicable standards listed hereinafter. By reference, the standards are made part of these specifications and standards.

1. Georgia State Department of Natural Resources (DNR), Environmental Protection Division (EPD), Rules and Regulations for Water Quality Control, Chapter 391-3-6, latest effective date.
2. Water Environment Federation (WEF), Regulation of Sewer Use, WEF Manual of Practice No. 3, latest edition.
3. Recommended Standards for Wastewater Facilities, 1990 or later editions, Policies for the Review and Approval of Plans and Specifications for Wastewater Facilities, A report of the Committee of the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers, generally referred to as the "Ten (10) States Standards for Sewage Works".
4. Gravity Sanitary Sewer Design and Construction, American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 60, Water Environment Federal (WEF) Manual of Practice No. FD-5, revised April 1982.
5. Criteria for Slaw Rate Land Treatment and Urban Water Reuse, State of Georgia Department of natural Resources, Environmental Protection Division, March, 1992.
6. Utility Accommodations Policy and Standards, Georgia Department of Transportation, Office of Utilities, latest edition.
7. Soils Survey of Barrow County, Georgia, by the United States Department of Agriculture, Soil Conservation Service in cooperation with the University Of Georgia College Of Agriculture, Agriculture Experiment Stations.
8. American Water Works Association (AWWA) Standards, latest editions.
9. American National Standards Institute (ANSI) Standards, latest editions.
10. American Society for Testing and Materials (ASTM) Standards, latest editions.
11. Occupational Safety and Health Administration (OSHA) regulations, latest editions.
12. Georgia Department of Transportation (DOT) specifications and regulations, latest editions.
13. American Association of State Highway and Transportation Officials (AASHTO) specifications, latest editions.



14. American Society of Mechanical Engineers (ASME) standards, latest editions.
15. National Electrical Manufacturer's Association (NEMA) standards, latest editions.
16. American Concrete Institute (ACI) standards, latest editions.
17. American Welding Society (AWS) standards, latest editions.

END OF SECTION

---

## SECTION 3

### SANITARY SEWERAGE SYSTEM – DESIGN REQUIREMENTS

#### 3.01 General

The Developer shall be responsible for the design of an adequate sewage collection system and/or treatment facilities where necessary. The methods of design and construction shall be in accordance with all City codes, accepted engineering practices, and this Section. When the owner or Developer of a parcel of land desires to connect to the City Utility System, it shall be his (their) responsibility to contact the City. The Developer is responsible for the coordination of connection to a privately owned system. Public systems shall be located entirely within City-owned property, rights-of-way or dedicated easements.

#### 3.02 Design Flows

A. Average Residential Flow Rates, Single-Family and Multi-Family: In the absence of data to the contrary, the following shall be used:

1. 111 gallons per capita per day (gpcd)
2. 300 GPD/per connection

B. All Others: Actual flow or estimated for each individual case as approved by the City.

C. Design Wastewater Peak Flow Factors

The peak factor for all residential projects including pump stations shall be 2.50. Designer is to consult with the City for determination of the peak factor for all commercial projects on a case by case basis.

D. Design all sewers to carry peak design flow when flowing ½ full (no hydraulic head allowed.)

#### 3.03 Design Period

A. Gravity Sewers: 25 years minimum, 50 years preferred.

B. Force Mains: 20 years.

C. Pumping Stations: 20 years.

D. Treatment Facilities: 20 years.

### 3.04 Hydraulic Design

- A. Mains, submains and lateral sewers, 8-inch pipe, minimum; actual as based on hydraulic computations.
- B. House service connection, 6-inch pipe, minimum. Where customer service line is 4", a "Fernco" coupling or "Harco" rigid coupling shall be used to connect the 6" stub to the 4" service. The maximum allowable length of a service connection is 250 linear feet (LF).
- C. When increasing size of gravity sewer piping, pipe crowns shall be matched at manholes.
- D. Force Main Manifolding: Force main shall not be manifolded with new or existing force mains, unless it is documented that:
  - 1. The effects on existing pump stations are minimal based on engineering analysis of the system, and
  - 2. The cost of the alternative is substantial.

### 3.05 Location

- A. Sewers: On centerline of street or easement.
- B. Force Mains Along Subdivision Streets: Outside of pavements in a 10 foot easement outside and adjacent to the right-of-way and on opposite side of street or easement from water main. (Along City or DOT roads, force main may be designed in right-of-way).
- C. Easements: Minimum 20-foot width for sewer or force main. Easements will be allowed only when there is no other way to service development. Wider easements may be required for sewers of greater depth.
- D. Pumping Stations: Located outside of street or easement right-of-way on a parcel of land no smaller than 35 x 50 feet.
- E. Pipeline Depth:
  - 1. Sewers shall be designed to meet the following depth requirements:
    - a. minimum four feet of cover, unless sewer is constructed with ductile iron pipe, whereby minimum cover shall be two feet;
    - b. top of pipe shall be two feet below any creek, stream or ditch when such is crossed;
    - c. top of pipe shall be two feet below adjacent creeks, streams and ditches; and

- d. such a depth as to allow service connections to be constructed at minimum 2.0 percent slope from sewer to probable house location on each lot to be served, and assuming service line is three feet deep at probable house location.
2. Force mains shall be designed and constructed with a minimum of three feet of cover

### **3.06 Service Connections**

- A. All service connections shall be 6-inch minimum size with a separate service connection to each lot. The maximum allowable length for a residential service connection or commercial lateral is 250 LF.
- B. Wherever possible, services shall connect to the existing sewers at manholes instead of direct connections to the sewer pipe. Service connections are not permitted to directly penetrate 24-inch diameter or larger trunk sewers.
- C. Inline manhole service connections shall be limited to two, one from each side of the street. Invert of service connection shall be installed at an elevation not greater than two feet above the invert of the sewer main. A maximum of three may be installed in any terminal manhole, provided the crown of the service connection and lateral sewer line are at the same elevation.
- D. Vertical service connection risers are not permitted within street rights-of-way.
- E. Clean-outs are required for every service lateral and must be installed on the customer's side of the right-of-way line. *The right-of-way shall be determined by an existing water meter location and clean-out shall not be placed any further than an existing water meter. (Refer to detail Volume II Standard Details NO. SS-3).*

### **3.07 Force Main Service Connections to Gravity Sewer System**

- A. A force main service connection to a gravity sewer system shall serve only one customer per pump station and service force main.
- B. Force main service connections shall be connected to the gravity sewer main by installing a wye connection so that the force main discharges into the main in the same direction as the gravity flow.

### **3.08 Force Main Service Connections to Force Main Sewer System**

- A. Any proposed force main service connection to a force main sewer system shall be submitted to the City for review to determine the availability of capacity in the force

main sewer system and also to determine if the connection is technically feasible. The submittal must include the following before it will be reviewed by the City:

1. Design plans and specifications prepared and stamped by a Professional Engineer (P.E.) licensed and in good standing with the State of Georgia
  2. Pump curves and pump station technical specifications
  3. Force main material and specifications, such as DR classification, ASTM classifications and/or pressure classification
- B. A force main service connection to a force main sewer system shall serve only one customer per pump station and service force main. The minimum size force main shall be two (2) inches in diameter. Grinder pumps are required for any service force mains less than 4-inches in diameter.
- C. A gate valve shall be installed directly after the service connection, followed by a check valve rated at a minimum 200 psi.
- D. The check valve located within the City right-of-way shall be installed with a flange connection on each side of the check valve to allow for maintenance and replacement.
- E. All force main service connections are required to have a check valve installed directly after the pump connection to the force main service line.
- F. When connecting a force main service connection to City owned HDPE force mains, all pipe, taps, valves and fittings located within public right-of-way are required to be HDPE material. All pipe, taps, valves and fittings shall be installed using butt-fused fittings, thermo-fused fittings/couplings, or flanged adapters. (Exception: Check valves shall be flange connections and can be made of PVC material)

### **3.09 Velocities**

- A. Gravity Sewers: When flow is full or one-half full, minimum velocity shall be 2.0 feet per second; maximum velocity shall be 4.0 feet per second.
- B. Force Mains: minimum velocity shall be 2.0 feet per second; maximum velocity shall be 5.0 feet per second unless otherwise approved by the City.

### 3.10 Minimum Gravity Sewer Pipe Slopes

Diameter, Inches	Slopes, %
8	0.40
10	0.28
12	0.22
15	0.15
16	0.14
18	0.12
20	0.11
24	0.08

### 3.11 Sewer Structural Integrity

- A. In the locations where the gravity sanitary sewer may be exposed to non-routine installation conditions, the sewer shall be constructed using ductile iron pipe and not polyvinyl chloride pipe. These conditions include, but are not limited to:
1. Where depth of cover is less than four feet.
  2. Where depth of cover is greater than fourteen feet;
  3. Where sewer crosses over a storm drain pipe;
  4. Where sewer crosses under a creek or stream;
  5. Where sewer crosses over or under a water main;
  6. Other locations deemed necessary by the City.
- B. Where ductile iron pipe is used, the ductile iron pipe shall extend from manhole to manhole.

### 3.12 Manholes

- A. Location: Provide manholes at all changes in pipe grade, pipe size, alignment, intersections, and at the end of a pipe run.
- B. Spacing
1. Pipe 15-inches and Smaller: 400 feet maximum.
  2. Pipe 18 to 30-Inches: 500 feet maximum, except with approval, 600 feet.
- C. Inverts: a minimum 0.2 feet drop across manhole inverts is required
- D. Inside Drop Connections: Drop connections inside a manhole shall not exceed a height of two pipe diameters plus 12 inches or greater above the outgoing pipe. Construct inside drop connections of the same materials as the upstream sewer and in accordance with the details shown on the Drawings.

- E. Outside Drop Connections: Manholes requiring outside drop connections are shown on the Drawings. Outside drop connections are required for any drop exceeding a height of two pipe diameters plus 12 inches or greater above the outgoing pipe. Construct outside drop connections of the same materials as the upstream sewer and in accordance with the details shown on the Drawings.

### **3.13 Grease Traps**

- A. Grease, oil, flammable liquid, and/or sand traps shall be provided at all vehicle service stations, commercial or industrial food-handling establishments, and at any other commercial or industrial establishment or institution at which such devices are necessary for the proper handling of liquid wastes containing grease, oil, flammable liquids, or sand.
- B. Such grease traps shall be of a type and size approved by the City and shall be located as to be readily and easily accessible for cleaning and inspection.
- C. Such grease traps shall be properly maintained by the sewer service customer. Maintenance shall include periodic removal of the contents of the grease trap with no reintroduction of any portion of the waste into the grease trap or introduction into a City's sewer system. The City may require grease trap maintenance based upon the observation of material build-up in the grease trap.
- D. Food handling establishments with no inside cooking may install an inside/under-the-counter type grease trap. All other establishments where grease traps are required shall install an outside grease trap with a capacity of at least 1,000 gallons.

### **3.14 Sewage Treatment Plants/Pumping Stations**

Sewage treatment plants and pumping stations to be dedicated to the City will be considered on an individual basis. It is the Developer's responsibility to contact the City Utility System early in the planning stage for direction.

### **3.15 Record Drawings**

When completed, Record Drawings shall be submitted for all systems for review and approval in AutoCad DWG format in the Georgia State Plane coordinates and hard copy.

### **3.16 Environmental Impacts**

The Sanitary Sewerage System shall be designed to minimize the impact on the environment. This includes taking into consideration the proximity of impounded water, rivers, streams, wetlands, and the contours of the land, and the construction's impact on soil erosion and sedimentation. Soil erosion and sedimentation control devices shall be designed for a 25-year storm event.

END OF SECTION



---

## SECTION 4

### WASTEWATER PUMPING – DESIGN REQUIREMENTS

#### 4.01 General

- A. Sewage pumping stations shall be Flygt duplex submersible type. Pumping station shall have an all weather access road located between the adjacent public road and the pumping station. The pump station road must meet the requirements of Article 4.05 below.
- B. The method of design and construction shall be in accordance with Standard Specifications for Wastewater System Construction and Article 4.02 below. The system shall be designed with considerations for future expansion and maintenance.

#### 4.02 Pumping System Equipment and Appurtenances

- A. Pumps: FLYGT Duplex system mounted on guide rails.
- B. Emergency Pumping: Each pump station shall be designed with a “Godwin” permanently mounted bypass pump station with water proof acoustical cover and integral check valve on the discharge line. The pump shall be equal in capacity to one of the Flygt pumps located in the wet well. The battery shall be charged with a photovoltaic system. The by-pass pump station shall be equipped with floats separate from the Flygt pump station and shall contain a cell-phone based telemetry system separate from the Raco dialer. The cell phone telemetry system shall be powered from the bypass pump station battery.
- C. Controls: Controls shall meet the requirements of Standard Specifications for Wastewater System Construction.
- D. Air Release/air and Vacuum Valves and Surge Relief Valves: As required at high points in force main. A surge relief valve on the force main just downstream of the valve vault and discharging back to the wet well may be required for high head applications.
- E. Piping: Meet requirements of Standard Specifications for Wastewater System Construction.
- F. Valves: Located outside of wetwell in a vault with cover. Discharge line for each pump shall have a check valve and resilient seat gate valve with hand wheels.

- G. Ancillary components include:
1. Emergency by-pass pump
  2. "Multi- trobe" level sensor
  3. Wired for combustible gas detector
  4. Audible alarm with silencer
  5. Visual alarm
  6. Gauges on discharge piping
  7. Site light
  8. Elapsed time meter, each pump
  9. Washdown water service
  10. Telemetry

#### **4.03 Wetwells and Valve Vaults**

- A. Construction: Precast reinforced concrete in accordance with Standard Specifications for Wastewater System Construction.
- B. Access Cover: Aluminum, lockable access hatch with stainless steel hardware.
- C. Vent: Wetwells require a vent pipe.
- D. High Water Level: High water level within the wetwell shall be a minimum of five feet below the lowest floor slab of all houses, apartments, buildings, businesses, ect. Being served as well as five feet below wetwell top.

#### **4.04 Security Fence**

Provide chain link fence in accordance with Standard Specifications for Wastewater System Construction.

#### **4.05 Pump Station Site**

- A. Provide a driveway, turnaround area and parking facility for maintenance vehicles. The driveway, turnaround and parking areas shall be constructed with Size No. 4 crushed stone with a minimum depth of 6-inches. The turnaround area shall be a minimum of 20 feet deep by 12 feet wide if located outside of the pump station fence. The pump station fenced area may be increased in size from the minimum requirements of Article 4.05 (B) to incorporate the turnaround inside the fenced area upon approval by the County or its designated representative.

---

Wastewater Pumping Design Requirements

- B. The pump station fenced area shall be a minimum 40 feet wide by 50 feet deep. If a surge relief valve is required, the minimum fenced area shall be 40 feet wide by 60 feet deep.
- C. The pump station graded pad area shall extend a minimum 1 foot outside the fenced area. Size No. 4 stone shall be placed over the entire graded pad area, including the area outside the fence.
- D. The pump station easement shall extend a) a minimum of 5 feet outside the pump station fenced area on all sides, or b) a minimum 2 feet from the base of the slope of the graded pump station pad on all sides.

END OF SECTION

---

## SECTION 5

### EPD SUBMITTAL GUIDELINES

#### 5.01 General

As stated in Georgia Department of Natural Resources (DNR), Environmental Protection Division (EPD), Rules and Regulations for Water Quality Control, Chapter 391-3-6, plans and specifications for wastewater system construction must be approved by the Georgia Department of Natural Resources, Environmental Protection Division (EPD) or a delegated authority representative. The Georgia EPD has approved the City of Winder Standard Specifications for Wastewater Systems, Volumes 1 and 2.

The following are guidelines as to the information needed for the submittals to EPD or the delegated authority representative. This appendix should not be considered a complete list of all information required by EPD.

Plans must be sealed and signed by a registered professional engineer (P.E.) who is registered in the State of Georgia and is experienced in designing wastewater transport (and treatment, if applicable) systems.

The Drawings or contract documents should incorporate by reference the *Standard Specifications for Wastewater System Construction* for the City of Winder. If separate specifications are prepared, the cover and/or fly sheet of the specifications shall indicate the project title, as well as the name, address and phone number of the engineering consultant preparing such document.

#### 5.02 Transmittal Letter

A transmittal letter should be prepared by the professional engineer preparing the design for the project. This letter should be addressed to the City of Winder Planning Department and shall specifically address the following items.

- A. State whether odor complaints may be generated by construction of this project. If odor is expected or deemed to be a potential issue, the appropriate odor control solution may be required at the discretion of the Utility Director.
- B. Provide the necessary information for the project for the City to complete the EPD Sanitary Sewer Submittal Form included in this section. This shall include Items 1 B-D, 3 A-F, 4 A-D, and 5 A-B.

- C. Provide a statement indicating whether or not any of the sewers, services or other utilities associated with the project will be constructed on a solid waste landfill site.
- D. Provide a COPY of the Report of Technical Review (ROTR) by EPD.

### **5.03 Drawings**

The Drawings for the project must include the following:

- A. A cover sheet containing the following information:
  - 1. Title of the Project
  - 2. Owner/Developer's name, address, phone number and fax number
  - 3. Engineer's name, address, phone number and fax number
  - 4. Funding source (i.e. private, state or federally funded)
  - 5. Project Location Map (map shall have a north arrow with indicated scale, and shall be legible and detailed enough for someone not familiar with the project to find the project site.)
  - 6. A copy of the FEMA map with the project site outlined or shaded on the map. The actual map must be copied onto the cover, not just the FIRM or panel number.
  - 7. Drawing sheet index
  - 8. The Utility Protection Center "Call Before You Dig" logo and phone number
- B. A legend of symbols used on Drawings (may be included on the cover sheet or on the first sheet of the drawings).
- C. Include a note on each plan sheet stating "Contractor shall call the Utility Protection Center "Call before you dig" 800.282.7411 prior to commencing any excavation work on the project."
- D. Provide a standard detail sheet. These details shall be the same as included in the Standard Specifications for Wastewater System Construction for the City of Winder. The Drawings may incorporate, by reference, the Standard Details of the Standard Specifications for Wastewater System Construction for the City.
- E. Include a plan sheet of the overall development (on one sheet if possible) that shows all gravity sewers, laterals and clean-outs for each lot. This plan should show the street edge of pavement, right-of-way, lot lines, and sewer utilities only. All other utilities and contours should be excluded from this plan sheet.

- F. Provide a plan and profile of the gravity sewers and the force mains. Also provide matchlines on the Drawings when more than one sheet is required to show the plan and/or profile.
- G. On gravity sewers, indicate
1. Plan and profile sheets at a scale no smaller than 1 inch = 100 feet horizontal and 1-inch = 10 feet vertical
  2. the slope of the sewer between manholes on the profile sheets,
  3. the length of pipe segments between manholes on the plan and profile
  4. angles between the manholes on the plan sheets
  5. manhole station number on the plan and profile,
  6. manhole numbers containing alpha-numeric nomenclature with the first character being a letter identifying the sewer line segment followed by a dash and sequential numbers identifying each sequential manhole located within that sewer line segment (i.e.; A-1 is the first manhole in the sewer line segment A and B-2 is the second manhole in sewer line segment B),
  7. angles between manholes on the plan sheets
  8. state plane coordinates of manholes on the plan sheets
  9. the pipe material(s) on the profile,
  10. manhole invert elevations on the profile.
- H. Indicate on the plans whether or not the project is located within a flood zone. When a body of water is located adjacent to the proposed gravity sewer, force main, pump station or treatment facility, indicate the 100-year flood zone elevation and graphically show the flood zone boundary of the stream/river on the plans. For adjacent lakes and reservoirs, indicate the high water/winter pool elevations. If flood elevations are not available, the Developer shall determine the 100-year flood elevation to insure facilities are not in flood prone areas.

#### **5.04 Pump Stations**

When the project includes a pump station, the following pumping system design parameters are required to be submitted to the City by the Developer's engineer for forwarding to EPD:

- Total Dynamic Head (TDH) calculations, in tabular form
- Net Positive Suction Head (NPSH) calculations
- Static Head
- Pump Curves from the proposed acceptable pump manufacturers

- Pump Curves from the backup pumping system
- Specifications from the backup pumping system
- System head curve
- Wetwell volume
- Pump cycle time
- Pump station and force main friction losses
- Wetwell buoyancy calculations
- Force Main diameter and length
- Force main material of construction
- Force main plan and profile (minimum scale 1-inch = 100 feet horizontal and 1-inch = 10 feet vertical)
- Pump Station site plan (at a minimum scale of 1-inch = 20 feet)

### **5.05 City Responsibilities**

The City Utility Director or designated representative will prepare the submittal for EPD, including executing the Sanitary Sewer Extension Submittal with the accompanying certifications identified in Items 8 and 9 of the submittal form.

END OF SECTION