

COMMISSIONERS OF PUBLIC WORKS
OF THE
TOWN OF SUMMERVILLE

GENERAL GUIDELINES
ENGINEERING MANUAL
REV. 9/29/17



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PREFACE

This manual is intended to provide for consistent quality in the design and construction of water and wastewater systems within the Commissioners of Public Works of the Town of Summerville's (Summerville CPW's) service areas. It is important that existing and future customers are provided with adequate systems to meet their needs and that can be maintained and repaired in a cost-effective manner. The guidelines established in this manual, which have been prepared by the Summerville CPW staff, are an attempt to set the basic specifications and procedures that shall be followed in the construction of water and wastewater systems intended to be conveyed to the Summerville CPW for operation, maintenance, ownership and control.

Requests to deviate from the established guidelines shall be considered on an individual basis. It shall be necessary for the design engineer to schedule the necessary meetings with the Summerville CPW staff to present the reason(s) for the requested variance and specifications regarding the alternative method/product.

These guidelines shall be periodically revised or upgraded. Copies of the latest version will be made available to interested parties. It is the responsibility of these parties to utilize the latest version when preparing plans for submittal.

Anyone having comments concerning this publication should feel free to contact the Summerville CPW Engineering Department.

PART 1 - POLICY STATEMENTS

The following are policies that shall be followed in the water and wastewater plan submittal and project conveyance phases.

- All facilities shall be designed by a Professional Engineer, registered in the State of South Carolina. All submittal drawings, specifications and design calculations shall bear the seal and signature of the design engineer. Easement and boundary plats shall be surveyed and prepared by a Professional Land Surveyor, registered in the State of South Carolina.
- The design engineer shall be the representative of the owner/developer throughout the project. All communications regarding the planning and construction of the project shall be between the Summerville CPW and the design engineer.
- Revisions to approved plans are not permissible without the written approval of the Summerville CPW, and possibly the South Carolina Department of Health and Environmental Control. The design engineer is solely responsible for obtaining these approvals.
- Construction of water and wastewater systems to be conveyed to the Summerville CPW shall be performed by contractors licensed in the State of South Carolina. All contractors shall have a current Town or County, as applicable, business license. Contractors not currently on the Summerville CPW approved list may be subject to prevailing inspection fees. As deemed necessary, the design engineer shall submit copies of all licenses and certificates of insurance.
- Design and construction deficiencies shall be addressed to the satisfaction of the Summerville CPW.
- All water flows in the Summerville CPW service area shall be metered and protected against backflow and back siphoning.

- All water and wastewater lines shall be installed in public rights-of-way, unless otherwise directed or approved by the Summerville CPW. Water easements shall be a minimum 7.5' wide on each side of the piping and appurtenances, while wastewater easements shall be a minimum of 10' wide on each side. The widths may vary depending on locations and depths of the systems.
- The Summerville CPW shall not accept responsibility for maintenance of service lines on private property.
- Connections to systems will not be allowed until all the Summerville CPW and South Carolina Department of Health and Environmental Control requirements have been met, including but not limited to the issuance of the operating permit(s) and payment of prevailing fees.
- Any unapproved/un-metered connection to a new system, not yet approved for operation, shall be defined as illegal and may be subject to a \$200 per day penalty plus the cost of the water consumed or discharged. This penalty must be paid in full prior to establishment of the approved connection.
- The Summerville CPW plan review fee shall be assessed on any project requiring a South Carolina Department of Health and Environmental Control construction permit. Said fee shall be as follows per submittal or re-submittal of plans for review:

Any water/sewer line project up to \$100,000.00 - \$250.00
Any water/sewer line project over \$100,000.00 - \$500.00
Any water/sewer line project over \$250,000.00 - \$750.00
- The installation of commercial wastewater services shall be the responsibility of the developer, under the supervision of Summerville CPW personnel.
- A wastewater service cleanout meeting the Summerville CPW criteria shall be installed at the right-of-way or easement line. A licensed plumber working under contract for the individual homebuilder or commercial site developer shall install the cleanout.
- The Summerville CPW reserves the right to inspect all exterior, private wastewater service installations. Said

services shall have 18" minimum cover, or shall be constructed with ductile iron pipe. Each joint shall be properly bedded in accordance with the pipe manufacturers' recommendations.

- The Summerville CPW reserves the right to assess an additional \$250 fee to the owner/developer for each project name change after the initial review. This fee will be due in full prior to final acceptance of the system(s) for ownership, operation, maintenance and control. The purpose of this fee is to minimize name changes and to assist in re-organizing and cross-referencing all project and plan files.
- The owner/developer is solely responsible for installing necessary off-site improvements to accommodate the proposed development.

PART 2 - TERMS AND DEFINITIONS

The following are terms and definitions that will be used in this manual and hereinafter will be referenced by the abbreviation or term given:

AISC - American Institute of Steel Construction

ANSI - American National Standards Institute

ASTM - American Society of Testing and Materials

AWPA - American Wood Preservative Association

AWWA - American Water Works Association

COG - Berkeley Charleston Dorchester Council of Governments

Contractor - An individual, group, partnership, firm or corporation contracted by the owner/developer or the SCPW to install water and wastewater systems to be owned, operated, maintained and controlled by the SCPW.

Design Engineer - An individual, group, partnership, firm or corporation registered in the State of South Carolina to design water and wastewater systems, and who shall be responsible for the design and construction of systems to be conveyed to the SCPW.

DIP - Ductile Iron Pipe

EPA - Environmental Protection Agency

NEC - National Electric Code

OCRM - SCDHEC Office of Ocean and Coastal Resource Management

Owner/Developer - An individual, group, partnership, firm or corporation responsible for procuring a design engineer and contractor to install the water and wastewater systems necessary to provide services to land and/or building improvements.

PE - Polyethylene

PER - Preliminary Engineering Report

PVC - Polyvinylchloride

SCDHEC - South Carolina Department of Health and Environmental Control

SCDOT - South Carolina Department of Transportation

SCPW - The Commissioners of Public Works for the Town of Summerville and its staff

USGS - United States Geological Survey

PART 3 - PROJECT REVIEW PROCEDURES AND REQUIREMENTS

In effort to expedite projects from the preliminary design phase to the conveyance phase, the following five step process has been established.

STEP 1 - Preliminary Review Meeting with Owner/Developer, Design Engineer and the SCPW

The purpose of the meeting is to exchange information. The design engineer is to furnish the SCPW with one copy of a boundary and topographic survey of the tract to be served and the preliminary subdivision layout. If available, one copy of the preliminary water and wastewater design drawings should also be provided. SCPW will provide available as-built information for the existing systems in the vicinity of the development, a list of current fees and fire flow information.

The preliminary plan should be drawn at a scale no smaller than 1" = 100', and should detail the following information:

- Name of the project - please note that name revisions are subject to an additional fee of \$250
- Name and address of the owner/developer and design engineer
- Boundaries of the entire tract to be included in the development
- Proposed phase lines, if applicable - phasing should comprise 25 lots minimum
- Basic topography of the tract
- Tentative street and lot layouts, including street names and lot numbers
- Features of adjoining and surrounding properties that may benefit from the proposed infrastructure additions and/or improvements
- Proposed water and wastewater design locations

After a review of the preliminary submittal drawings and the conclusion that mains/services can be extended by the owner/developer to serve the tract, the SCPW will issue a letter of availability and willingness to provide services to the proposed development.

STEP 2 - Plan and Specification Submittal and Approval

All water and wastewater systems proposed for construction within the SCPW service areas shall be reviewed and approved by the SCPW prior to application for the SCDHEC permits and construction being initiated. This includes, but is not limited to, all connections and extensions to existing SCPW facilities.

The SCPW shall review all documentation required by the SCDHEC prior to submittal for permitting.

All elevations are to be relative to the USGS and Mean Sea Level. North American Vertical Datum 88 shall be used.

2.1 Plan Preparation

All plan sheets shall be of one size. Plans shall not be smaller than 18" x 24" nor larger than 30" x 42". Each plan set shall include the following, applicable items.

Cover sheet showing the name of the project, the name, address and phone numbers of the Owner/Developer and Design Engineer, a project location map and the plan preparation date.

Plan sheet(s) showing the location of all existing and proposed construction, including but not limited to, water and wastewater system layouts, roads, drainage structures, known utility locations, rights-of-way, lot and easement information, fences, stationing and other pertinent information. Plan scales shall be 1" = 10', 1" = 20', 1" = 30', 1" = 40', 1" = 50' or 1" = 60'.

Profile sheet(s) - water and wastewater profiles shall be drawn with stationing corresponding to the plan sheet(s). Profiles shall include existing and proposed facilities, storm drain crossings, water and wastewater separation, stationing, pipe and manhole elevations, existing and proposed ground elevations, ductile iron pipe locations, line sizes, slopes, etc. The inverts and tops of pipes are to be shown. Horizontal scales shall match those of the plan sheet(s). Vertical scales shall be 1" = 2', 1" = 4' or 1" = 5'.

Structural sheet(s) - including foundation plans, floor plans, sections each way through the structure, roof details, door and louver details, stair details, reinforcing details and all other details pertinent to proper construction of water and wastewater systems.

Equipment and piping sheet(s) - including location details for all equipment and exact piping details showing all piping features pertinent to proper construction of water and wastewater systems.

Electrical sheet(s) - showing locations of all electrical and control units and schematic wiring diagrams showing circuits, wire sizes, lights and electronic schematics as they apply, and other features pertinent to the proper construction of the water and wastewater systems.

Standard detail sheet(s) - SCPW standard details are to be used and may be provided electronically.

2.2 Specification Preparation

Submittal of specifications is not necessary, unless deviations from the current SCPW standard specifications have been approved in writing. All plans and associated documents shall clearly state that all water and wastewater construction must meet or exceed the SCPW standard specifications.

Specifications shall be prepared in ample detail to describe all items of labor, materials, equipment and construction.

2.3 Design Calculations

See the "Design Criteria" portion of the applicable water and/or wastewater portions of this manual for specific requirements.

Residential water systems shall be designed using the maximum instantaneous flow rates found in Ameen's Community Water Systems, fifth edition plus a minimum 1000 gallon per minute fire demand. Unless the entire development is to be constructed in one phase, the design calculations should only take into consideration one feed. Hydraulic software calculations, such as Infowater, WaterCad or WaterGEMS, are preferred.

Wastewater calculations are necessary to determine the projected flow rates as well as pipe capacities.

2.4 Complete Submittal Package

A complete water and wastewater combined package, ready for submittal to SCDHEC for permitting, shall include the following:

- Three (3) copies of the combined water and wastewater plans
- Two (2) copies of water and wastewater design calculations
- Two (2) copies of an 8.5" x 11" USGS quadrangle map showing the site location
- One (1) original SCDHEC application for permit to construct and two (2) copies
- Two (2) copies of the OCRM water and wastewater certifications
- Two (2) copies of the COG wastewater certification
- One (1) copy of each of the water and wastewater plans with the systems highlighted for clarity
- One (1) copy of applicable easement documents
- SCDHEC water and wastewater application fee checks, if applicable
- A check in the appropriate amount made payable to the SCPW for the plan review fee (additional fees may be required if multiple reviews were conducted by the SCPW staff)

A complete wastewater package, ready for submittal to SCDHEC for permitting, shall include the following:

- Three (3) copies of the wastewater plans
- Two (2) copies of wastewater design calculations
- Two (2) copies of an 8.5" x 11" USGS quadrangle map showing the site location
- One (1) original SCDHEC application for permit to construct and two (2) copies
- Two (2) copies of the OCRM wastewater certification

- Two (2) copies of the COG wastewater certification
- One (1) copy of the wastewater plan sheet highlighted for clarity
- One (1) copy of applicable easement documents
- A SCDHEC wastewater application fee check, if applicable
- A check in the appropriate amount made payable to the SCPW for the plan review fee (additional fees may be required if multiple reviews were conducted by the SCPW staff)

A complete water package, ready for submittal to SCDHEC for permitting, shall include the following:

- Three (3) copies of the water plans
- Two (2) copies of water design calculations
- Two (2) copies of an 8.5" x 11" USGS quadrangle map showing the site location
- One (1) original SCDHEC application for permit to construct and two (2) copies
- Two (2) copies of the OCRM water certification
- One (1) copy of the water plan sheet highlighted for clarity
- One (1) copy of applicable easement documents
- A SCDHEC water application fee check, if applicable
- A check in the appropriate amount made payable to SCPW for the plan review fee (additional fees may be required if multiple reviews were conducted by the SCPW staff)

2.5 Approval

Upon satisfactory review of a complete submittal packet, SCPW will write its approval letter, which also serves as the operation and maintenance letter for the SCDHEC application packet. A cover letter will also be written to accompany the necessary documents to SCDHEC for permitting.

The SCPW will apply for necessary SCDOT water and wastewater encroachment permits. The design engineer may be requested to provide necessary electronic drawings and information, and revise plans as necessary to satisfy SCDOT requirements.

STEP 3 - Construction Process

Upon receipt of the SCDHEC construction permit(s), the design engineer shall immediately provide the SCPW with a copy of each permit, along with a letter stating the name of the contractor and the estimated construction start date. No construction shall take place until a preconstruction meeting is held with the Contractor, Design Engineer, and SCPW representatives. Construction of the water system shall not be initiated until the site has been cut/filled to within 0.50' of the final grade. A letter from the Design Engineer stating this condition has been met should be obtained by the Contractor prior to construction.

The contractor installing the system(s) must be approved in advance by SCPW. At its sole discretion, the SCPW may place a full-time inspector on site for the duration of the project and assess the owner/developer a fee of \$30 for each inspection hour. The inspection fee must be paid in full prior to the SCPW's acceptance of the system(s) for ownership, operation, maintenance and control, and before any individual taps are sold. **Daily inspections do not eliminate the need for a final, comprehensive inspection of the work.**

As necessary, the SCPW reserves the right to require a meeting with the contractor to coordinate the construction activities and review the plans and specifications at any time during the construction process.

Any proposed connection to the SCPW's existing system(s) must be scheduled with the SCPW Engineering Department a minimum of 48 hours prior to making the connection. No connections shall be

made without the direct supervision and/or participation of the SCPW personnel.

After construction is initiated, all communications concerning the project (i.e. work performance, necessary revisions and/or technical matters) shall be between the Design Engineer and the SCPW.

During the construction process, any work found not in conformance with the approved plans and specifications shall be immediately removed and replaced to the satisfaction of the SCPW. Until such items are corrected, further work may be halted.

Similarly, should the contractor fail to maintain satisfactory relations with SCPW personnel, or fail to perform as expected, the work may be halted.

STEP 4- Final Approval and Conveyance

Upon completion of the water and wastewater systems associated with the project, the design engineer shall inspect the project for design compliance and furnish the following, as applicable, prior to requesting a final inspection from the SCPW. **NO FINAL INSPECTIONS WILL BE CONDUCTED UNTIL THE SCPW HAS RECEIVED AND APPROVED ALL OF THE FOLLOWING:**

- An affidavit signed by the Owner/Developer and the design engineer stating that the work and materials to be conveyed are in strict accordance with the approved plans and specifications. The letter must indicate the project name, the specific lot numbers being approved and the SCDHEC construction permit number(s).
- Two (2) copies of the "as-built" drawings, including one Autocad drawing file on disk/CD/DVD and one Adobe Acrobat .pdf file - water and wastewater drawings are to be prepared separately, and shall contain the following information at a minimum:
 - Field measured improvements, both horizontal and vertical, drawn to the same scale as the original, approved construction drawings
 - Station marks at all service connections, fittings and bends in the mains (stationing shall be relative to the centerline of the main)

- Distances from the mains to the end of service lines
- A summary of the number of valves, hydrants, manholes and the type, diameters and lengths of pipe(s) and casing installed
- All easement and right-of-way information
- Road names
- Lot lines and numbers
- The project title with "As-Built", "As-Constructed" or "Record Drawing" in large, bold print
- The design engineer's certification, seal and signature - the certification shall read, "I certify that the information shown hereon represents field measurements, made under my supervision. I further certify that all information depicted is a correct representation of actual field conditions, and that all horizontal dimensions, vertical dimensions and grade lines shown are true representations of existing conditions."
- The SCDHEC construction permit number(s)
- The vertical datum used on the survey.

The SCPW reserves the right to verify the accuracy of the "As Constructed" drawings prior to issuing its letter of acceptance. If errors are found, the drawing will be returned to the Design Engineer and the acceptance letter will not be written until the items are addressed

- A project cost and description letter. This is a letter from the design engineer stating the exact dollar value of the water system construction, wastewater collection system construction, pump station construction, water system engineering, wastewater collection system engineering and pump station engineering, separately. It shall also state the number of manholes, length of service lines in linear feet, length of distribution, collection and force mains in linear feet, number of service connections, and the number of valves, hydrants and manholes installed.

- A future construction cost letter. This is a notarized letter from the owner/developer guaranteeing payment for the installation of items shown on the "As-Constructed" drawings that were not installed, and/or for items that must be relocated to accommodate changes or other improvements by the developer or builders (such as services having to be relocated because of driveway or other utility construction).
- A maintenance agreement.
- A mechanics lien waver (Engineer) and Contractor's affidavit and final waiver of lien.
- A water and/or sewer bill of sale and water and/or sewer easement document, including a final subdivision plat or easement plat showing the public rights-of-ways and permanent easement locations. The final plat shall bear the recording information.
- Copies of the contractor's water sample results.
- Three (3) copies of the operation and maintenance manual for pump stations, contained in suitable three ring binders. The manuals shall include pertinent identification detail on the covers, table of contents, tabulated sections, system descriptions and operations, start up/shut down procedures, maintenance checklists, emergency response information, etc., as necessary to explain the operation of the entire system.
- One (1) complete spare pump and drive unit for each size pump included in any pump station design. At its sole discretion, SCPW may allow a collection of replacement parts in lieu of the complete spare pump. A check to cover the cost of these items may also be permissible.

STEP 5 - Final Acceptance

Upon satisfactory completion of Steps 1-4 detailed above, the SCPW will issue its acceptance letter and field investigation report(s) to the SCDHEC and the design engineer. It is the design engineer's responsibility to supply the SCDHEC with any other information necessary to obtain operating approval. **NO** connections to the water and wastewater systems will be permitted prior to the issuance of the SCDHEC operating permit(s). Upon receipt of the SCDHEC operating permit(s) and payment of all prevailing fees, connections to the systems will be allowed. Connections shall be made by the SCPW personnel, or approved contractors working under the direct supervision or in participation with the SCPW. **Violators may be subject to a \$200 per day fine.**