

# 1. General

## 1.1 Definitions

- A. APPLICANT: The person or entity seeking approval of the Department of Utilities for a Project affecting the public water and/or sewer system of the County. The applicant can be the Contractor, the Owner, or another third party connected to the Project.
- B. APPROVED PLANS: The final set of plans approved by all appropriate regulatory agencies.
- C. CONSTRUCTION DOCUMENTS: The Approved Plans, specifications, permits, shop drawings, or references required for the completion of the work and material submittals.
- D. CONTRACTOR: The person or entity under contract with the Applicant or Owner to perform the water or sewer facilities work or service as set forth in the Approved Plans.
- E. COUNTY: The County of Spotsylvania. As the context requires, "County" may refer to the locality, the local government departments and agencies, of specific personnel acting within the scope of their employment with the County, such as the Director of Utilities, Designee, employees, and Inspectors.
- F. DEPARTMENT: County Department of Utilities.
- G. DEQ: The Virginia Department of Environmental Quality.
- H. DIRECTOR: The Director of the Spotsylvania County Department of Utilities or the employee or employees of the Spotsylvania County Department of Utilities to whom is given express, written authority by the Director of Utilities to exercise discretion or authority consistent with the terms of this DSM.
- I. EASEMENT, PERMANENT, PUBLIC: An area of land through which the owner has granted the County or the Commonwealth the perpetual right to install, maintain, or replace public facilities; typically to limit the activities of others, as recorded on a deed of easement and shown on a plat. The granting owner retains ownership of the property subject to the terms and conditions of the easement. Easements are classified into two of the following broad categories:
  - a. Off-site Easement - where the likelihood of human activity is considered to be minimal, and
  - b. Maintained Easement - where human activity is common such as residential lot.
- J. ENGINEER: The Professional Engineer, or engineering firm who has been designated by the Applicant as Engineer in relation to the Project, whether acting directly or through properly authorized agents, inspectors or representatives.

- K. FINAL ACCEPTANCE/LETTER OF FINAL ACCEPTANCE: a written document from the County to the Applicant acknowledging the completion of the Final Inspection and the acceptance of the Project. The Letter of Final Acceptance shall specify the date upon which the Warranty Period begins.
- L. FINAL INSPECTION: The County Inspector's last inspection of the Project to confirm that all construction, clean up, restoration, and remediation, if any, have been completed in accordance with the County's specifications, the requirements of the approved plans, and to the satisfaction of the Inspector.
- M. FIRST ACCEPTANCE LETTER: A written document from the County to the Applicant that sets forth the County's acceptance of the newly constructed water and sanitary sewer service facilities into the public utilities system. Water meters will not be set within any subdivision or development until the water and sewer facilities have been accepted in accordance with the design standards.
- N. INSPECTOR: The County employee or third party disclosed agent authorized by the Director to inspect all materials, equipment and construction of the Project.
- O. MASTER UTILITY PLAN: Drawings and associated documents describing the utility system proposed by the Applicant in support of a subdivision plan, site plan or multiple site plans. The master utility plan includes, but is not limited to, plan views, hydraulic profiles, hydraulic calculations, elevations and definitions of easements, all to the level of detail required for a Site Plan.
- P. OWNER: The person or entity reflected in the land records of the County as the owner of the real property upon which work is to be performed.
- Q. PRIVATE WATER AND SEWER SYSTEMS: Water and sewer systems that are not under the purview of the County's Utility/Public Works Department.
- R. POTW: Term used for a water or sewage treatment plant that is owned, and usually, operated by a government agency.
- S. PROJECT: The construction, installation, or modification of water or sanitary sewer facilities as depicted on the Approved Plans.
- T. RIGHT-OF-WAY, PUBLIC: An area of land dedicated to the County or the Commonwealth for provision of public facilities, as shown on a recorded plat. The County or Commonwealth becomes the effective owner of the property, and retains all rights and responsibilities associated with ownership.
- U. SITE PLAN: Drawings and associated documents describing a specific water and sewer infrastructure Project.
- V. Water/Sewer Master Plan: The approved Spotsylvania County Water/Sewer Master Plan in force and effect as of the date of approval of Approved Plans.

- W. SUBCONTRACTOR: A person or entity under contract with the Contractor to perform part or all of the Contractor's water or sewer facilities work or service as set forth in the Approved Plans.
- X. SUBDIVISION PLAN: Drawings and associated documents describing the dividing or re-dividing of a parcel of land in accordance with the requirements of Chapter 20 of the Spotsylvania County Code.
- Y. VDH: The Virginia Department of Health
- Z. VDOT: The Virginia Department of Transportation
- AA. WARRANTY PERIOD: A one-year guarantee of equipment, materials, and labor by the Applicant that begins on the date set forth in the Letter of First Acceptance.

## 1.2 Intent

This Design and Construction Standards Manual ("DSM") has been prepared to establish the standards and technical requirements for water and sanitary sewer infrastructure in Spotsylvania County, Virginia. The Director may approve a variation to these standards as set forth in this paragraph. Any variation to the Approved Plan shall not be considered unless and until the Director provides express written authorization of the variation. An approved variation from these standards shall be highlighted and shown on the Approved Plans. Designs, including all variations, shall be in accordance with the latest edition of the Virginia Waterworks Regulations, Sewage Collection and Treatment Regulations (SCAT), and any other local, State, or Federal agencies having jurisdiction, including the requirements of the Code of Spotsylvania County, as they pertain to water and sanitary sewerage systems. Where conflicts exist among the regulations, the more stringent requirements, as solely determined by the Department, shall apply. Nothing herein shall be deemed to waive requirements of any existing law, regulation, ordinance, or standard.

All Site Plans submitted after the effective date (October 23, 2018) of the DSM shall conform to the standards set forth in this manual.

## 1.3 Spotsylvania County Water/Sewer Master Plan

The Water/Sewer Master Plan identifies regional sanitary sewerage and water pumping stations. Public pumping stations not previously identified in the Water/Sewer Master Plan are strongly discouraged and will only be considered for construction when service cannot be otherwise reasonably provided, as determined by the Director.

Low Pressure sanitary sewerage systems are only considered on a case-by-case basis for the rehabilitation of existing public or private sewer and septic systems.

Vacuum sanitary sewerage systems are prohibited.

## 1.4 Submittals Overview

Prior to the approval of any portion of a subdivision or site plan, the Applicant shall submit a complete Master Utility Plan for review and approval by the Director. At least one set of construction drawings must accompany the Master Utility Plan for review. For complex Projects and Projects which may require special considerations, the Applicant should meet with the Director to discuss the approach to be taken to supply water and sanitary sewer service. All water and sanitary sewer systems must be located and sized properly to serve the entire service areas as determined by the Water/Sewer Master Plan.

VDH has delegated to the County the authority to review water mains up to 16" in diameter. All Project plans containing water mains larger than sixteen-inch (16") in diameter, water pumping stations, or water storage tanks exceed the County's authority to approve and must be submitted to VDH for review and approval. The plans shall be submitted to VDH after the County reviews and approves all plans and plan components within its authority. VDH's approval does not authorize work to commence on the Project.

DEQ has delegated to the County the authority to review gravity sewer mains, force mains and wastewater pumping stations. All Project plans containing gravity sewer projects with average day design flows over 40,000 gpd; pump stations/force mains to gravity sewers with average day design flows >2,000 gpd; and pump stations/force mains to pressurized systems must apply through the Department of Environmental Quality (DEQ) for a Certificate to Construct (CTC) under 9 VAC 25-790-50 and 60 of the Sewage Collection and Treatment Regulations. The applicant must apply for a CTC prior to plan approval.

9 VAC 25-790-50 and 60 of the Sewage Collection and Treatment Regulations also requires that a state of completion, signed by a licensed professional engineer who has inspected the construction, be submitted to DEQ when an applicant applies for a CTC. DEQ requires the submission of a Certificate to Operate (CTO) that will serve as the statement of completion. The applicant must apply for a CTO prior to first acceptance. Verification of the application of the CTO must be submitted to the County.

The Engineer of record shall provide to the County timely and complete copies of all submissions to the regulating agencies. VDH and DEQ final approvals must be obtained before the Planning Department can issue the final approval of a Site Plan.

Several local departments and state and federal agencies exercise jurisdiction over development. The Applicant is responsible for determining the requirements of and restrictions imposed by all regulators, and for addressing each issue to the satisfaction of the regulator. These regulators may include but are not limited to:

- A. State Agencies: VDH, DEQ, VDOT, Department of Conservation and Natural Resources
- B. Federal Agencies: US Army Corps of Engineers (USCOE), US Environmental Protection Agency (EPA)
- C. County Departments: Utilities, Planning, Fire, Rescue and Emergency Services, Zoning, and Code Compliance.

In addition, multiple utility owners provide various services within Spotsylvania County. The Applicant is responsible for determining the requirements of and restrictions imposed by all interested utilities, and for addressing each issue to the satisfaction of the utility. These utilities may include but are not limited to: Electric, Phone, Cable and Natural Gas.

#### 1.4.1 Plan Review and Permitting for Water and Sewer Lines in VDOT Maintained Right-of-Way

For new Projects involving water or sanitary sewers that are designed to run under pavement on subdivision roads to be incorporated into the VDOT secondary system, VDOT's District Office must review and approve the relevant site plans to determine compliance with VDOT's standards and specifications. A VDOT Land Use permit will be required for all work within the right-of-way to be maintained by VDOT. VDOT approval does not authorize work to commence on the Project.

### 1.5 Service to Surrounding Areas

The Applicant shall design and construct water and sewer facilities, properly sized and at appropriate locations, to permit future extensions to be made at or beyond the limits of the Applicant's construction. The sewer system must be sized and designed to allow gravity service to all of the area naturally draining toward the system. Water systems must be sized and designed for future extensions. Utility easements must be provided to allow adjoining properties to connect to the water and sewer systems. Incremental improvements related solely to service for future extensions will be considered incidental to the proposed construction and shall be constructed solely at the Applicant's expense unless either:

- A. Nominal pipe diameter is increased by more than nominal sizes (nominal sizes are 6", 8", 12", 16", 24", 30", 36", 42", 48", 54", 60") from either pipe designed solely for the Applicant's need or pipe designed to County minimum diameter, whichever is greater. In this case, the Applicant must pay the costs of up to two nominal size increases, and the County may provide reimbursement for reasonable additional incremental costs above the two nominal size increases.
- B. Average sewer pipe depth is increased by more than two (2) feet for more than 10% of the total pipe length, not including laterals, involved in the Project. In this case, the Applicant must pay costs for increases of depth not exceeding two (2) feet, and the County may provide reimbursement for reasonable costs created by increases of depth exceeding two feet.
- C. Where proposed facilities indicated on the Water/Sewer Master Plan are deemed necessary or advisable by the Director to provide service for a combination of the proposed development and future extensions, the location and details of, and financial responsibility for, such construction shall be determined by the Director and the Applicant and memorialized in a writing signed by both parties. Each proposed item of construction

may be a separate matter for discussion and agreement. All constructed utility facilities shall become the property of the County after successful testing and acceptance by the County.

## 1.6 Off-Site Facilities

In the event that the Director deems that offsite improvements of water or sewer facilities are necessary or advisable to provide service to the Applicant, the location and details of, and financial responsibility for, such construction shall be determined in conference by the Director, and the Applicant, subject to approval by the Board of Supervisors. The approved written agreement shall be signed by both parties. Each such proposed item of off-site construction may be a separate matter for discussion and agreement.

## 1.7 Easements

The Applicant shall obtain permanent easements for all water and sewer utilities that will become the property of the County and do not lie wholly within a public right-of-way. The easements shall be shown on the construction drawings and labeled as to the classification, type, and dimensions. The Department shall determine the proper classification during the plan review. The easements shall be dedicated to the County.

The utility easements shall be centered on the utility and shall be a minimum of twenty (20) feet wide for utilities where the depth to the invert is less than fifteen (15) feet and a minimum of thirty (30) feet wide in all other cases. Combined water and sewer easements shall be a minimum of thirty-five (35) feet wide. Increased easement widths may be required at the discretion of the Director.

Access (ingress/egress) easements may be required at the discretion of the Director where needed to properly maintain utilities. The access easements will be a minimum of twenty (20) feet wide.

Fences, buildings trees, shrubs, landscaping, or other obstructions inconsistent with the purpose and use of the easement (such as potentially damaging public facilities or rendering the easement inaccessible to equipment) are prohibited. Any object placed on a utility easement that the County, in its sole discretion, considers to be an obstruction, may be removed and disposed of by the Department at the sole risk and expense of the property owner.

## 1.8 Contacting Property Owner

Prior to performing any survey and design work on private property, the applicant shall notify the affected landowners and obtain the landowners' permission for all work. The notification shall be made in the form of a letter to be sent to the property owners. Copies of these letters shall be provided to the Department if requested.

## 1.9 Access and Inspection

During the progress of the work, the Applicant shall provide all duly authorized representatives of the County, which includes Inspectors, access to the locations of construction for the purposes of establishing to their satisfaction that the Projects are being constructed to County requirements and in accordance with Approved Plans or other specifications.

Any construction or installation of public utilities performed on a major holiday, as “major holiday” is defined in the County Human Resource Policy, on a weekend, or on any day before 7:00 a.m. or after 5:00 p.m. (“Off Hours”) shall require two (2) days advance written notice and approval by the Department.

## 1.10 Contractor Requirements

Only those contractors holding a valid license pursuant to Virginia Code Section 54.1-1100, et seq., for the value of the scope of work shall perform utility work. The contractors shall have a heavy highway endorsement.

In addition to the requirements for Approved Plans and a preconstruction meeting, no utility work may begin until the Department of Code Compliance has issued the proper land disturbance permits. All plan review and inspection fees must be paid and a performance bond or surety, in compliance with Virginia law, shall be posted before a permit will be issued.

A permit must be obtained from VDOT for all work performed in the VDOT right-of-way.

After the Department receives notification that the Applicant has Approved Plans and a land disturbance permit, the Applicant may apply for a water and sewer construction permit from the Department. The Applicant shall obtain the current permit application form from the Department and return the completed application form to the Department a minimum of five (5) working days before the Applicant seeks to begin construction pursuant to the permit. The Department shall schedule a pre-construction meeting with the Applicant and retain the form until the Applicant meets all pre-construction requirements. No construction of any kind involving water or sewer facilities shall be performed until the Applicant has received a water and sewer construction permit.

In addition to the Department water and sewer permit, the Applicant is responsible for obtaining all other required permits and certifications from all other regulatory agencies, such as County Code Compliance and Zoning Departments, VDOT, VDH, DEQ, and the Army Corps of Engineers, before construction can be started. All permits and Approved Plans shall be available at all times at the construction site for review by the County upon request.

The Applicant shall obtain all required licenses and permits, pay all charges and expenses connected with the work, and will be held responsible for all damages to persons or property, which may occur in connection with the Contractor’s work.

## 1.11 Utility Department Water and Sanitary Sewer System Acceptance Requirements

### A. First Acceptance

Upon completion of the construction of water and sanitary infrastructure for commercial or residential developments, the Applicant must submit a request for acceptance of the infrastructure by the Department. Requirements for first acceptance of newly constructed infrastructure are:

- a. Request for First Acceptance form – See [Appendix F](#) and [G](#)
- b. Water Samples – Two water samples taken by the County at least sixteen (16) hours apart that report negative for E. Coli and Total Coliform. See [Section 3.4.3.3](#)
- c. As-built drawings – See [Section 1.12](#)
- d. Recorded Easements – Land Record Numbers for all Public Utility Easements must be shown on as-built plans. See [Section 1.12](#)
- e. Cost estimate – breakdown of costs for public water and sewer installed on request form. See [Appendix F](#) and [G](#)
- f. Sanitary Sewer Video Inspection – All sewer mains accepted by the Department require via a CCTV video inspection by the County. See [Section 3.3.3.3](#)
- g. Copy of the DEQ certificate to operate (CTO) if required.
- h. Copy of VDH approvals as required.
- i. If not provided previously, copies of all third party testing required for the Project for water or sewer facilities.
- j. All matters relative to specific contracts between the Applicant and the County are in order.

Water meters will not be set and customer accounts will not be initiated until a first acceptance letter has been issued. Infrastructure bonds for water and sanitary sewer items can be reduced to a ten percent (10%) maintenance bond after the first acceptance letter has been issued. A bond reduction request must be submitted to the Planning Department to initiate this process.

### B. Final Acceptance

Final inspection of the constructed water and sewer infrastructure shall occur when final paving is complete. An inspector shall verify that all public utility infrastructure is operational, accessible, and conforms to all County, Department, and any appropriate regulatory agency requirements. The Applicant shall submit a request for final acceptance

of the infrastructure by the Department. The Department's final acceptance occurs only upon its issuance of a Final Acceptance Letter. Requirements for Department final acceptance are:

- a. Request for Final Acceptance form – See [Appendix H](#)
- b. Inspection and approval by County that all infrastructure constructed is to County standards.
- c. If not previously submitted, copies of all required inspections and test results submitted to and approved by the County.
- d. Record drawings and digital files submitted to and approved by the County.

The Department's issuance of a final acceptance letter constitutes its acceptance of the installed utilities. The remaining 10% of the water and sanitary sewer infrastructure bond can be released upon the issuance of the Final Acceptance Letter. A bond reduction request must be submitted to the Planning Department to initiate this process.

Issuance of the final acceptance letter is explicit written understanding between the Applicant and the Department that the Applicant shall be responsible for and obligated to correct any deficiencies in construction for a period of one year from the date of final acceptance by the Department. An inspection shall be made within 12 months of Final Acceptance and any deficiencies will be provided in writing to the Owner.

## 1.12 Record Drawings

The Applicant shall submit a complete set of as-built record drawings upon completion of the Project. These record drawings shall be sealed by the Engineer or Surveyor, shall include changes made to locations of buried and exposed piping (existing as well as proposed), equipment changes, substitutions, and all variations from the Approved Plans and documents. The County shall not issue first acceptance until it has received and approved all such documents and digital files.

The Contractor shall keep daily as-built plans at the construction site. These daily as-built plans shall include size and the horizontal and vertical location of all existing utilities uncovered during the course of the work. This shall include telephone cables and conduits, TV and fiber-optic cables, electrical cables and conduits, gas lines, water lines, sewer force mains, sanitary sewers, and storm sewers within all water and sewer easements or public easements.

The contractor's as-built plans shall be available to the Inspector at all times during the life of the Project and shall be provided to the responsible Engineer for preparation of the record drawings at the completion of the Project.

Final record drawings shall be created using field survey information and sealed by the responsible Engineer or Surveyor. At the completion of the Project the Applicant shall give the County an electronic PDF file of the as-built drawings, a .DWG file and an accompanying projection world file. Projection world files contain the projection parameters given for an AutoCAD dataset. The format of these files should be [Projects name].dwg and [Project name].wld respectively.

Record drawing information shall include, but not be limited to:

A. General items:

- a. As-built certification statement by Engineer or Surveyor on EACH sheet of the as-built drawing set.

B. Water Line Construction:

- a. Scale location and elevation of the installed waterline and all valves, bends, reducers, plugs and caps, restrained joints, encasements, and any other fittings or special construction.
- b. Material, class, specification and sizes of all pipes.
- c. Location, elevation, and size of all water main taps made, including plugs and corporation stops used for testing.
- d. Sub-foot GPS coordinates shall be provided in three locations on each as-built sheet.
- e. Sub-foot GPS coordinates shall be provided to all valves, hydrants, meter barrels, air relief valves, and vaults. This can be in the form of a table on the corresponding sheet.
- f. Land Record numbers and limits of easements for all public utility easements on the sheet.

C. Sewer Line Construction:

- a. Scale location and elevations of manhole inverts as determined by field survey following construction.
- b. Scale indication of lengths, grades, direction of lines between manholes and numerical notations of the lengths and grades as determined following construction.
- c. Location of all encasements or special construction.
- d. Scale location of all service laterals by measurement from the manhole immediately downstream.
- e. Scale Location of all lateral stubs or cleanouts as determined by field survey following construction. Distance from the sewer main shall be noted.
- f. Material, class, specification and sizes of all pipes.
- g. Sub-foot GPS coordinates shall be provided in three locations on each as-built sheet.

- h. Sub-foot GPS coordinates for all valves, sewer lateral markers, sewer cleanouts, air-relief valves, vaults and manholes. This can be in the form of a table on the corresponding sheet.
  - i. Land Record numbers and limits of easements for all public utility easements on the sheet.
- D. Pumping stations and other structures:
- g. As-built plans and specifications shall accurately indicate all approved deviations from or changes in locations, type of equipment installed and material used.
  - h. Accurate listings of the names of the manufacturers of all operating equipment installed, together with model or style numbers, ratings, capacities and other pertinent information, shall be provided as part of the record plans on the Project, to include shop drawings.
  - i. At least two (2) complete sets of operation and maintenance manuals for all operating equipment and all certificates of inspections, warranties, and guarantees of equipment, materials and installation thereof, required by the Project specifications which are approved by the Director, shall be provided as part of the record drawings for the Project.

### 1.13 Water and Sewer Lines in VDOT Roadways – New Construction

Parallel installations of water and sanitary sewer lines may be permitted in the roadway pavement section subject to review and approval by VDOT. All Projects shall be new subdivision roads to be constructed in accordance with the VDOT Road Design Manual Appendix B(1) and will be considered on a case by case basis. The Applicant must submit a written request to VDOT stating the justification and reasoning for approval of parallel installation of water and sanitary sewer lines to be located in the roadway pavement section.

Specific zoning designations where water and sewer lines may be located in the roadway are: Mixed Use (MU), Planned Development Housing (PDH), Planned Development Commercial (PDC), Residential-1 Cluster (R-1C), Residential-2 Cluster (R-2C), Residential-8 (R-8), Residential-12 (R-12), Residential Manufactured Home Park (R-MHP), Village Commercial (VC), and Village Residential (VR) or any development planned with lots less than 10,000 square feet in area.

The parallel installation of water and sanitary sewer utilities under the pavement in rights-of-way to be maintained by VDOT shall be in accordance with chapter three, Geotechnical Engineering, of the VDOT Materials Division Manual of Instruction, VDOT Road Design Manual Appendix B(1), The VDOT Land Development Inspection Documentation Best Practices Manual, this DSM, and all applicable VDOT standards, specifications, and regulations, whichever specification is most stringent and most pertinent to the method of construction.

The following sections of this Manual detail requirements that shall be met for VDOT approval:

[Sec. 2.2.1](#) Water Main Location

[Sec. 2.3.1](#) Sanitary Sewer Location

[Sec. 3.2.3.6](#) Backfill for Trenches

[Sec. 3.2.3.8.1](#) Compaction and Inspection for Public Utilities under Pavement in VDOT  
maintained right-of way – New Construction

[Sec. 3.2.3.9](#) Construction in Public Street, Roads, and Alleys

[Sec. 3.3.3.3](#) Video Inspection of Sanitary Sewer Lines