



*DELAWARE HEALTH  
AND SOCIAL SERVICES*  
Division of Public Health  
Office of Drinking Water

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# **CONSTRUCTION PLANS AND SPECIFICATIONS**

## **SUBMITTAL AND REVIEW GUIDELINES**

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*Prepared by:*

**Division of Public Health  
Office of Drinking Water  
43 South DuPont Highway  
Dover, DE 19901  
Phone: (302) 741-8630**

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# Construction Plans and Specifications Submittal and Review Guidelines

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## Introduction

The purpose of this document is to provide guidance to water system owners, consultants, engineers, and contractors on the construction practices that the Office of Drinking Water (ODW) expects when submitting plans. The Office of Engineering (OE) will conduct plan reviews on behalf of ODW.

## Requirements

- In accordance with Section 1.11.1 of *State of Delaware Regulations Governing Public Drinking Water Systems*: No person shall construct a new Public Water System (PWS) or alter an existing PWS without a Certificate of Approval for Construction.
- In accordance with Section 2.0 of *State of Delaware Regulations Governing Public Drinking Water Systems*: Public Water System (PWS) is a water supply system for the provision to the public of water for human consumption through pipes or other constructed conveyances either directly from the user's free flowing outlet or indirectly by the water being used to manufacture ice, foods, and beverages or that supplies water for potable or domestic purposes for consumption in more than three dwelling units or furnishes water for potable or domestic purposes to employees, tenants, members, guests or the public at large in commercial offices, industrial areas, multiple dwellings or semi-public buildings including, but without limitation, rooming and boarding houses, motels, tourist cabins, mobile home parks, restaurants, hospitals and other institutions, or offers any water for sale for potable domestic purposes. Public water systems are classified as follows:
  - Community Water System is a public water system that serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.
  - Non-Transient Non-Community Water System is a public water system that is not a community water system and that regularly serves at least twenty-five (25) of the same persons over six (6) months of the year.
  - Transient Non-Community Water System is a public water system that has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year.
  - Miscellaneous Public Water System is a public water system that is not community, non-community, or non-transient non-community.
- Plans are needed for the following:
  - Any extension of water main;
  - New system;
  - Non-transient non-community serving more than 100 people;
  - Water main upgrade;

- New and/or upgrade of treatment;
  - New and/or upgrade of total storage capacity greater than 5,000 gallons.
- Plans that need minimal drawing with schematic flow diagram:
- Small installations – systems serving less than 15 connections at build out;
  - Interconnections;
  - Chemical feed pumps;
  - Non-transient, non-community system serving greater than 25 but less than 100 people;
  - New well.
- Plans are not needed but OE notification is required for the following:
- Treatment replacement in kind;
  - Tank maintenance;
  - Emergency repair;
  - Adding security;
  - New and/or upgrade of pressure tanks with total storage capacity of less than 5,000 gallons.
- All chemicals, materials, mechanical devices, and coatings in contact with potable water shall comply with the National Sanitation Foundation/American National Standards Institute (NSF/ANSI) Standards 60 and 61 and be labeled as such.

## **Plans and Specifications Submittal**

- In accordance with Section 1.11.1.1 of *State of Delaware Regulations Governing Public Drinking Water Systems*: Systems shall submit two (2) copies of plans and specifications. Plans shall be developed utilizing the latest edition of *Recommended Standards for Water Works (Ten States Standards)*, *American Water Works Association (AWWA) Standards*, or an approved equivalent and shall be suitable for reproduction on paper no larger than 30" x 42".

***Plans shall include:***

- General layout:
  - Title, scale, north point, and datum used;
  - Names of municipality, utility, or other entity or person responsible for the water supply, and boundaries of municipality, area, or institution to be served;
  - Date, name, and address of the design engineer;
  - Location and size of existing water mains, sewer, and storm pipes.
  
- Detailed plans:
  - Stream crossings, providing profiles with elevations of the streambed and the normal and extreme high and low water levels.
  - Profiles must include size, length, and identity of sanitary sewer, storm sewer, and water pipes existing and proposed and clearly labeled distances between these pipes at crossings (see Appendix A):
    - Profiles are only required at locations where water lines cross utilities.
    - Profiles must have a horizontal scale of not more than 100 feet per inch and a vertical scale of not more than 10 feet per inch, with both scales clearly indicated.
    - Profiles must be on water plans or construction plans.
    - Service connections do not need to be on profiles.
    - Each utility crossing shall have its own profile.
  
- Treatment plants:
  - Schematic flow diagrams and hydraulic profiles showing the flow through various plant units, including waste lines;
  - Locations of all chemical storage areas, feeding equipment, and points of chemical application;
  - Chemical injection shall be placed downstream of check valve with flow proportional control;
  - Pre-storage isolation valve for each well that is preceded by a blow-off and raw water sample tap,
  - All appurtenances, specific structures, equipment, water treatment, and points of discharge having any relationship to the water works structures;
  - Locations of sanitary or other facilities, such as lavatories, showers, toilets, and lockers;

- Locations, dimensions, and elevations of all proposed plant facilities;
- Locations of all sampling taps:
  - Prior to all treatment systems;
  - Following all treatment systems;
  - Smooth-nosed with no internal or external threads and down-turned;
  - Prior to pre-storage isolation valve.
- Adequate description of any features not otherwise covered by the specifications.

***Specifications:***

- A program for keeping existing water works facilities in operation during construction of additional facilities so as to minimize interruption of service.
- Laboratory facilities and equipment.
- The manufacturer's specifications of chemical feeding equipment.
- Materials or equipment for sanitary or other facilities including any necessary backflow or back-siphonage protection.
- All chemicals and coatings in contact with potable water shall comply with NSF/ANSI Standards 60 and 61 and labeled as such.
- Operations manual and/or standard operating procedures.
- Design criteria shall take into consideration:
  - Long-term dependable yield and area of the source of supply;
  - Estimated average and maximum daily water demands for the design period with number of proposed services;
  - Firefighting requirements;
  - Flash mix, flocculation, and settling basin capacities, retention times, unit loadings;
  - Filter area and the proposed filtration rate, backwash rate, and feeder capacities and ranges.

## **Approval of Plans and Specifications**

- In accordance with Section 1.11.1.4 of *State of Delaware Regulations Governing Public Drinking Water Systems*: The Division shall notify the person who submitted the plans and specifications if they have been approved or disapproved within thirty (30) days of receipt of plans and specifications.
- Such notice shall specify any conditions of approval or any reasons for disapproval.
- One (1) set of reviewed plans with cover letter and application (see Appendix B) will remain with the OE and one (1) set of plans will be sent back to the submitter.
- The reviewer will stamp each sheet of the plans “Reviewed by Office of Engineering” with their name and the date.
- Approvals are valid for one (1) year, and construction shall begin within that time.
- All construction shall be in accordance with the approved plans and all conditions listed in the Certificate of Approval to Construct.
  - In these conditions will be the owners responsibility to provide as-built drawings to the ODW prior to providing water to the public.

## **Changes to Plans and Submissions**

- When plans are changed, submit two (2) sets of revised plans and specifications.
- OE will issue supplemental approval prior to the start of construction.

## **Upon Completion of Construction**

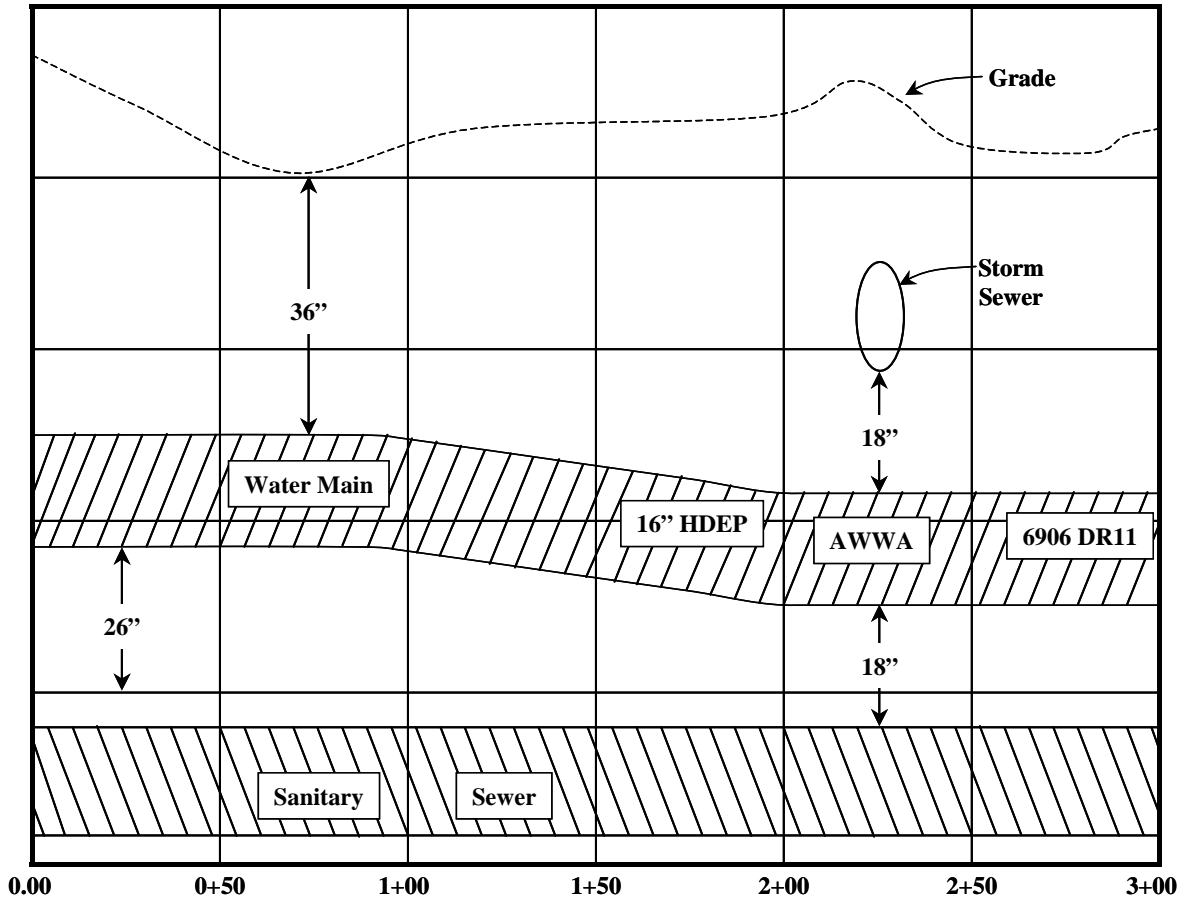
- Submit one (1) set of as-built plans to OE after construction completion with a “Letter of Completion.”
- OE will retain the as-built plans.
- Prior to initiating operations of a new or upgraded treatment plant, a sanitary survey must be conducted by ODW.
- In accordance with Section 1.12.1 of *State of Delaware Regulations Governing Public Drinking Water Systems*: A Certificate of Approval to Operate will be issued by the Division to water systems when the following requirements are met:
  - As-built plans submitted to OE.
  - Compliance with the *State of Delaware Regulations Governing Public Drinking Water Systems* to prevent health hazards.

- Adequate protection of the water quality throughout all parts of the system, as demonstrated by sanitary surveys.
- Proper operation of the water supply system under the responsible charge of personnel whose qualifications meet the certification requirements of the Division of Public Health.
- Adequate capacity to meet anticipated peak demands while maintaining not less than twenty-five (25) pounds per square inch (psi) and not more than one hundred (100) psi at ground level at all points in the water distribution system.
- Records of laboratory examinations showing compliance with the water quality requirements of the *State of Delaware Regulations Governing Public Drinking Water Systems*.



# Appendix A

## Profile Example



Water Main Profile  
Scale: Horizontal 1" = 50'  
Vertical 1" = 2'



## Appendix B

### Application for Construction of New or Existing Public Water System

**Project Name:** \_\_\_\_\_ **Project Number:** \_\_\_\_\_

**Location:** \_\_\_\_\_ **County:** \_\_\_\_\_

**Description:** \_\_\_\_\_

**Submitted by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Owner/Developer:** \_\_\_\_\_

**Email:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_

**Water System:** \_\_\_\_\_ **PWSID:** \_\_\_\_\_

**Owner:** \_\_\_\_\_

**Email:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_

**Consultant/Engineering Firm:** \_\_\_\_\_

**Email:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_

2 Copies of Plans with **Profiles and Elevations**       Schematic Flow Diagrams when needed