CHAPTER 7 – DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

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CHAPTER 7

DISTRIBUTION FACILITIES
DESIGN AND CONSTRUCTION STANDARDS

The following chapter highlights the design and construction standards of King County Water District No. 49. Water service is currently available to all areas within the boundaries of the District. Therefore, no large extensions to the system are expected. Extensions to the system will generally consist of redevelopment of existing lots and extensions to increase fire flow capacities. The following shall represent the District's standards for the construction and replacement of all distribution and distribution related facilities.

7.1 PROJECT REVIEW PROCEDURES

The District requires all construction activities related to the District's water system to be coordinated directly through the District. All developer extensions shall be reviewed by the District's engineer through the developer extension process. All projects proposed by cities, counties, special purpose districts and all other jurisdictions must also be reviewed by the District when they have a possibility of affecting District facilities. Procedures relating to the developer extension process can be found in the District's current version of the Developer Extension Manual which is incorporated into this WSP by reference.

7.2 DESIGN STANDARDS

This section outlines the general performance and design criteria used in evaluating the acceptability of system performance and construction of replacement and new facilities. The District's detailed design standards and construction specifications contained in the District's Developer Extension Manual are based on meeting or exceeding the latest version of the following standards, which are hereby incorporated by reference:

1. Water System Design Manual, Washington State Department of Health
2. Standard Specifications for Road, Bridge and Municipal Construction (WSDOT/APWA) including APWA Supplement, latest edition.
3. Standards of the American Water Works Association.
4. IAPMO Uniform Plumbing Code and Installation Standards, latest edition.
5. ICBO International Building Code, latest edition.

<u>Ownership</u>

All water lines and appurtenances located in public rights-of-way and easements where applicable shall become and remain the exclusive property of the District for future operation, maintenance and service responsibilities. For service connections, the point of District ownership and responsibility shall end at the back side of the meter. District ownership for non-potable water service lines shall end at the downstream end of the

gate valve at the point where the service line is connected to the water main (on easements on private property) or at the property line (on public rights-of-way).

Design Responsibility

Water system plans and specifications shall be prepared under the supervision of and signed by a professional engineer registered in the State of Washington and shall comply with the design standards of the District. The designer shall obtain all local requirements and criteria from the applicable city or county and the District. A copy of the final design with the District Superintendent's signature of acceptance shall be obtained prior to commencement of work. A mylar copy of the final record drawings shall be delivered to the District upon completion of work.

Pressure

A minimum of 40 psi will be provided at customer meters during normal conditions not including a fire or emergency. During peak hour conditions, the system will provide a minimum pressure of 30 psi at any customer meter. Systems will be designed to minimize pressure fluctuations between normal and peak hourly design conditions.

At service connections where static pressure exceeds 80 psi, the installation of a pressure-reducing valve behind the meter is recommended. The cost, installation and maintenance of the pressure reducing valves shall be the responsibility of the customer.

During fire flow conditions, the pressure at any major risk location and in the remainder of the system will be no less than 20 psi.

Velocities

Under normal demand conditions, the velocity of water in a transmission main should be less than four feet per second (fps). Under emergency conditions such as fire, the velocity of water in a transmission main should be less than eight fps.

Pipe Layout

All water pipe shall be designed to lie in public road right-of-way or, if not available, on a dedicated, recorded utility easement. Permanent easements shall be a minimum of 15 feet in width. Pipe will be designed for maximum trench depth of 48 inches and a minimum depth to top of pipe of 36 inches. All pipe shall maintain a positive or negative slope between respective high and low points in the water line; high points will be fitted with air-vacuum release assemblies and low points will be fitted with flushing assemblies as determined necessary by the District. Extensions to the District's system will not be allowed to connect to the system prior to completion of pressure testing, flushing and passing of bacteriological testing.

Domestic Water Services

Water mains constructed in platted areas will include the installation of water service lines to common or individual lot corners installed concurrently with the water main. Water service installation will include all materials shown on the District's current standard details. The cost of service lines installed as part of a water main extension will be borne by the Developer.

7.3 CONSTRUCTION STANDARDS

Construction standards for materials and methods and standard details for water system appurtenances and construction are included in the District's Developer Extension Manual. The Developer Extension Manual is updated regularly to incorporate new or updated District policies and standards.

7.4 CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

All construction activity related to the District's water system must be coordinated through the District. The District will inspect the construction of water related facilities up to the property line, or end of easement if applicable, and will perform all water quality testing prior to authorizing connection to a potable water main. Testing may include soils compaction, pressure and water purity, as applicable. All costs related to inspection and testing shall be paid by the Developer.

Backflow prevention devices shall meet the standards of the District's Cross-Connection Control Program and must be on the Washington State Department of Health's approved list of backflow prevention devices. Assemblies must be initially tested and certified by a Backflow Assembly Tester and approved by the District's Cross Connection Control Specialist prior to being placed into service. Backflow prevention devices must be tested and certified annually and a copy of the certification provided to the District. The property owner shall own and be responsible for the cost of maintaining and certifying the assemblies. Backflow prevention devices shall be accessible for District inspection via easement or real property license.

7.5 IMPROVEMENTS

The District's design and construction standards have been in place for many years. The Developer Extension Manual is routinely updated to include any changes in District standards or policies. The developer extension process has been refined over the past years to improve communications between developers and the District. Therefore, at this time, there are no recommended improvements for the items presented in this section.

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