

CHAPTER 7

DESIGN AND CONSTRUCTION STANDARDS

The objective of this chapter is to describe the design and construction standards of the Three Lakes Water Association. The inclusion of the standards into this document enables the Association to utilize an alternative review and approval process from DOH for distribution system projects. The alternative review process allows the Association to approve construction documents for distribution main and other distribution system related facilities without written approval from DOH. The Association is still responsible for complying with all applicable sections of the regulations, including project report and construction document requirements listed under WAC 246-290-110 and 120.

Eligible distribution related projects include distribution reservoirs/storage tanks, booster pump facilities, transmission mains, distribution mains, pipe linings and tank coatings. The water system standards must be at least as stringent as those discussed in Chapter 246-290 WAC.

7.1 PROJECT REVIEW PROCEDURES

The Association requires all construction activities related to the Association's water system to be coordinated through the Association. All developer extensions shall be reviewed by the Association's engineer through the developer extension process. All projects within the water service area which are proposed by Snohomish County, the City of Everett, Snohomish County PUD and all other jurisdictions shall also be reviewed by Association staff and the engineer when they have a possibility of affecting Association facilities. Procedures relating to the developer extension process can be found in the Association's *Developer Extension Manual*.

7.2 POLICIES AND REQUIREMENTS FOR OUTSIDE PARTIES

Policies for development are set forth in this plan in Chapter 1, Section 1.10, Service Area Policies and Section 1.11, Conditions of Service.

The Association has previously not entered into or allowed latecomer or reimbursement agreements. Such agreements may be appropriate for certain developer extensions, wherein the conditions of service result in one member or developer providing a benefit to another property owner that does not yet have service. The Manual acknowledges the Association may enter into such agreements, but the terms will be developed on a case-by-case basis.

7.3 DESIGN STANDARDS

The Association recently updated its *Developer Extension Manual*, adopted in October 2021, which provides guidance through the necessary steps required to

obtain water service from the Three Lakes Water Association by an extension of the existing water system. The manual describes the process, includes checklists and forms, and provides design, construction and detail standards for water system improvements.

The *Developer Extension Manual* was submitted to DOH for review and approval concurrently with the submittal of this Plan.

7.3.1 The water system extension shall be routed as necessary to meet the following criteria:

- A. Provide water line to serve all the frontage of all lots or structures in the proposed development.
- B. Connect between the water system in the proposed development and the Association's existing water distribution system at the location and in the manner (e.g., "wet tap" on main, connection at existing plugged or capped end, "cut-in" tee and valves) as indicated by the Association.
- C. Extend water line to the farthest corner of the property or through the property for potential future connection in accordance with the Association's Comprehensive Water System Plan or as required by the Association.
- D. "Loop" the water system within the proposed development and/or with multiple connections to the existing water distribution system in accordance with the Association's Comprehensive Water System Plan or as required by the Association or as required to provide the required flow to the most remote fire hydrant in the proposed water extension.
- E. Locate the water system in the public right-of-way to the maximum extent feasible.
- F. Locate valves on all three branches of tee connection, at changes in pipe diameter and at intervals of no more than 500 feet along the water main.

7.3.2 Water line size shall be determined as necessary to meet all of the following criteria, subject to approval by the Association:

- A. In accordance with size indicated in the Association's Comprehensive Water System Plan.
- B. As necessary to allow minimum required fire flow and/or peak hour demand, whichever is greater with maximum velocity of 8 feet per second, minimum pressure of 20 psi during fire flow conditions and 30 psi during maximum day demand conditions, maximum pressure of 80 psi.

- C. 2.2.3 Minimum mainline pipe diameter shall be 8 inches in diameter depending on the site conditions and the required fire flows by zoning code.
- D. 2.2.4 Fire hydrant laterals of 6-inch diameter shall be a maximum of 50 feet in length, measured from the distribution main. Fire hydrant laterals of 8-inch diameter shall be a maximum of 150 feet in length, measured from the distribution main.

7.3.3 Water system extensions shall be sized for the minimum fire flows according to current Snohomish County Zoning Designation, or greater as required by the local fire District or Snohomish County Fire Marshal, or as indicated in the Association's Comprehensive Water Plan:

7.3.4 Gate valves shall conform to AWWA C-509 or C515 Resilient Seat and shall be furnished with a concrete valve marker. Valve marker shall be painted and stenciled to Association requirements.

7.3.5 Valve boxes shall be located with valve markers as required.

7.3.6 The minimum cover on water mains shall be three feet unless otherwise approved by the Association, or as required by the Local Road Agency.

7.3.7 Water services shall be Type K copper service line (3/4" or 1" at the discretion of the Manager or as approved on the plans) with brass fittings (see parts list on detail). The service line shall be installed per the standard detail. All saddles and corp stop shall be minimum 1".

7.3.8 Meter boxes shall be Association Standard and shall be furnished and installed by the Developer.

7.3.9 Casings under roadway for far side services may be required by other jurisdiction (material and size/depth per agency).

7.3.10 Fire hydrants shall conform to AWWA C-502 and shall be American Darling or approved equal with a 5¼ inch main valve opening, a 4-½" steamer port with 5" Female Storz adapter and two (2) 2-1/2" Hose Connections (all N.S.T.). Hydrants shall be spaced at distances appropriate for the type of development as approved by the local fire authority or a maximum distance of 500 feet between any new hydrants or from any existing hydrants. They shall be painted with two coats of paint to meet Association requirements and installed with guard posts. Hydrant main sizes shall be 8"

diameter on dead end mains. Six-inch laterals to hydrants shall be a maximum of fifty feet in length. When lateral exceeds 50 feet, gate valves shall be installed on the lateral at the mainline tee and within 10 feet of the hydrant.

7.3.11 A two inch blow off assembly as required by the details shall be installed at all dead-end water mains (temporary or permanent). Additional blows offs may be required at low points in the system as required by the Association's Engineer. Air and air vacuum relief valves shall be installed at high points of water transmission and distribution mains.

7.3.12 Water line marker posts shall be installed at changes of direction, at terminations and every 300 feet along water lines on easements.

7.3.13 Galvanized pipe shall not be used underground.

7.3.14 Valves on dedicated fire sprinkler or other fire protection service lines shall be installed with post-indicator assemblies. Maximum height for the post indicator shall be 36 inches above the adjacent grade.

7.3.15 A double detector check valve assembly is required between the potable water system and private fire sprinkler and/or standpipe connections. The use of fire retardants, anti-freeze or other hazardous additives in the fire sprinkler system is prohibited.

7.3.16 Sample stations shall be provided per Association standards.

7.3.17 Water system extensions shall also comply with the latest edition of the DOH Water System Design Manual. If there is a conflict between the requirements of this document and the Design Manual, the stricter requirements shall govern.

7.4 CONSTRUCTION STANDARDS

The Association's construction standards for materials and methods and standard details for water system appurtenances and construction are included in its *Developer Extension Manual*.

7.5 CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

All construction activity related to the Association's water system must be coordinated through the Association. No work on the water system shall be performed without an Association inspector being present. The Association may refuse acceptance of any portion of the work installed without the Inspector

having reviewed the work. The Association must be notified a minimum of two full working days in advance of a firm starting date and time to arrange for and schedule the Inspector. Work must proceed in a continuous manner. If there are breaks in construction, there must be two working days' notice before beginning work again. All inspection and testing costs are to be paid by the developer.

The approved construction plans and specifications shall be followed. No deviations will be allowed without written request for change and approval received from the Association. The Association reserves the right to order changes in the event of conditions or circumstances discovered during construction. Such changes could result from the ability or care shown by the contractor, natural and man-made conditions, or any other reason.

Final tie-in to the existing Association system will not be permitted until after acceptance of the entire installation by the Association. All taps to existing Association mains must be performed while the Association Inspector is present. Final acceptance will not be made until all submittals required are completed and after acceptable system installation is complete.

The water system extension shall be hydrostatically pressure tested in accordance with the *Developer Extension Manual*. The contractor shall provide all testing equipment. The final testing shall be performed in the presence of the Association's inspector.

Any changes or additions to the facilities used for water supply must be properly disinfected prior to using them for service, in accordance with WAC 246-290-451(1). The Association will complete a "Construction Completion Report", which is required for public water system projects in accordance with WAC 246-290-040 following completion of construction of Association and developer-initiated projects.

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