DEVELOPER-INSTALLED WATER MAIN
SEATTLE PUBLIC UTILITIES

CONTRACTOR INFORMATION

Preconstruction

Prior to the start of a water distribution main construction project, a preconstruction meeting is held with representatives of SPU design, project management, construction, water quality, and operation staff; the contractor and subcontractor; other involved parties, such as developer or consulting engineer. At the preconstruction meeting, SPU's procedures for submittals, inspection, water quality control, connection(s) to the existing water system, and installation of meters are discussed.

Submittals are required from the contractor for review by SPU before water distribution main installation is allowed to begin. Contractors will perform their own survey, and grade sheets are submitted to verify pipeline grade during construction. The contractor's proposed sources of construction materials are submitted and reviewed by SPU's Materials Testing Laboratory. Specifying construction materials submittals, including shop drawing, catalog cuts, and technical data ate also reviewed, as required.

New Water Services

Developer/Contractor must order new service well in advance of construction and before final street paving is planned. Water services are installed by SPU Water Distribution crews, and not be adjusted, (except for meter box), modified, damaged or repair by contractor. A "tail run" will extend from the back of the meter to the abutting property line. SPU Water Distribution crews to established a "union" for the contractor to connect on to the tail end run.

Construction Inspection

SPU Construction Engineer personnel perform continuos on-site inspection during installation of water distribution mains to verify conformance with appropriate AWWA, DOH, and City of Seattle Standard Specifications. The procedures listed below are followed during inspection:

Grade and Alignment. Grade and alignment of the new water distribution main are verified by SPU and any deviations from the plan are noted.

Existing Utilities. Encounters with existing utilities, both marked and unmarked, are noted by SPU Construction Engineering personnel. Proper separation between the new water distribution main and existing utilities is ensured. In the case of encountered sanitary sewers and storm drains where sufficient separation is not available, replacement of the section pipe is required.

Trench Excavation. Trench excavation is observed to verify sufficient depth of cover water distribution mains (26 inches of cover for 12-inch and smaller mains, as per Seattle Standard Specifications 7-10.3(5)). Extra excavation is required if unsuitable material is found at the bottom of the trench.

Pipe Bedding and Backfill. Proper pipe bedding is ensured in according with per Seattle Standard Specifications 7-10.3(9). Trench backfill is also observed to conform to per Seattle Standard Specifications 7-10.3(10). Unsuitable backfill material is rejected. Proper compaction of the bedding and backfill is ensured and tested by SPU Materials Laboratory personnel, or a private, certified testing firm.

Pipe Installation. Prior to installation of new water distribution mains, SPU inspects pipe and appurtenances for proper size, materials, thickness calls, and type of joint. Proper storage and handling of the pipe before it is placed in the trench is ensured. All standing water in the trench is directed to be removed by the contractor before the pipe is laid. Proper cutting of pipe is also observed.

All pipe bell and spigot ends are inspected for cleanliness before jointing. Proper assembly and tightening of mechanical or restraint joint system is observed. Deflection of joints is observed to not exceed allowable limits of the type of joint.

Trust Restraint. Thrust restraint measures are observed to conform to design requirements. Thrust blocking is ensured to cover a sufficient amount of area based on pipe diameter and soil type (per Seattle Standard Plan No. 330.1a&b, 331.1a&b) and be of an appropriate mix of concrete, Shackle rods, when used, are observed to be the proper type, number, and diameter.

Corrosion Protection. When corrosion protection and/or electrolysis monitoring measures are specified, SPU observes that they are properly installed. Prior to exothermic pipe bonding, the bonding surface is observed to be clean and free of paint, primer, and other coating materials. The soundness of the welds is observed and tested with a glancing blow with a 16-ounce hammer. Joint continuity tests, when specified, are observed to meet minimum levels. Polyethylene wraps are observed to be continuous and free from tears.

Installation of Appurtenances. SPU verify proper installation of valves, hydrants. Blowoffs, and other appurtenances. Proper installation of hydrant tee thrust restraint system is observed and verified.

Pressure Testing. SPU performs hydrostatic pressure tests of all installed water distribution mains according to the requirements Seattle Standard Specifications 7-10.3(11). Ductile iron water distribution main 12 inches in diameter or smaller are tested to a pressure of 300 psi. Pipes 16 inches in diameter or larger are tested to 250 psi unless otherwise specified. The test pressure is maintained without pumping for 15 minutes for section of distribution main up to 1,500 feet long. A Pressure drop of not more than 15 psi, with no visible leaks, during this time

is considered acceptable. In-line gate valves and hydrant and hydrant valves are tested on the water distribution side only. A pressure drop of not more than 5 psi during this time, with no visible leaks, is considered acceptable. Water distribution mains not passing a pressure test are corrected and retested.

Pressure tests are recorded using a Bristol Babcock portable pressure recorder, using a 0-500 psi chart set at a 96-minute duration. Each test interval is indicated on the chart, along with whether the entire test was considered acceptable. Project information, date of test, and the name of the inspector performing the test are also recorded on the chart. Charts are maintained with project records.

Disinflection, Flushing, and Water Quality Sampling

SPU ensures that proper disinflection and flushing are performed and sample ports are provided during water distribution main installation.

Disinfection. SPU verifies that chlorine for pipeline disinfection is applied through one of three allowed methods. In water distribution main installation, dry calcium hypochlorite (60-70 percent chlorine) is applied on a pipe-by-pipe basis in an amount sufficient to provide an initial dosage of at least 25mg/L free chlorine. In circumstance where this is not feasible, gas chlorine or liquid sodium hypochlorite is applied as the disinfectant. The amount of chlorine required for each method for each diameter of pipe is specified in section 7-11.3(12) of the Seattle Standard Specifications.

Flushing. After a sufficient chlorine residual and contact time has been verified by SPU, the installed water distribution main is flushed. If dry calcium hypochlorite is the method of disinfection, a flushing velocity of at least 2.5 feet per second is required. Installed water distribution mains are flushed for at least five minutes for every 150 feet of new water distribution main and at least 30-minute minimum.

Water Quality Sampling and Testing. Water quality samples are collected by SPU at intervals of 500 lineal feet or less along a new water distribution main. Samples are analyzed for total loliform. Samples showing a presence of coliform bacteria are considered unsatisfactory and disinfection, flushing, and sampling of the distribution main is repeated (Seattle Standard Specifications 7-10.3(12)M). If samples exceed requirements for any reason other than coliform, the water distribution main is flushed and re-sampled.

Connection to Existing Distribution System. After satisfactory laboratory results are obtained, the installed water distribution main is connected to the existing distribution system. SPU water distribution crews make the physical connection with the aid of the contractor. SPU personnel ensure that, when possible, the total pipe required to connect the end of the installed water distribution main to the existing system is less than one standard length of 18 feet. When

this is not possible, SPU personnel require the contractor to predisinfect the connection pieces and arrange for water quality sampling of those pieces.