

SECTION S936 – INSIDE WATER SERVICE REPLACEMENT (2 INCH AND SMALLER)

S936-1 DESCRIPTION

Work consists of the replacement of the water service tubing between the curb stop and the ball valve located immediately upstream of the water meter located in the interior of the building as required in the Contract Documents and as directed by the Project Manager. This work is primarily performed on private property outside the public Right-of-Way.

Work is to be in conformance with the requirements of Section S900 General Water Provisions and all federal, state and local plumbing codes

Replacement of inside water services shall be performed by plumbers licensed to perform plumbing work within the City of Rochester. Before the work can commence the Contractor must verify that the City has received a valid customer agreement from the property owner.

S936-2 MATERIALS

S936-2.01 Copper Water Service

Copper water service tubing is to be Type K in conformance with requirements of ASTM B88, in sizes 3/4 inch, 1 inch, 1-1/2 inch and 2 inch.

Joints are to be of flared or compression type.

Couplings used for connecting copper water service tubing to corporation stop are to be of flared or compression type. Connection to ball valve shall be performed with a compression or flared ball valve.

S936-2.02 Polyethylene (PE) and Cross-Linked Polyethylene (PEX) Water Service

PE water service tubing shall be high density, copper tube size (CTS), SDR 9 (Standard Dimension Ratio), PE 4710 - pressure class 250 psi blue outer layer, in conformance with the requirements of ANSI/AWWA C901 and ASTM D2737 Standard Specification for Polyethylene (PE) Plastic Tubing, in sizes 1 inch, 1-1/2 inch and 2 inches.

PEX water service tubing shall be copper tube size (CTS), SDR 9, PEXa, pressure class 200 psi/73.4°F @ 0.63 design factor, material designation 3306, with blue outer layer, in conformance with the requirements of ANSI/AWWA C904, in sizes 1 inch, 1-1/2 inch and 2 inches.

PE and PEX water service tubing shall bear permanent identification markings that will remain legible during normal handling, storage, installation and service life and that will not reduce strength or otherwise damage tubing. Markings shall be applied at intervals not more than 5 feet and shall include: nominal size, standard material designation, (PE 4710 or PEX 3306), pressure class, AWWA designation number (C901 for PE or C904 for PEX), manufacturer's name or trademark and production record code, seal or mark of testing agency that certified suitability of tubing material for potable water products. For PE pipe, include PE compound oxidative resistance classification per ASTM D3350 (i.e., CC2 or CC3).

Joint couplings for PE and PEX tubing shall be Quick Joint compression type with solid stainless steel internal stiffeners inside ends of PE tubing.

Where soils contaminating solvents or petroleum products are encountered, copper tubing shall be used instead of PE or PEX tubing.

S936-2.03 Tracer Wire for Polyethylene (PE) and Cross-Linked Polyethylene (PEX) Water Service

Tracer wire for PE and PEX water service tubing shall be in conformance with the requirements of Section S901 Water Main Pipe and Fittings for tracer wire.

S936-2.04 Pipe Penetration Materials

Pipe penetration sealant used with grout filler at building wall shall be one (1) component polyurethane, elastomeric non-sag sealant meeting ASTM C920, type S, grade NS, Class 35, Sikaflex 1a as manufactured by Sika Corporation or approved equal.

S936-2.05 Ball Valve

Ball valves shall be full-port valves meeting the no-lead requirement. The ball valve shall be supplied with a galvanized steel handle. The ball shall be no-lead brass with a chrome plating. The body, end piece, and stem shall be no-lead brass. The ball valve shall be as manufactured by A. Y. McDonald or approved equal.

S936-2.06 Meter Coupling

The meter coupling shall be a brass threaded female to male adapter and a plain threaded male end. The male threaded end shall connect directly into the ball valve. The coupling shall be supplied with a seal washer. The meter coupling shall be lead free (no-lead brass), i.e., contain less than 0.25% weighted average lead content.

S936-3 CONSTRUCTION DETAILS

S936-3.01 General

Minimum cover over water service tubing and fittings, as measured between finished grade and top of exterior limit of water service tubing and fittings is to be 4 feet 6 inches, unless otherwise shown on plans or as ordered by Project Manager.

Inside water service replacement shall be completed in one water shutoff. No partial replacements will be permitted.

Contractor shall have the option to install water service tubing by means of open trenching or tunneling (missiling, drilling or jacking), or a combination thereof.

Inside water service tubing shall be installed in a single piece without joints between curb stop and the ball valve located on the interior of the building. Water service tubing may be curved around obstructions in the trench. There shall be no kinks, joints, gouges or crimps in the water service tubing, and Contractor shall avoid any unnecessary flexing and bending of the water service tubing. Bending radius for PE and PEX tubing shall not be less than 30 times pipe diameter. PE and PEX tubing should be laid with moderate slack or snaking to accommodate any contraction. PE and PEX tubing should be allowed to cool in trench before cutting to required length between fittings to reduce stress from thermal contraction. Distance between bends and fittings in PE and PEX tubing should not be less than 10 pipe diameters to minimize bending stresses at connection point.

The new water service line shall pass through the existing cinder block, stone, or poured concrete basement wall. The contractor shall use mechanical coring machine to drill an opening in the basement wall that is slightly larger than the space needed to allow the new water service line to pass through.

Water service tubing shall be connected to curb stop and ball valve by using approved and appropriate gaskets, coupling, bushing, joint and connection materials, or fittings required to make the connections. Water service connections and appurtenances shall be made watertight. Prior to flaring copper tubing, contractor shall verify that the end of the tube is round and cut at a right angle to the axis of the tubing. For PE and PEX water service connection, internal stiffener shall be required at ends of PE and PEX tubing and stiffener shall not extend beyond end of connection fitting. For connecting PE and PEX water service to existing non-copper interior water service, appropriate couplings, bushings, meter fittings shall be used. Prior to connecting new water service to interior plumbing, the new service line shall be flushed with clean water making sure all debris is removed from the line and all joints tested for leaks at line pressure.

Contractor shall perform all work using appropriate methods to minimize the disturbance to private property including the existing interior wall finish and the exterior foundation wall. The existing pipe penetration shall be severed at the interior building wall, sealed with a non-shrink grout and made water watertight. The contractor shall restore the existing interior wall finish and/or exterior foundation wall when damaged by the Contractor at no additional cost to the City.

The opening in the building wall made for the new water service shall be sealed and made watertight as

specified under section S936-2.04 Pipe Penetration Materials.

Upon completion of the work and testing of the water service for leakage and inspected by the City, the excavation shall be backfilled and the disturbed surface area restored. Backfilling of the trench shall be done in a manner so as to avoid damage to the water service and any other nearby utilities. Sand backfill is required within 12 inches of the water service.

All hazardous waste, including lead water service materials, removed from the excavation and interior of the building shall be disposed of in accordance with all applicable New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) solid and/or hazardous waste management regulations. Solid hazardous waste must be disposed of at waste management or recycling facilities permitted to receive specific waste. Proposed disposal or recycling facilities must be approved by the City of Rochester prior to shipment by the Contractor. The Contractor shall submit written evidence that the receiving lead waste treatment storage or disposal facility is approved to accept lead waste by federal and State regulatory agencies. Lead pipe removed as part of the work shall be recycled at a certified recycling facility in accordance with the required regulations. No lead pipe shall be disposed of in excavated material.

S936-3.02 Water Service Tubing Sizing

For sizing of new water service tubing, use the following:

Existing Water Service (nominal outside diameter)	Copper Water Service Tubing (nominal outside diameter)	PE or PEX Water Service Tubing (nominal outside diameter)
5/8 and 3/4 inch	3/4 inch	1 inch
1 inch	1 inch	1-1/2 inch
1-1/2 inch	1-1/2 inch	2 inch
2 inch	2 inch	-

S936-3.03 Tunneling

Where the Contractor opts to install water service tubing by means of tunneling (missiling, drilling or jacking).

At locations where tunneling is to be performed, Contractor shall open cut and excavate at the curb valve. Pit excavations shall be kept as small as practical, but large enough so as not to jeopardize safe tunneling operations. Excavations and tunneling operation shall be to a depth to ensure that the water service tubing will be installed at required minimum depth. Contractor has the option of tunneling-in the water service tubing by either boring, drilling or missiling.

Contractor shall open cut and excavate a sight pit at any location where an existing underground utility line is in the direct path of the tunneling operation. Sight pit shall be large enough and deep enough to be able to ensure that no damage occurs to the existing underground utility line during the tunneling operation.

The contractor shall make every effort to identify the location of the storm and/or sanitary lateral serving the property and every effort shall be made to protect and avoid damaging the lateral(s). If a storm or sanitary lateral is damaged, the contractor shall excavate and repair the lateral with materials and methods approved by Monroe County Pure Waters. The Contractor shall contact Monroe County Pure Waters and request an inspection by their representative. The sewer repairs shall be performed at no cost to the City.

S936-3.04 Installation of New Water Service Tubing at Existing Appurtenances

For connection of new water service tubing to existing curb stop that is to remain, existing curb stop must not be leaking or damaged and fully operational. Water service shall be shut down at the existing curb stop. Existing water service tubing is to be disconnected and removed, new water service tubing connected to the existing curb stop, and existing curb stop returned to full open position.

The existing water meter and appurtenances shall be removed and stored in a safe location. The contractor shall reinstall the existing water meter along with two new ball valve and meter couplings. The contractor shall provide new seal washers and other joint seal items to make the reinstalled water meter water tight.

Any leaks discovered must be corrected by the contractor. The Contractor shall install two (2) anti-tamper locking nuts on the meter couplings. The City shall provide the anti-tamper locking nuts to the Contractor. The water meter must be reinstalled in accordance with Detail No. S970-2. Indoor Installation of Water Meter 1 Inch and Smaller or Detail No. S970-3 Indoor Installation of Water Meter 1-1/2 Inch and 2 Inch.

S936-3.05 Tracer Wire Installation with Polyethylene (PE) and Cross-Linked Polyethylene (PEX) Water Service

Tracer wire shall be installed with PE and PEX water service tubing and secured to the top of the tubing using nylon cable zip ties at intervals not to exceed 8 feet. Tracer wire should not be taped to or wrapped around the service tubing. Tracer wire shall be installed in such a manner as to enable its detection with electronic locating equipment. For tunneling methods, the tracer wire shall be secured securely at the beginning of the water service tubing making sure the wire will not become detached from the service line during tunneling operations.

Tracer wire shall be from the curb box extended continuously along PE and PEX water service tubing to the ball valve located within the building.

No splices will be allowed on the tracer wire.

S936-3.06 Flushing Water Service Lines and Restoration of Service

After installation of the new water service the Contractor shall flush the new service line before reconnecting the new service to the interior plumbing. If the existing service that is replaced with the new water service is connected to an outside service composed of lead or galvanized steel the contractor shall perform the following procedure for a complete and final flushing of the entire water service. The final flush out of the service will be through the hose connection to the outside hose bib or through another plumbing fixture approved by the Project Manager. The Contractor must make arrangements to remove the water meter and install a splice pipe. The water service may not be flushed through the water meter. Each service shall be flushed for a period of at least 10 minutes, prior to reinstallation of the water meter. Flushing water shall travel from the charged water main through the new water service and the existing inside water service, through a portion of the internal plumbing and flushed out through an outside hose bib or laundry tub on the inside of the building. The water service curb stop must be left in the full open position for the duration of the flush. Precautions must be taken to ensure the flushing water is directed to the street and directed away from the building and lawn areas.

If the inside water service that is replaced is connected to a copper or PE outside water service, the extensive final water service flush as mentioned above is not required.

Following the flush, the splice piece shall be removed and the meter reinstalled. The same procedure will apply in cases where the meter is located in an exterior meter crock.

Instructions for interior flushing of the premise plumbing shall be issued to each household following installation of the water meter. The City Water Bureau will provide the contractor with the appropriate *pamphlets and/or door hangers* for distribution. The contractor's representative shall advise the resident not to drink water until the resident has completed the flushing of the internal premise plumbing

S936-3.07 Testing Water Services

Prior to backfilling the trench, water service work, including but not limited to connections, joints and unions, shall be tested for leaks under line pressure in the presence of the Project Manager. Any defective work shall be repaired and retested until installation is accepted. All work must be inspected by an authorized City Representative.

S936-3.08 – Removal and Reinstallation of the Water Meter

Water meters shall be removed, stored and reinstalled in their existing location unless otherwise directed by the City. The cost to replace a meter damaged by the contractor's operation will be billed to the Contractor. The electrical ground wire shall be reattached with new ground wire clamps where necessary. The water meter shall be reinstalled in accordance with S936-3.04.

S936-4 METHOD OF MEASUREMENT

S936-4.01 Water Service

The quantity to be measured for payment shall be the number of linear feet of water service tubing installed.

S936-5 BASIS OF PAYMENT

S936-5.01 General all Items

The unit price bid for all items shall include the cost of: furnishing and installing all water service tubing; pipe specials; flared connections; compression connections; gasket fittings; joint and connection materials; connection to water meter, balls valve, and curb stops; initial and final flushing; disposal of existing service pipe when removed; verifying location and disposition of water services; distribution of service interruption notices; removal and replacement of water meter; supplying and installing a water meter splice pipe; water service line flushing; distribution of premise plumbing flushing instructions; pavement saw cutting; leakage testing; excavation, pavement saw cutting, placement of select backfill excavated from the trench; and furnishing all labor, material and equipment necessary to complete the work.

Work shall include removal and replacement of the water meter with new seal washers including two new ball valves and meter couplings, reinstallation of the ground wire with new clamps if necessary. Disposal of hazardous waste. The meter couplings may be reused if they are in acceptable condition.

In those cases, where tunneling is used in lieu of, or in combination with open trenching, payment for the tunneled portion only is included in the unit price bid for water service. Excavation, backfill and surface restoration for boring, trenching, receiving and sight pits will be paid for as outlined under Subsection S936-5.04 Excavation, Backfill and Surface Restoration.

S936-5.02 Polyethylene (PE) and Cross-Linked Polyethylene (PEX) Water Service

The unit price bid shall also include the cost of: furnishing and installing all tracer wire; splices and connections.

S936-5.03 Connection to Existing Appurtenances

The unit price bid shall also include the cost of: shutting down the existing water service; and connection to existing water meter, stop & waste valve, and curb stops, or water service lines. The cost shall include removal and reinstallation of the water meter including two new ball valves. The brass coupling may be reused and reinstalled with the water meter. However, if the brass couplings are in poor condition they shall be replaced by the contractor. New seal washers must be provided. The cost shall include supplying and installation of two ball valves with any necessary couplings needed to install the ball valves. The cost shall include supply and installation of two (2) meter couplings with seal gaskets and other joint sealing material as needed.

S936-5.04 Excavation, Backfill, and Surface Restoration

Excavation, furnishing and placing of sand embedment and select granular backfill, temporary pavement, and pavement saw cutting, permanent surface restoration, driveway restoration will be included in the price bid for the item as indicated in the item description.

Excavation that is included in the pay item does not include rock excavation, except for water services installed by tunneling. Rock excavation will be paid for under separate bid item. For tunneling operation, excavation that is included in the pay item includes rock excavation.

Where excavation, backfill and/or surface restoration is called for to be included in the pay item, it is meant to be inclusive of the tunnel operation, any open trench, and all boring, receiving and sight pits.

Sidewalk replacement that is required to access the curb box will be paid under a separate pay item.

Surface restoration that is included in the pay item shall include temporary pavement.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S936.03XXXX	New X" Inside Copper Water Service at Existing Appurtenances (Including Excavation, Backfill and Surface Restoration)	Linear Foot
S936.06XXXX	New X" Inside Polyethylene or Cross-Linked Polyethylene Water Service at Existing Appurtenances (Including Excavation, Backfill and Surface Restoration)	Linear Foot