



CITY OF MARYSVILLE

WATER DIVISION

SPECIFICATIONS

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INDEX FOR APPROVED WATER LINE AND RELATED MATERIALS

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**CITY OF MARYSVILLE
WATER DIVISION**

**DETAIL SPECIFICATIONS
GENERAL INFORMATION**

1. **DRAWINGS:** Five complete sets of drawings must be submitted to the Engineering Division for approval before any construction begins. Drawings must show a plot plan and detailed piping arrangements, as well as lawn irrigation, limited area sprinkler systems, and/or main fire protection systems. A comment letter from the City will be provided with requested revisions, if applicable. A response letter and revised plans that meet City specifications shall be resubmitted for approval.

2. **CAPACITY FEES:** Any fees or charges are payable upon application of service. Fees must be paid before any taps will be made.

3. **PERMITS:** The contractor will be responsible to make application for and secure necessary City, Township, County and State of Ohio EPA permits for the foregoing water pipe installation in, along, and across city, township, county, and state roadways and right of ways.

4. **DATA SHEETS:** Non-residential or multi-unit service lines are to be sized after the following information and calculations are provided to the City of Marysville, Water Division:
 1. Maximum demand (GPM) & use.
 2. Continuous daily demand, if any (GPM).
 3. Required pressure at meter (P.S.I.).
 4. Site plan of building showing distance to property lines, as well as elevations.

5. **RESPONSIBILITIES:** The Contractor or plumber shall be responsible for all excavation, materials, and installation beginning at the main. Taps for main extensions shall be made before any piping is laid. The Contractor is also responsible for setting proper line and grade stakes before installing any piping. Subdivision plans shall show location of handicap ramps, street lights, and other utilities. Inspector will have proper cut sheets provided at least one day before water lines are installed.

6. **INSPECTIONS:** The contractor will leave all trenches open until the City Inspector has approved installation. Inspection hours will be from 8:00 a.m. to 5:00 p.m. Monday – Friday. *A green card will be issued at curb box for approved installation; a red card for unapproved installation.* Any excavation backfilled or covered prior to inspection will have to be uncovered for the inspector approval.

SECTION I - FIRE HYDRANT

Fire Hydrants shall be provided and installed in accordance with the latest edition of AWWA C502.

All hydrants installed on the City system must be **Mueller Company's Centurion 250 Hydrant** with a three way upper barrel consisting of one 4 ½" main valve opening with a 5" **Storz** pumper nozzle, and two 2-1/2" hose nozzles with the type and size of the threads being the same as those in the existing system. The 5" **Storz** connection shall be integral to the fire hydrant, and installed at the factory. After market Storz connections will not be allowed. The operating nut and caps shall be 7/8" square and open left. It shall be a 5'0" bury with a 6" M.J. shoe. Hydrants shall be self-draining with an all bronze drainway. ***The entire hydrant will be assembled with #304 stainless steel bolts from the factory.*** Hydrants shall be painted with only federal safety blue rust-oleum #0925 with red bonnet and caps federal safety red rust-oleum #0964. Private hydrants will be completely painted federal safety red. Hydrants shall be furnished with a breakable feature that will break cleanly upon impact. The breakable feature shall consist of a breakable safety flange and one-piece stem coupling.

Fire hydrant installations will be Type 1, Type II or Type III unless specified or agreed to by the Division of Water. (See Drawings WTR-03, WTR-04, and WTR-05)

When risers are used to bring hydrant breakaway to finished grade only one riser is used for each hydrant. No stacking of risers will be allowed. All risers will be manufactured by the **Mueller Company**. ***Stainless steel bolts will be used to secure the riser to the hydrant if a riser is needed.*** No "after market" manufacturer's products will be accepted. ***If an extension has to be installed, a visual inspection prior to the installation has to be made by water personnel.***

All bolts used to assemble the fire hydrant will be made out of #304 stainless steel.

Fire hydrants are for the exclusive use of Fire Departments and Water Division personnel. Anyone using fire hydrants without the permission of the City will be charged with "Theft of Utilities" under Chapter 930 of the City of Marysville Codified Ordinances, and prosecuted.

A 5 inch integral hydrant **Storz** nozzle shall be provided on all new fire hydrants. The integral **Storz** nozzle shall meet or exceed the requirements of **AWWA C502** regarding material and pressure testing. The **Storz** nozzle shall have a brass metal face and hard anodized aluminum **Storz** ramps and lugs. The aluminum caps shall be of the locking type.

SECTION II - VALVES

Gate valves shall be resilient wedge, manufactured by Mueller Company, Clow or American. They shall have a pressure rating of 250 PSI and conform to the latest edition of AWWA C-509 or AWWA C-515 specifications. Valves shall have a machined seating service to provide positive sealing with a predictable number of turns. The valve interior shall be epoxy coated on all surfaces. All valves shall open left. All valves shall be M.J. joint unless specified different. All nuts and bolts will be stainless steel ANSI Type 304 on bonnet and packing gland.

All gate valves and valve box bases shall be placed on a minimum of 4 inches of #57 stone. #57 stone will be placed between undisturbed ground and bottom of valve box. All valve operating nuts shall not exceed 4' in depth. If operating nut is in excess of 4' in depth, it will require a valve nut extension that is approved by the Division of Water, *and secured to valve operating nut by set screws etc.*

All valves 8" and larger will have a #160 oval valve box base. All valves 6" and smaller will have a #6 valve box base.

Butterfly type valves conforming to the latest edition of AWWA C-504 will be used in pipe of 18" and larger. Approved butterfly valves are Linesal XP II Class 250B, MJ ends, and Clow 1450 Class 250, MJ ends, both assembled with ANSI 305 stainless steel hardware.

NOTE: Any valve boxes inside the blacktop street, driveways, or concrete approaches will have a City of Marysville heavy duty valve box installed! (Standard drawing # WTR-23)

SECTION III - TAPPING VALVES

Tapping valves shall be resilient wedge manufactured by Mueller Company, Clow or American. They shall have a pressure rating of 250 PSI, and conform to the latest edition of AWWA C-509 or AWWA C-515 specifications. Valves shall have a machined seating service to provide positive sealing with a predictable number of turns. The valve interior shall be epoxy coated on all surfaces. All valves shall open left. All valves shall be M.J. joint unless otherwise specified. All nuts and bolts will be stainless steel ANSI Type 304 on bonnet and packing gland.

NOTE: Any valve boxes inside the blacktop street, driveways, or concrete approaches will have a City of Marysville heavy duty valve box installed! (Standard drawing # WTR-23)

All gate valves will be supported by 4" solid concrete blocking under valve. #57 stone will be placed between undisturbed ground and bottom of valve box. All valve operating nuts shall not exceed 4' in depth. If operating nut is in excess of 4' in depth, it will require a valve nut extension that is approved by the Division of Water *and secured to valve operating nut, by setscrews etc.*

SECTION IV - TAPPING SLEEVES

Tapping sleeves that are approved are: Powerseal Model #3490, the Ford tapping sleeve style, fast or "FTSS", and the Mueller Model 304SS, or approved equal.

The shell shall be 304 (18-8) stainless steel or equal. The flange shall be 304 (18-8) stainless steel. The flange shall have ANSI 125 lb. drilling and be recessed for tapping valve per MSS-SP60. The armor plate shall be 304 (18-8) stainless steel, bonded to the complete circle gasket. Gasket shall be full thickness between armor plate and pipe. The lugs shall be 304 (18-8) stainless steel. The lugs shall be welded (GMAW) to the shell. The nuts shall be heavy hex, of 304 (18-8) stainless steel and lubricated to prevent gaulding or seizing. The bolts shall be 304 (18-8) stainless steel or equal, 5/8" NC thread. The gaskets shall be of virgin styrene butadiene rubber (SBR) or equal, compounded for water service. After installation of the sleeve on the main but before the tap is made, the tapping sleeve and valve are to be tested at 150 PSI for 5 minutes. Pressure test shall be done with the valve closed, and before the tapping machine is attached. Tapping sleeve and valve to be blocked up from undisturbed earth to fitting before tap is made. The coupon will be saved and given to Water Division.

SECTION V - VALVES BOXES

All valve boxes shall be the standard cast iron three-piece type equal to the Tyler #6860 series with the proper size base. (All valves 8" and larger will require the #160 oval base.) All valve boxes will be required to be properly set to finished grade. Lids will be marked "Water".
All valve box bases shall be supported by #57 stone.

SECTION VI - CURB BOXES

All curb boxes shall be the standard cast iron two-piece type equal to the Minneapolis Style series with the proper size base. All curb boxes shall be properly set to the finished grade from top of curb at curb box.

SECTION VII - WATER LINE PIPING

SPECIFICATIONS FOR DUCTILE IRON PIPE & FITTINGS

PIPE

Minimum size for all water main installations is 8" Class 52 to Marysville specifications.

Pipe shall be designed in accordance with the latest editions of ANSI Specification A21.50 and AWWA C150. Pipe shall be Class 250 (ANSI Thickness Class 52) or equal, adequate for the rated working pressure and maximum depth of cover shown in the following table:

SIZE	THICKNESS	RATED WATER WORKING PRESSURE, psi	MAXIMUM DEPTH OF COVER, feet*
6"	0.31	350	38
8"	0.33	350	30
10"	0.35	350	24
12"	0.37	350	22
14"	0.39	350	19
16"	0.40	350	17
18"	0.41	350	15
20"	0.42	300	14
24"	0.44	250	12
30"	0.47	200	10
36"	0.53	300	15

*Based on Laying Condition Type 2: Flat bottom trench, backfill lightly consolidated to centerline of pipe.

Pipe shall be manufactured in accordance with the latest editions of ANSI Specification A21.51 and AWWA C151.

Pipe shall be standard cement lined and seal coated with an approved bituminous seal coat in accordance with ANSI Specification A21.4 (AWWA C104), latest revision.

Bell holes will be dug at each joint.

SECTION VII - WATER LINE PIPING

SPECIFICATIONS FOR POLYVINYL CHLORIDE (PVC) WATER PIPE

POLYVINYL CHLORIDE (PVC) WATER PIPE

PVC pressure pipe (4 inches through 12 inches in diameter) shall conform to the requirements of AWWA C909. PVC pressure pipe (14 inch through 48 inch) shall conform to the requirements of AWWA C905. Minimum size for all water main installation is 8", Pressure Class 235.

PIPE AND FITTINGS

All fittings shall be ductile iron, and shall comply with "Section X - Fittings" of the City of Marysville Water Division specifications.

All PVC water pipe shall be manufactured in accordance with one of the following Standard Specifications:

- a. AWWA C905, "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 inch through 48 inch (350mm - 1200mm), for Water Transmission and Distribution."
- b. AWWA C909, "Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, 4 in. through 24 in. (100mm - 300mm), for Water Distribution.

JOINTS:

Pipe joints shall be gasket, push-on type. Gaskets shall be part of a complete pipe section and purchased as such. Lubricant shall be as recommended by the pipe or fitting manufacturer and shall not adversely affect the potable qualities of the water to be transported. The gasketed joint shall meet the laboratory performance requirements specified in ASTM D3139. (This is a qualification test to verify a leak free design of the specified joint.)

RESTRAINED JOINTS

Restraining gland, wedge segments, and actuating bolts shall be manufactured of high strength ductile iron conforming to the requirements of ASTM A536, Grade 65-45-12. Dimensions shall be compatible with standardized mechanical joints conforming to the requirements AWWA C111/ANSI A21.11 and AWWA C153/ANSI 21.53 (latest revision). Breakaway tops shall be incorporated in the design of the actuating bolts to visually ensure proper torque. The mechanical joint restraining devices shall have a working pressure rating of 200psi minimum and provide no less than a safety factor of 2:1. Restraining devices shall be EBAA C909 PVC Pipe Restraints, SIGMA ONE-LOK™ Series SLC/SLCE, or approved equal.

CERTIFICATIONS:

PVC water pipe shall be certified to NSF International Standard No. 61.

ACCEPTANCE:

Pipe may be rejected for failure to comply with any requirement of this specification.

POLYVINYL CHLORIDE (PVC) WATER PIPE DESIGN AND INSTALLATION

PRESSURE CLASS:

All PVC water pipe shall have a pressure class (PC) or pressure rating (PR) that equals or exceeds the anticipated working pressure for the pipe section being designed or replaced. "Working Pressure" is defined as the maximum sustained operating pressure.

EMBEDMENT REQUIREMENTS:

The embedment requirements for PVC water pipe shall comply with Standard Drawings WTR-26 and WTR-27. Embedment shall be in accordance with AWWA Standard C605 for "Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water" and the Unibel Document UNI-PUB-9, "Installation Guide for PVC Pressure Pipe."

SERVICE CONNECTIONS:

All service lines shall be Type "K" soft copper, and comply with "Section VIII - Service Line Policy" in these specifications. Saddle tapping shall be used for all services. Saddles shall provide full support around the circumference of the pipe. Tapping saddles shall be manufactured specifically for PVC pipe. Service connection tapping shall comply with AWWA C 605. Saddle service threads shall have AWWA/CC Taper. Approved Corporation Stops and Curb Stops are listed below.

Corporation Stops

Ford - FB1000-Q Series

Mueller - B-25008

McDonald - 74701BO

Curb Stops (Minneapolis Style)

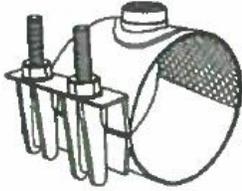
B44-444MQ-NL Series ball type

B-25155N

76104Q-NL

Approved tapping saddles are listed below.

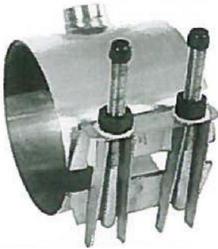
Ford Meter Box FS313 Series



Smith-Blair 372 Series



Powerseal Model 3412AS



Mueller SS Series



TRACER WIRE

All water mains, including out of service stubs intended for future expansion, shall be installed with plastic coated copper tracing wire, rated for direct burial, placed on top of the pipe. Maximum length between terminal connections shall be 500 feet. (See “Section VII (B)-Tracer Wire”)

POLYVINYL CHLORIDE (PVC) WATER PIPE - POST INSTALLATION TEST REQUIREMENT

HYDROSTATIC TEST:

A post installation hydrostatic test shall be performed on the installed system in accordance with AWWA C605.

CHLORINATION

See “Section XII-Pressure and Bacteria Testing” of these specifications for details. Disinfection procedures follow the guidelines established in AWWA C651.

BACTERIOLOGICAL TESTING

See “Section XII-Pressure and Bacteria Testing” of these specification for details. Disinfection procedures follow the guidelines established in AWWA C651.

SECTION VII(A) - PRIVATE FIRE LINE PIPING

All fire protection will be on a separate service. No fire protection will be permitted off the domestic service unless otherwise approved by Water Division.

If a private fire hydrant is required by the local Fire Department, the minimum size line to the fire hydrant or hydrants will be 8". After the hydrant or hydrants, the fire service can be reduced to size needed.

All private lines must also meet the Marysville specifications required for material, pressure testing and backflow prevention.

SECTION VII (B) - TRACER WIRE

SPECIFICATIONS FOR HIGH STRENGTH TRACER WIRE

GENERAL

Install electrically continuous tracer wire, with access points, to be used for locating pipe electronically after installation. Tracer wire shall be installed on all non-metallic water lines and services.

MATERIALS

WIRE

12 AWG Tracer wire shall be composed of a steel core with a uniform and continuous copper cladding thoroughly bonded to the steel throughout. Wire must conform with ASTM B910/B910M

Wire must be insulated with thermoplastic insulation and be rated for direct burial. Insulation shall comply with APWA color code standard for identification of buried utilities. Wire connectors shall be rated for direct burial, and shall be watertight to provide electrical continuity.

ACCESS BOX DESIGN REQUIREMENTS:

1. Detection

- a. Box shall be designed to be easily detected by magnetic and electronic locators even when box is covered by a minimum of four (4) inches of soil, sod and / or paving material.
- b. A magnet shall be securely attached at the top of the upper tube of the box for locating purposes. Material used to retain magnet in place shall remain effective at minus 15 degrees Fahrenheit.

NOTE: A MAGNETIZED LID OR MAGNET ATTACHED TO THE LID IS NOT ACCEPTABLE.

2. Security

a. Locking Mechanism:

- i. Lid of valve box shall be designed to employ a locking mechanism that will clamp it to the box collar in a closed position.
- ii. Locking mechanism shall incorporate a standard pentagon-shaped head bolt which when measured from flat to vertex shall not be less than 0.830 inches or greater than 0.875 inches.
- iii. Locking mechanism shall be such that the lid cannot be removed without using the proper wrench.

b. Collar:

- i. Collar is designed for support of the lid and shall be securely attached to the upper tube to prevent separation after installation.
- ii. Collar shall be designed to withstand an applied impact force of two (2) foot pounds without failure at -15 degrees Fahrenheit.

3. Shape

- a. Box shall be of a tubular construction (cylindrical) with removable round lid.
- b. Box shall have a support flange at the base of the lower tube bell at least one-half (1/2) inch wide. If box is designed for use with an integral valve support, flange may be omitted.

4. Length Adjustment

- a. Box shall be of telescoping design with upper and lower tubes overlapping three (3) inches when the box is extended to its maximum overall length.
- b. Box of sliding design shall be made to maintain tension in the range of 40-80 pounds at any length between minimum and maximum lengths.
- c. Tension system shall be designed to allow upper portion of lower tube to be sawed off without loss of tension.
- d. Tension requirements must be met after box has been removed from storage and telescoped ten (10) times.

5. Wire connection

- a. Brass screw running through brass wire harness will be used as connection for locator transmitter hook-up.
- b. Brass wire harness shall be used to secure tracer wire leads to brass screw enabling locator equipment hook-up.
- c. Petrolatum wax tape incorporated with magnetized tracer box to encapsulate tracer wire leads and brass wire harness.
 - i. Petrolatum wax tape must be formed around brass wire harness connection after tracer wire leads are connected to prevent oxidation of wire ends.
 - ii. In order to ensure proper long term locatability and signal strength, the petrolatum wax tape must be utilized to prevent oxidation.

6. Access Box shall be designed for operational access to underground tracer wire systems.

7. Lid

- a. Box shall be designed so that when installed, the collar will be flush with the surface and contain the lid so that it will not be in contact with the adjoining backfill or pavement.
- b. The cavity which holds the lid shall be designed so that water drains into the inside of the box.
- c. The top surface of the box lid shall be flush with the top of the box. The top of the bolt or locking device when in the locked position shall be flush with or below the lid surface.

DIRECT BURIAL LUG

Unit must be pre-filled with dielectric silicone sealant that never hardens, be of one piece for easy installation, and allow the service line to be installed without cutting the main line. Wire range shall be # 14 - #10 AWG and be approved by the manufacturer for direct burial. Unit shall be designed for low voltage tracer splices and cathodic applications up to 50V. The silicone sealant temperature rating shall be -45°F to 400°F. Outer lid shall lock securely.

INSTALLATION

Tracer wire shall be installed on all non metallic pipe and services. The wire shall be installed in such a way as to be able to properly trace all lines without loss or deterioration of signal.

Tracer wire shall be installed in the same trench, or inside bored holes and casings, with the pipe during installation. Tracer wire shall be attached to the top of the pipe at every fitting and valve and at intervals not exceeding 5 feet by the use of non-adhesive, waterproof silicone tape or approved equivalent. Tracer wire shall be placed at the 3 o'clock position of the pipe and shall be consistently placed in that position.

Tracer wire access points shall be no more than 300 feet apart. Access boxes shall be magnetized tracer boxes, or approved equal. Concentrations of multiple valves and tees may require more than one access point. All access points shall be in the public right of way or public utility easement. Access points shall be installed by the nearest above ground fixture, i.e. valve box or fire hydrant for ease of locating.

The connection to the existing tracer wire shall be made using a waterproof, corrosion proof direct bury lug.

At each service line a branch tracer wire shall be installed. The connection to the existing tracer wire shall be made using a waterproof, corrosion proof direct bury lug.

At the point of connection between cast iron or ductile iron mains and any non iron main, the tracer wire shall be connected to the iron pipe with an exothermic weld or approved equivalent. Tracer wire welds shall be completely sealed with the use of an approved mastic sealer specifically manufactured for underground use. Mastic shall be applied in a thick coat (1/4" min.), and shall be protected from contamination from backfill material with the use of a plastic membrane.

Tracer wire shall be continuous and without splices, except for approved spliced in connections, from each tracer wire access point. Where approved splices occur, watertight connectors, or approved equals shall be used.

At all main end caps, a minimum of 6 feet of tracer wire shall be extended beyond the end of the pipe, coiled and secured for future connections. All dead ends not brought to the surface require the tracer wire to be connected to a 1 Lb., drive In, magnesium grounding anode to complete the electrical circuit. All circuits need to be grounded.

For directional drilling, auguring, or boring installations, 2 each #12 tracer wires shall be installed with the pipe and connected to the tracer wire at both ends, or cad welded to the existing iron pipe or casing pipe at both ends.

Spliced connections between the main line tracer wire and branch connection tracer wire shall only be allowed at water main tees, crosses, and at iron or copper services where a portion of the service is being replaced with non metal materials. The branch connection tracer wire shall be a single tracer wire properly spliced onto the main tracer wire.

TESTING

The contractor shall perform a continuity test on all tracer wire in the presence of a City of Marysville representative. If the tracer wire is found to not be continuous after testing, the contractor shall repair or replace the failed segment at their own expense.

SECTION VIII - SERVICE LINE POLICY

PART 1 - GENERAL

- The City of Marysville's Water Division Service Line Policy shall be governed by Codified Ordinance 930.07.

Before the water can be shut off and work to commence, a service order must be called in to the Utility office at 209 South Main Street (phone # 937-645-7350 Ext. 2.) We request that service work be scheduled twenty four (24) hours in advance.

- The application for installation of a City service line will be accepted subject to the condition that there shall exist, adjacent to the premises to be served, a supply of water sufficient to provide the service requested.
- **“Application for Service” must be made at least twenty-four (24) hours prior to inspection.**
- Any fees or charges are payable upon “application for service”. Fees must be paid before any taps will be made.
- The size of the service line will be determined by the City of Marysville at the time of application. In all cases, it shall not be less than 1-inch nominal size. Non-residential or multi-unit services lines are to be sized after the following written information is provided to the City of Marysville. Service lines shall be sized in accordance with AWWA Manual M22, “Sizing Water Service Lines and Meters.” Minimum pressure at meter shall be 35 psi.
 1. Maximum demand (GPM) & use
 2. Continuous daily demand if any (GPM)
 3. Required pressure at meter (PSI)
 4. Site plan of building showing distances to property lines, as well as elevations.
- A plumbing permit shall be obtained by the customer for the customer's service line as required by local building regulations.
- If there is an irrigation system installed at any time, a zoning permit is required to be issued prior to installation. A pressure vacuum breaker device is required on any irrigation system!
- Any property requiring a fire sprinkling system whether it be a limited area sprinkling system or a totally sprinklered system will require a separate service line with its size approved by the City of Marysville Division of Fire. Any deviations to this will be approved by the Superintendent of Water and the Fire Department - no exceptions.
- ***Any unmetered line on private property that begins to leak that does not meet Marysville specs, be it a main or a service, will have to be replaced to current City of Marysville specs. Any cast iron line 4” or larger can be repaired at the discretion of the Division of Water.***

- The valves before and after the meter setting are to be in operable condition. These valves are the responsibility of the customer. If either valve fails to operate as designed, the defective valve(s) shall be replaced to the current City of Marysville Water Division Specifications.
- Individual booster pumps will not be allowed, except for irrigation, for any individual service.(Ohio Administrative Code Rule 3745-95-07(A))
- Booster pumps are permitted on irrigation systems, provided that proper backflow protection is in place. i.e. (Airgap)

PART 2 – MATERIALS

- All service lines shall be Type “K” soft copper conforming to ASTM B-88, all joints shall be compression. Solder joints are prohibited except at the meter inlet point, where a sweat valve can be used. Underground brass fittings will be CTS (Copper Tubing Size) Ford Quick Joint, Mueller 110 Conductive Compression Connection, and AY McDonald. Ductile iron pipe shall be used if size exceeds 2 inches in diameter. **All curb stops must have a positive stop. All corporation and curb stops shall be ball valve type.**
- All service material:

1”, 1.5”, and 2” services - Corporation Stops	-	Curb Stops
<u>Corporation Stops</u>		<u>Curb Stops (Minneapolis Style)</u>
<u>Ford - FB1000-Q Series</u>		<u>B44-444MQ-NL Series ball type</u>
<u>Mueller - B-25008</u>		<u>B-25155N</u>
<u>AY McDonald - 74701BQ</u>		<u>76104Q-NL</u>
- 1 ½” and 2” taps on ductile iron pipe will use a brass double strap tapping saddle or full circle stainless steel tapping saddle with C.C. threads. 1 ½” and 2” taps on PVC piping will require the use of a full circle stainless steel tapping saddle with C.C. threads.
Saddles shall be Ford Meter Box FS313 Series, Smith-Blair 372 Series, Powerseal Model 3412AS , Mueller SS Series
- *If an existing service line begins to leak for any reason and is not constructed to City of Marysville standards, the entire service line has to be replaced to current City of Marysville specifications. An inspection fee will have to be paid before the new service line can be inspected and turned on at the curb stop. If a service line has a meter pit between the curb stop and the dwelling it services, the meter pit shall be eliminated and a new water meter shall be relocated inside the dwelling it services.*

PART 3 - SERVICE LINE INSTALLATION

- The customer's service line shall be laid at a depth of not less than four and one-half (4-1/2) feet nor more than five (5) feet below finished grade.
- When existing rough grade deviates from finished grade by more than one (1) foot, a site plan shall be reviewed in the field by the City Inspector and/or finished grade stakes shall be provided by customer or contractor.
- The customer's service line will be laid in a separate trench or it may be laid on a ledge in either side of the sewer trench. Said ledge shall be cut into the side of the sewer trench so as to provide a shelf six inches wide of solid firm soil for the entire length of the pipe. Water Division approval must be obtained, **prior to installation**, to lay the service line in the sewer trench.
- The customer's service line shall be brought to the green space 2' in front of sidewalk. When connection with the City of Marysville main lies on far side of street, an obstruction free zone directly across from the service line must exist. The obstruction free zone shall be clear 5 feet on either side of the intended tie in with the City of Marysville main (see WTR-07).
- Before installation, the contractor shall check with the City of Marysville for the best location to locate this service line. This line will be located as to insure that the City of Marysville service connection and service line will be free of obstructions (see WTR-08).
- In the event the contractor has the option of providing a main connection on either side of the street (corner lots), the contractor shall choose the near side connection (see WTR-09).
- In the event the customer's lot is located on a cul-de-sac, the contractor shall notify the City of Marysville prior to installation of the customer's service line, so that desired location can be determined.

All curb boxes shall be the Minneapolis Style with the proper size base with the lid marked "Water". All curb boxes shall be properly set to the finished grade. Final finish curb box height is to be the responsibility of the contractor.

PART 4 - SERVICE LINE INSPECTIONS

- All service line installations must be inspected and approved by the City of Marysville personnel prior to backfilling. *A green card will be issued at curb box for approved installations. A red card for unapproved installations.* Any service line, which has been backfilled prior to inspection, will not be approved until it is uncovered and a proper inspection can be made.
- Service lines will not be inspected prior to application for service.
- Inspections will be made Monday thru Friday, for a fee of \$75.00 during the following hours:
8:00 am to 5:00 pm.

The customer shall provide minimum of one (1) workday advance notice when requesting an inspection.

- Customer's service lines will not be approved prior to full compliance of the City of Marysville's service line policy. Those service lines which are not ready at time of inspection will not be approved. Service lines which are not approved will require a second inspection. Any problems after second inspection additional fee of \$75.00 will be required to be paid.
- All inspection charges, if any, shall be paid prior to the City of Marysville connections.
- All service lines 2" and smaller will be hydrostatically tested at system pressure for 5 minutes to make sure they are leak free. 3" and larger service lines will be hydrostatically tested at 150 PSI for 2 hours.
- Any service that has to be repaired or replaced for any reason must be inspected prior to backfill. Inspection fees will be paid prior to inspection (\$75.00).

PART 5 - CITY OF MARYSVILLE CONNECTIONS

City of Marysville Connections will be scheduled following customer's service line approval.

Curb stops and valves in the City's service lines are for the exclusive use and under the exclusive control of the City. No person, other than an authorized employee of the City of Marysville, is permitted to operate said curb stops or valves.

Only in cases where a curb stop exists prior to the customer service line shall the customer's plumber connect the customer service line to the curb stop. **Under no circumstances will the plumber turn the water on until authorized personnel are present to turn on.** The plumber shall then reset the curb box in a plumb manner and make sure curb box is at proper grade, which is 1/4" rise per foot from top of curb or if in a driveway approach, curb box will be set to grade of finished approach. Finally, compact the backfill around the curb box. The plumber shall adjust the curb box to the proper height.

If any damage is made to curb stop, curb box, or service during hook-up, the plumber or contractor will be charged labor and material for repairs.

If a contractor or plumber finds a problem prior to excavation, the Water Division will be notified and the contractor will not be charged for repairs.

PART 6 - METER SETTINGS

- The water meter must be connected to the service line not more than 12" from point of entrance of service into the building. An outside meter pit is not preferred but may be installed at the discretion of the City of Marysville. A typical residential meter set is shown in Drawing WTR-10.
- Valves are required directly in front of the meter on the inlet as well as directly following the meter on the outlet. (See meter setting detail in WTR-16.) They must be full port brass ball valves. These valves are the responsibility of the customer, and must be kept in operating condition. Valves must operate as designed, or they shall be replaced with new valves conforming to City of Marysville Water Division Specifications. The customer is responsible for all costs incurred from valve replacement.
- The location of the meter must be in an accessible area to allow for installation, disconnection or reading. Crawl space installation is strictly prohibited.

- The meter must be protected from freezing temperatures. The customer will be charged for any frozen or broken meters.
- For meters 1-1/2" and larger the valve immediately upstream of the meter shall be a full port ball valve. Ball valves are acceptable if they are five (5) pipe diameters or more upstream from the meter. Downstream ball valves can be used. 3" and larger will be rising stem valves (osy) with resealant seats.
- For meters 2" and larger that do not have a built in test port, a test tee shall be installed to allow field-testing of the meter. The tee shall be a 2" NPT outlet with a 4" nipple and valve, as shown on WTR-14. (Some meters have a test port incorporated into meter body.)
- Meters 2" and larger will be supplied with strainers. Piping for 2" meters shall be bronze and piping for meters larger than 2" shall be a minimum class 52 ductile iron pipe.
- Meters 1-1/2" and larger are flanged with flanges furnished by City of Marysville.
- A typical meter setting for 2" meters and larger is shown in WTR-13. A lockable meter bypass ball valve is required for testing 2" meters for larger installations. The lockable meter bypass ball valve shall be Apollo 75-100 Series or equal. 3" and larger meters shall use (osy) valves.
- If house plumbing is copper, a grounding wire will be installed with ground clamps around the meter setting. Ground wire will be connected to piping prior to meter being set. Grounding is not necessary if house plumbing is plastic.
- If a second attempt has been made to set a meter but the meter setting is still not ready, additional charge of \$75.00 will be billed to requesting agency.
- Hydrant meters may be set year round, weather permitting. Hydrant meters will remain on site at all times and will be presented to a water representative upon request to get meter readings. If the temperature is less than 32° for more than two days, hydrant meters will be removed. Anyone using a hydrant meter will be responsible for damages caused to meter assembly and/or the hydrant while meter is being used.

PART 7 - BACKFLOW PREVENTION

- The City of Marysville shall review the need for a backflow prevention device at the meter as mandated by the City of Marysville Codified Ordinance 930.06. If, in the opinion of the Water Superintendent, a backflow prevention device is necessary, it shall be installed by the customer at his expense, and will be approved by the City prior to the meter being set and the service placed in use.
- Prior to the meter set, the customer will disconnect any alternative water supplies, (i.e. wells, cistern) on their property from the system. Should the customer choose to maintain the alternative water supply source on the property, they must install an approved backflow prevention device.
- No person shall establish or maintain any alternative water supply other than the regular public water system supplied by the Division of Water. If, in the judgment of the Water Superintendent, a backflow prevention device is necessary for the safety of the public water system, notice will be given to the water customer to install an approved device. The customer shall install the device at his own expense at a location approved by the Division of Water.
- If the service line serves an industrial or commercial account, then a suitable backflow prevention device (subject to City of Marysville approval) must follow the meter installation, as shown on WTR-13.
- All non-residential services will have installed a suitable backflow prevention device (subject to City of Marysville approval) after the meter.
- All fire lines will have a backflow prevention device (subject to City of Marysville approval) installed.
- If a lawn sprinkling system is installed on the premises, a pressure vacuum breaker backflow prevention device is required, as shown on Drawing WTR-11. A pressure vacuum breaker must be installed a minimum of 12" above grade.

All backflow prevention devices must be tested annually by a state certified tester in order to insure proper operation. The device shall be dismantled, inspected and any worn parts replaced every five years. The results of such testing and repairing of devices shall be submitted to the City of Marysville office annually using City of Marysville Backflow Testing form.

- The cost of the device(s), the testing and maintenance thereof, is at the expense of the customer.

PART 8 - PRIVATE FIRE LINE INSTALLATION

- All fire protection, limited area as well as complete systems, will be on a separate service. No fire protection will be permitted to be serviced off the domestic line per Marysville specifications as required by the local Fire Department.
- The customer's service line shall be laid at a depth of not less than four and one-half (4-1/2) feet nor more than five (5) feet below finished grade.
- When existing rough grade deviates from finished grade by more than one (1) foot, a site plan shall be reviewed in the field by the City Inspector and/or finished grade stakes shall be provided by customer or contractor.
- The customer's fire line may be laid in a separate trench, or it may be laid on a ledge in either side of the sewer trench or domestic line installation. Said ledge shall be cut into the side of the sewer trench so as to provide a shelf six inches wide of solid firm soil for the entire length of the pipe. This must be approved by Water Division prior to installation.
- The customer's service line shall be brought to the green space 2' in front of sidewalk. When connection with the City of Marysville main lies on far side of street, an obstruction free zone directly across from the service line must exist. The obstruction free zone shall be clear five (5) feet on either side of the intended tie in with the City of Marysville main (see WTR-07).
- Before installation, the contractor shall check with the City of Marysville for the best location to locate this service line. This line will be located as to insure that the City of Marysville service connection and service line will be free of obstructions (see WTR-08).
- In the event the contractor has the option of providing a main connection on either side of the street (corner lots), the contractor shall choose the near side connection (see WTR-09).
- In the event the customer's lot is located on a cul-de-sac, the contractor shall notify the City of Marysville prior to installation of the customer's service line, so that desired location can be determined.

PART 9 - FIRE LINE BACKFLOW PREVENTION

- The City of Marysville requires a backflow prevention device on all fire lines immediately inside building. As mandated by City of Marysville Codified Ordinance 930.06. When the backflow prevention device is installed, it shall be installed by the customer at his expense, and will be approved by the City prior to the meter being set and the service placed in use. All backflow prevention devices must be tested annually by a state certified tester in order to insure proper operation. The device shall be dismantled, inspected and any worn parts replaced every five years. The results of such testing and repairing of devices shall be submitted to the City of Marysville office annually using City of Marysville Backflow Testing Report Form.
- The cost of the device(s), the testing and maintenance thereof, is at the expense of the customer.

SECTION IX – JOINTS

Joints shall be push-on, conforming to ANSI Specification A21.11 (AWWA C111), latest revision. Push-on joints shall be equal to the Tyton Joint as manufactured by Clow Corporation.

SECTION X - FITTINGS

Fittings shall be furnished in accordance with ANSI Specification A21.10 (AWWA C153), latest revision. Joints shall be mechanical, conforming to ANSI specification A21.11 (AWWA C111), latest revision. A cement mortar lining shall be furnished. Fluorocarbon coated (Blue Bolts) bolts shall be used on all fittings.

Plugs other than MJ will be: Clow F1159 solid plug (super belltite push on restrained plugs only) on 4"-12" pipe. On 16" and larger pipe mega lug both sides of phase valve; last piece of pipe shall be properly restrained according to Marysville specifications with anchor type plug or cap on the end of the pipe.

All bends will have Mega Lugs or wedge action retaining glands installed. The Division of Water will decide if concrete blocking or 4" x 8" x 16" solid blocks will be used.

Whenever a solid sleeve is approved by Water Division to be used, it will require mega lugs. All sleeves to be supported by 4" solid blocks. Proper restraining of joints shall be installed as per detail.

SECTION XI- WATER MAINS ENCASEMENT PIPE AWWA C600 Latest edition

Description. This work shall consist of furnishing and installing an encasement pipe of a sufficient size. The casing pipe shall be 6 to 8 inches larger than the outside diameter of the ductile iron carrier pipe bells, to permit the installation of the carrier pipe therein and the encasing of the carrier pipe as shown on the plans or as specified. Chocks, skids, or spacers shall be placed on or under the carrier pipe to ensure approximate centering in the casing pipe and to prevent damage during installation. Metal to metal contact must be avoided.

General. Crossings constructed on the right of way of private companies or public agencies shall conform to the requirements and regulations of the respective companies and agencies. The owner will acquire the necessary permits and crossing rights from the respective authorities involved. The Contractor shall be responsible of the payment of any costs due to the authority's requirements, of whatever nature, including watchmen and supervision by the authority's forces. Where work under this item involves railroads, the Contractor shall perform his work in such a manner so as not to interfere with the operation of the railroad and shall save the railroad harmless from any claims resulting from the operation or omissions of the Contractor. The Contractor shall perform his work below the track level and shall not obstruct the roadbed of the railroad (conform to Conrail specifications).

The Contractor shall, before beginning work on the crossing, submit to the Water division the work schedule and shop drawings together with a description of the methods and materials to be used on constructing the crossing.

The Contractor shall submit with his proposal evidence to prove to the satisfaction of the Engineer that he has had previous experience in this type of work or that he will have a superintendent with the required experience continuously employed on the construction until the crossing work is completed.

Encasement Pipe. The encasement pipe shall meet the requirements of the City of Marysville Water Division as well as private or public authority involved. The size, type of material and thickness shall be shown on the drawings.

Detailed drawings of the encasement pipe proposed for use shall be submitted to the Engineer and Water Division for approval prior to any work starting.

Construction. The crossing shall be accomplished by boring and jacking. When boring and jacking the encasement pipe, extreme care shall be taken to maintain grade and alignment of the pipe.

Carrier pipe shall conform with the City of Marysville Sections VII Waterline Piping

After the carrier pipe has been installed in the encasement pipe, the ends will be bricked and mortared closed and the backfill shall be tightly tamped around the ends of the encasement pipe, unless otherwise noted. The carrier pipe shall be filled with low strength mortar or blown full of sand to eliminate voids between the carrier pipe and the water main.

All shoring, blocking, or other special supports, if required, shall be provided by the Contractor at his expense.

As Built Plans. The Contractor shall provide the City of Marysville Water Division with As Built Plans upon completion of the job. All utilities are to be shown as well as any elevations that were found after excavating.

If any bends are used, measurements to the closest hydrant or MLV will also be shown on as-built.

SECTION XII - PRESSURE AND BACTERIA TESTING

Pressure Test

After the trench has been backfilled, the water main shall be subjected to water pressure of 150 PSI for 2 hours, measured at the point of highest elevation. Before applying the test pressure, all air shall be expelled from the pipe. If hydrants or blow offs are not available at high places, the installation contractor will be responsible for making and plugging these 1" blow offs. The City Inspector will make the final decision on how much pipe will be pressure tested at a time. If defects are found, the installation contractor shall immediately make necessary repairs and be reinspected prior to backfilling at his own expense under the direction of the City Inspector. The duration of the pressure test shall be two hours. If the first leakage test is unsuccessful, the water used to successfully pass the pressure test will be charged to the contractor by formula of pipe capacity times 10 times the current rate of bulk water charged in the City of Marysville.

Leaking Test

A leakage test shall be conducted after the pressure test has been satisfactorily completed. Leakage is defined as the quantity of water to be supplied into the newly laid pipe to maintain the leakage test pressure of 150 PSI. The allowable leakage quantity will be determined by the City of Marysville Inspector. No pipe installation will be accepted until the leakage is less than the allowable quantity. The duration of the leakage test shall be two hours.

Chlorination

The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension or any valued section of it and through a 1" corporation stop inserted by the installation contractor in the top of the newly laid pipe. Disinfection procedures shall follow the guidelines established in AWWA C651. The chlorine-bearing compounds that may be used are commercial products known as "HTH", "PERCHLORON" or "PITCHLOR". Water from the existing distribution system shall be controlled so as to flow slowly in the newly laid pipeline during the application of chlorine. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.

Bacteriological Testing

The super chlorinated solution shall stay in the newly laid water main for 48 hours from time of application. The new main will be thoroughly flushed and the first of two consecutive samples will be taken 24 hours from the time of flushing. The second sample will be taken 24 hours after the first sample. When taking bacteria samples the City of Marysville Inspector will control the valve at the beginning of the main extension. Bacteria samples will be collected by the installation contractor. The samples will be analyzed by an Ohio Environmental Protection Agency approved laboratory in bacterial analysis.

Test result sheets will be forwarded from the lab to the City of Marysville Division of Water. The new main extension will be passed only after two consecutive negative samples are collected and reported to the City of Marysville. The new main extension will be turned on after the 1" blow off corporation stops are removed and plugged with 1" corp stop plugs. Blow offs will be a minimum size of 1" cc threads.