MULTI-FAMILY, COMMERCIAL, AND INDUSTRIAL

METER AND SERVICE STANDARDS

AQUA Ohio
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METER AND SERVICE STANDARDS

I. INTRODUCTION

A. The purpose of this document is to provide clear, concise information regarding new and replacement water service lines and meters within Aqua Ohio service areas. Please do not hesitate to contact our Field Operations staff in your area if you have questions or need additional information.

II. TYPES OF WATER SERVICE

A. Aqua Ohio provides both domestic and fire water services to duplexes, multi-family premises, commercial premises and industrial premises.

B. An individual service line and meter must be installed for each type of service on each premises.

C. Each water service line must originate at a water distribution main owned by Aqua Ohio, and the water main must front the parcel for which service is requested, extending at least to:
   1) the parcel midpoint, or
   2) the mid-point of the farthest structure receiving service.

D. Corner parcels or parcels that are adjacent to more than one street will receive service when an Aqua water main extends across the entire frontage. When a water main extends along the side yard of a corner parcel, water service may be installed when the water main extends along the entire side lot line.

E. Each water service line may serve only one premises on a single parcel or lot unless Aqua Ohio and an Applicant enter into a special agreement for service.

F. Special agreements may be permitted under the following circumstances at the discretion of Aqua Ohio:
   1) Special agreements may permit the use of a combined domestic and fire service line at a commercial or industrial premises:
      a) When the fire service provides water for a closed fire system and the required fire line size is 2 inches in diameter or smaller.
      b) When the required fire line size is greater than 2 inches in diameter and Aqua determines that water quality will not be compromised.
   2) Special agreements may permit multi-premises commercial or industrial developments on private property:
      a) when a water main is extended within the property to provide water service to each premises, and

b) when Aqua is granted ownership of the water main with a 20-foot easement at an agreed upon location, and the owner is responsible for surface restoration related to future water main repairs.

G. Aqua Ohio may require submission of plans for new or replacement water service and reserves the right to approve or change proposed water service connection plans when necessary to meet Aqua standards.

III. HOW TO OBTAIN WATER SERVICE

A. All persons requesting a new water service connection must apply to Aqua Ohio using forms supplied by Aqua Ohio. Sample forms are attached in APPENDIX A.

B. The applicant for a new water service connection must be the water customer.

C. Applications for new water service must be made as follows:
   1) when new water service is requested,
   2) when temporary water service is requested. Temporary service must meet requirements of permanent service.

D. Each application must include the address for which application is being made.

E. Each application for new water service must state the uses for which water service is being requested.

F. Applications for commercial, industrial and fire service must be accompanied by a Cross-Connection Survey. A sample form is attached in APPENDIX B.

G. Applications must be accompanied by the information required in Sections IV and V below. Processing application packages may take up to 30 days.

H. Once an application is approved and required fees are paid, contact Aqua at least 48 hours prior to making the waterline tap. All taps on Aqua waterlines must be witnessed by Aqua. Fee schedule is available upon request.

I. When there is no water main fronting the premises for which application is being made, the applicant must first enter into a water main extension agreement with Aqua.

IV. AQUA WATER SERVICE LINES

A. General

   1) The Aqua Ohio water service line is that portion of the water service line between the water distribution main up to and including the curb stop, meter pit or meter vault located at or near the premises property line. The Aqua Ohio water service line is maintained by Aqua Ohio at its own cost.
   2) No fixture or branch connections are permitted in a water service line between the water distribution main and the water meter.
   3) Domestic water service connections require installation of a curb stop or gate valve within the street right-of-way or the waterline easement for Aqua Ohio exclusive use.
   4) When a combined domestic and fire service line is allowed by Aqua individual isolation valves are required on both the domestic and fire service lines. Both valves must be located at the property line.

5) An existing Aqua Ohio water service line may be reused for a new owner if Aqua determines that the service line is in good condition and the Customer service line is of the same nominal diameter as the existing Aqua Ohio service line. Otherwise a new Aqua Ohio water service line must be installed at the applicant's expense.
6) If a proposed Aqua Ohio water service line is to be installed where any portion of the line must pass through property not owned by the Applicant or is subject to a third-party easement or lease, the Applicant is responsible for acquiring a permanent easement for the water service line in Aqua's name on that property.
7) Examples of typical Easement Agreements are included in APPENDIX C.

B. Multi-family, Commercial and Industrial Water Service

1) Multi-family, commercial and industrial domestic water service connections to Aqua Ohio water distribution mains must be installed and paid for by the Applicant upon receiving written approval from Aqua Ohio. Installation includes restoration of pavement and landscaped areas within public and private rights-of-way that are disturbed during construction of the water service line.
2) No application for multi-family, commercial or industrial service will be accepted until plans are submitted.
3) Aqua Ohio reserves the right to deny service if the proposed water service will have a negative impact on Aqua Ohio's ability to provide water service to existing customers through its existing distribution systems.

C. Fire Water Service

1) Fire water service connections to Aqua Ohio water distribution mains must be installed and paid for by the Applicant upon receiving written approval from Aqua Ohio. Installation includes restoration of pavement and landscaped areas within public and private rights-of-way that are disturbed during construction of the fire water service line.
2) No application for fire service will be accepted until plans are submitted.
3) Aqua Ohio reserves the right to deny service if the proposed fire service will have a negative impact on Aqua Ohio's ability to provide water service to existing customers through its existing distribution systems.

V. CUSTOMER OWNED WATER SERVICE LINES

A. General

1) The Customer water service line is that portion of the water service line from the Aqua Ohio water service line to the structure or premises being served.
2) No fixture or branch connections are permitted in a water service line between the water distribution main and the water meter.
3) The Customer is responsible for installing, maintaining, and repairing the Customer water service line using materials and in a manner acceptable to Aqua Ohio.
4) The Customer's water service line and all connections and fixtures attached to it are subject to inspection by Aqua Ohio before the Customer service line is backfilled and before water service is initiated or re-initiated.

5) Aqua Ohio reserves the right to request additional information on specific installations.
6) Standard Details for construction of Customer water service lines are included in APPENDIX D.

B. Multi-family, Commercial and Industrial Water Service Lines:

1) These water service connections and lines must be sized by the Customer or authorized agent (i.e., architect, engineer, etc.)
2) Backflow prevention devices may be required.
3) Prospective and existing customers applying for a new water service connection or making modifications to an existing water service connection must submit duplicate copies of a site plan and drawings for the customer's water system to Aqua Ohio for review. Drawings must include, but may not be limited to, the following:
   a) Location map of the service site.
   b) General site layout including buildings, pavement, existing and proposed utilities, and right-of-way and property lines.
   c) Location and size of existing and/or proposed connection to Aqua Ohio's water main.
   d) Location and size of existing and/or proposed metered service connections, meter vaults, and valves.
   e) Location, type and size of proposed backflow prevention device(s).

C. Fire Service Lines:

1) Fire service connections/lines must be sized by the Customer or authorized agent (i.e., fire sprinkler contractor, fire protection engineer, etc.)
2) All fire services shall be protected and metered in accordance with Aqua's Cross Connection Control Program (see APPENDIX E).
3) Prospective and existing customers applying for a new fire service connection or making modifications to an existing fire service connection must submit duplicate copies of a site plan and drawings for the private fire system to Aqua Ohio for review. Drawings must include, but may not be limited to, the following:
   a) Title sheet including a location map of the service site.
   b) General site layout including buildings, pavement, existing and proposed utilities, and right-of-way and property lines.
   c) Location and size of existing and/or proposed connection to Aqua Ohio's water main.
   d) Location and size of existing and/or proposed metered service connections, meter vaults, and valves.
   e) Location, type and size of proposed backflow prevention device(s).
   f) Location of proposed water connections to buildings, private fire lines, and private hydrants.
   g) Location and size of auxiliary fire water source connections, tanks, booster pumps, etc.
   h) A plan showing areas proposed to be protected by a fire sprinkler system.

i) An indication of whether chemical additives or anti-freeze will be present in the private fire protection system.

D. Booster Pump Requirements:

1) Provide an approved method to maintain a minimum suction pressure as follows:
   a) Booster pumps not intended to be used for fire suppression must be equipped with a low pressure cut-off designed to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch (10 psi) gauge or less.
   b) Booster pumps used for fire suppression installed after August 8, 2008 must be equipped with one of the following:
      i) A low suction pilot-operated valve installed in the discharge piping to maintain positive pressure in the suction piping while monitoring pressure in the suction piping through a sensing line. The valve must throttle the discharge of the pump when necessary so that suction pressure will not be reduced below 10 psi gauge while the pump is operating.
      ii) A variable speed suction speed control system to maintain a minimum positive suction pressure at the pump inlet by reducing the pump driver speed while monitoring pressure in the suction piping through a sensing line. It will be set so that the suction pressure will not be reduced below 10 psi gauge while the pump is operating.
   c) Booster pumps used for fire suppression installed prior to August 8, 2008 which are equipped with a low pressure cut-off as defined above are not required to be modified solely for the purpose of meeting the methods accepted after this date. However, if booster pumps are modified for any other reason, they must meet the requirements for pumps installed after August 8, 2008.
2) Maintain the low pressure cut-off device, the low suction throttling valve, or the variable speed suction limiting control in proper working order.
3) Certify to Aqua Ohio at least once every twelve months that the minimum suction pressure sustaining method is operable and maintained in continuous operation.

VI. GENERAL SPECIFICATIONS FOR WATER SERVICE LINE MATERIALS

A. Water service lines 2-inches in diameter and smaller:

1) Type K copper complying with ASTM B88, Standard Specification for Seamless Copper Water Tube.
2) HDPE SDR 9 complying with
   a) AWWA C901, Polyethylene (PE) Pressure Pipe and Tubing, ½ Inch Through 3 Inch for Water Service
   b) NSF 61, Drinking Water System Components – Health Effects

c) 12-gauge copper tracer wire and marking tape must be installed in the trench above the HDPE service line

B. Valves and Fittings 2-inches in diameter and smaller:

1) AWWA C800, Underground Service Line Valves and Fittings
2) curb stops
3) curb boxes
4) corporation stops
5) Oval flanges: companion flanges for 1 ½-inch and 2-inch meters, made of bronze and drilled, faced, and tapped in conformance with ASME B1.20.1. Flange dimensions shall conform to AWWA C700.
6) NSF 61, Drinking Water System Components – Health Effects
7) NSF 372, Drinking Water System Components – Lead Content

C. Water service lines 3-inches in diameter and larger:

1) Cement lined ductile iron pipe and ductile iron fittings:
   a) AWWA C151, Ductile Iron Pipe, Centrifugally Cast
   b) AWWA C150, Thickness Design of Ductile Iron Pipe (CL 52 or 350)
   c) AWWA C110, Ductile Iron and Gray Iron Fittings
   d) AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings
   e) AWWA C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings (buried joints)
   f) AWWA C115, Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges (exposed joints)
2) Flanges:
   a) adequate for water service of 175 PSI working pressure, or higher depending on system pressure.
   b) bolt circle and holes matching Class 125 flanges shown in ANSI B16.1.
3) Polyethylene Encasement:
   a) AWWA C105, Polyethylene Encasement for Ductile Iron Pipe Systems
4) Nuts and bolts: ASTM 307 Grade B with A563A Heavy Hex nuts.

D. Valves 3 inches and larger:

1) AWWA C509, Resilient Seated Gate Valves
2) Manufactured by Mueller Company
3) Open right in Massillon Division and Tiffin Division
4) Open left in all other Divisions
5) Pressure rating: 350 psi
6) 3-in. and larger, shall be rated 200 psi working pressure (or higher depending on actual pressure in the Aqua water main) and shall be in accordance with AWWA C500. BURIED Valves shall BE NON-RISING STEM), and valves in vaults shall have outside screw and yoke (rising stems.)

E. Hydrants

1) AWWA C502, Dry-Barrel Fire Hydrants as manufactured by Mueller Company

2) Storz connections

F. Tapping Sleeves and Valves

1) AWWA C223, Fabricated Steel and Stainless Steel Tapping Sleeves
2) Stainless steel with MJ outlet, as manufactured by Smith-Blair or equal
3) Rated at 200 psi working pressure (or higher depending on actual pressure in the Aqua water main) complying with AWWA C500. Valves shall have resilient seats (RS).

VII. DIVISION SPECIFICATIONS FOR WATER SERVICE LINES

DIVISION	SERVICE LINES	VALVES	HYDRANTS
Ashtabula and Jefferson	1" - copper 1 ½" to 2" – HDPE 3" and above – DIP CL52	Open left	Storz connection on 4" steamer nozzle
Marion	Up to 2" - HDPE (minimum 160 psi) 3" and above - DIP	Open left	No Storz
Tiffin	Up to 2" – HDPE (minimum 160 psi) or copper 3" and above - DIP	Open right	Storz connection on 4" steamer nozzle
Franklin	Up to 2" – HDPE 3" and above - DIP	Open left	No Storz
Lawrence County	Copper	Open left	No Storz
Lake White	Copper	Open left	No Storz
Struthers	1" up to 1 ½" – copper 2" – copper or HDPE 3" and above – DIP	Open left	No Storz
Stark	1" to 2" – CTS copper 3" and above – DIP	Open right	5" Storz
Portage	1" to 2" – CTS copper 3" and above – DIP	Open left	4" Storz
Mansfield	1" to 2" – CTS copper 3" and above – DIP	Open left	No Storz
Mohawk	1" to 2" – CTS copper 3" and above – DIP	Open left	No Storz
Firestone Trace		Open left	No Storz

VIII. SPECIFICATIONS FOR WATER SERVICE LINE INSTALLATION

A. Water service lines must be laid at a depth of not less than 4 feet 6 inches nor more than 5 feet below finished ground level.

B. Aqua Ohio recommends that waterlines be laid at 5 feet below finished grade in the Mentor and Ashtabula Divisions.

C. Customer water service lines shall be a minimum of 1 inch in diameter.

D. The Customer water service line may be laid as follows:

1) in a trench separate from a sewer service lateral or
2) on a ledge on either side of but above the crown of a sewer lateral. The ledge shall be at least 6 inches wide and provide solid firm soil bedding for the entire length of the water service line.

E. The water service line trench shall be left open and the pipe uncovered until it is inspected and approved by an Aqua Ohio representative.

F. Aqua Ohio recommends that the Customer water service line materials and installation match Aqua Ohio water service line materials and installation.

G. Horizontal bends are prohibited in the Aqua Ohio water service line.

H. Service connections larger than 1 inch in diameter must be separated by a minimum distance of 5 feet from other service connections, hydrant tees, fittings and valves.

IX. WATER METERS

A. General

1) Installed water meters are the property of Aqua Ohio. They may not be moved, altered, or tampered with in any way.
2) Aqua will install the meter and turn on water service after the customer plumbing is installed, tested and inspected.
3) All meters are installed horizontally with shutoff valves on both sides
4) Aqua will size meters based on water system demands as provided by the Applicant.

B. Aqua will provide, install and maintain meters and meter pits for settings of single meters up to 1-½ inch in diameter.

C. Aqua will provide technical specifications for meter pits 2 inches and larger in diameter for purchase and installation by the Applicant.

D. Deduct meters are not permitted.

E. Meters located in buildings shall be located in the basement or on the first floor as near as possible to the point of entrance of the water service line, and:

1) In a clean, dry, safe space not subject to freezing, and
2) Where easily accessible for installation, disconnection and reading.

F. Tees, valves, and meter settings must be supported by adjustable pipe supports and remain supported and stable with or without a meter or meter spacer in place.

G. Meters installed in an underground pit or vault shall be located in a convenient and readily accessible location at or near the curb or customer property line, outside of sidewalks and paved areas and in areas not subject to vehicular loading, and shall be protected from freezing.

H. Commercial, Industrial and Fire Service Meters

1) Special agreements may provide for metering of water service through one or more master meters to two or more business units per meter:
   a) when a building or combination of buildings on a single parcel has two or more rental units and each unit is designed for professional or business purposes.
   b) when a single building housing two or more units on a single parcel has units under different ownership, each of which is designed or used for professional or business purposes.
   c) when a mobile home, trailer park, or court on a single parcel contains pads, lots, or locations for two or more mobile homes or trailer units, each unit of which is under different ownership and is designed or used for professional or business purposes.
2) Meter pits are required for commercial, industrial and fire service meters when the building is more than 200 feet from the water main. Plans for meter locations and installations must be approved by Aqua before installation of pits.
3) Commercial, industrial and fire service meter pits are to be provided, installed, owned, and maintained by the Customer. Pits shall be located outside of the public and/or Aqua right-of-way and inside the property line of the structure to be served, with the inlet side of pit abutting the property line closest to the water line.
4) Bollards or curbing must be installed around a meter pit installed in a paved area or an area subjected to traffic.
5) A permanent easement for ingress and egress shall be provided to Aqua at no cost to allow for maintenance of the installed meter. Aqua shall determine the necessary dimensions required for the easement. Aqua shall not be held responsible for replacement or maintenance of any paved surfaces, structures, shrubs, or landscaping placed within the easement.
6) Reduced pressure backflow devices are not permitted below grade.
7) Pre-cast concrete meter pits and vaults shall conform to Standard Details and the following:
   a) Designed for HS-20 loading.
   b) Concrete shall consist of ASTM C150 Portland cement and aggregates that conform to ASTM C33. The minimum compressive strength shall be 4000 psi.
   c) Reinforcing steel shall conform to ASTM A615 grade 60 for rebar or ASTM A185 for welded wire fabric.
   d) Individual concrete sections shall be joined with keyways and two rings of butyl rubber sealant or equal for a watertight installation.
   e) Each pit shall include a minimum 12-inch diameter by 6-inch deep sump.
   f) Access doors shall be centered over the meter and adjacent to the wall and be aluminum, single or double-leaf type J-ALH20, as manufactured by the BILCO Company or equal, of a size adequate to remove the meter.
   g) Install flange adaptors or couplings to permit removal of the meter.

h) The top of the meter pit shall be set a minimum of 4 inches above adjacent finished grade. Adjacent surfaces shall be sloped to divert water away from pit/vault.

i) A 10 foot wide gravel paved access drive is required for all vaults where the vault is located more than 10 feet from a paved surface. Aqua access to the meter vault must be available at all times.

j) Properly sized floor drains must be located near meters and backflow devices.

X. BACKFLOW DEVICES

A. Aqua Ohio has an established Cross Connection Control Program to ensure the safety of our water supply for our customers. The Cross Connection Control Program applies to all premises served by the public water systems owned and operated by Aqua Ohio. The Cross Connection Control Program is attached in APPENDIX E.

B. All applicants for water service must follow the requirements of the Cross Connection Control Program.

XI. PRESSURE REDUCING VALVES

A. A pressure reducing valve (PRV) is required by the Ohio Building Code where the Aqua water system pressure exceeds 80 psi on domestic water services, and at the discretion of Aqua where water pressure may exceed these limitations. Aqua Ohio will provide the pressure reducing valve when system pressure exceeds 125 psi.

B. Pressure reducing valves shall be selected, installed, owned and maintained by the customer on the outlet side of the water meter as recommended by the valve manufacturer.

GLOSSARY

Adjacent buildings: A group of 2 or more buildings on the same lot or parcel of land not separated by any street, avenue, thoroughfare, alley or other public right-of-way, except where the customer owns and /or leases a lot or parcel of land on both sides of a street, avenue, thoroughfare, alley or public right -of-way which lots or parcels of land otherwise would be contiguous, such building thereon shall be considered adjacent.

Applicant: A person, firm, corporation, or governmental unit that applies for water and/or sewer service from Aqua Ohio.

Application: An oral or written request to Aqua Ohio for water and/or sewer service. An application for the installation of a customer service line must be in writing on forms provided by Aqua Ohio.

AWWA: American Water Works Association

Backflow Preventer: A device designed to prevent a potential backflow of contaminants from the customer's activities or property into the Aqua Ohio water distribution system.

Check valve: A device designed to allow the flow of water in only one direction.

Closed Fire System: A fire suppression system, for which water is supplied directly by Aqua Ohio, that includes automatic sprinklers, standpipes or other automatic fire suppression devices, and does not include private fire hydrants, reservoirs, or holding tanks.

Company: Aqua Ohio, Inc.

Cost: The expenditure by the Company for labor, materials, engineering, supervision, motor vehicles and tools, and any other expenditures incidental thereto to the extent that any or all of the items are directly assignable to the particular situation involved, except when modified by the word "estimated," in which case it shall be the estimated expenditure for such item.

Customer: A person who enters an agreement with Aqua Ohio to receive water service.

Domestic Water Service: Water service, for which water is supplied directly by Aqua Ohio for uses other than fire suppression, including residential, commercial and industrial customers.

Main Extension: An extension, including fire hydrants if fire protection is provided by Aqua, from the nearest existing adequate main along a route determined in accordance with reasonable utility engineering practices to a point perpendicular to the most remote structure to be served fronting the Main Extension.

Meter: Aqua Ohio approved device, including associated remote registers, used to measure water passing through a customer service line.

Open Fire System: A fire suppression system, for which water is supplied directly by Aqua Ohio, including private fire hydrants, reservoirs or holding tanks for future firefighting purposes, firefighting training, etc.

Person: An individual, corporation, partnership, association, organization, or other entity capable under the law of suing or being sued, including any public body; includes the plural as well as the singular. Words of any gender include all genders.

PIV: Post Indicator Valve

Premises: Each of the following, together with the single and combined lot or parcel of land upon which it is located, or such portion of such land as is used or held for use with it, constitutes a Premises:

A. One building designed or used for single-family occupancy as a residence.

B. One building designed or used for single-family occupancy both as a residence and for professional or business purposes when the resident conducts the business or profession. When not so conducted, the portion occupied by the resident constitutes the Premises and each separate portion occupied by other persons for professional or business purposes constitutes a separate Premises.

C. A combination of adjacent buildings, one portion designed or used for single-family occupancy as a residence and the other portions designed for professional or business purposes all of which are occupied by the resident. When not so occupied, the portion designed or used for single-family occupancy constitutes one Premises and each separate portion designed or used for professional or business purposes and occupied by other persons constitutes a separate Premises.

D. One building designed or used by one person for professional or business purposes.

E. A combination of adjacent buildings designed or used by one person for professional or business purposes.

F. Each combination of rooms designed or used for single-family occupancy as a residence within a multiple-unit building.

G. Each room or combination of rooms designed or used by one person for professional or business purposes within a house or within a multiple-unit building.

H. Each parcel of land that requires water service.

I. Each parcel or mobile home unit where the unit is not resting primarily on its wheels.

J. Any building not otherwise defined a as premises in any other definition of premises contained herein.

Pressure Reducing Valve: A device designed to reduce water pressure within the Customer's building below the pressure that exists in the Aqua water distribution system.

Pressure Relief Valve: A device designed to relieve pressure on the internal plumbing system on the Customer's property.

Private Fire Protection Service: Fire protection water service furnished by Aqua other than Public Fire protection service. This includes, but is not limited to:

A. Water service to a Customer's fire protection facilities, such as sprinkler systems and/or fire hose connections in buildings and structures,

B. Fire hydrants other than those that qualify as public fire hydrants within the definition of Public Fire Protection Service and are operated and maintained by Aqua.

Public Fire Protection Service: Water service to fire hydrants that are operated and maintained by Aqua.

Service Lines:

A. Aqua's water service line is the portion of the service line between the water distribution main up to and including the curb stop, meter pit, or meter vault at or near the property, right-of-way, or easement line maintained at the cost of Aqua. For meters in homes where there is no curb stop, meter pit, or meter vault, Aqua owns and maintains the service line up to the customer's property line or right-of-way line.

B. The customer's water service line is the portion of the service line from the company's service line to the structure or premises that is supplied, installed, and maintained at the cost of the customer.

Special Agreement: A reasonable arrangement between Aqua and one or more of its customers.

Temporary Service: Water service that is not continuously used through the year, such as for building or construction purposes, street paving, cleaning property, filling tanks, or other uses of this kind.

Water Service Connection: The connection of the Aqua water service line with the customer's water service line at or near the property line, which connection enables the customer to receive water service.

APPENDIX A

AQUA

WATER SERVICE APPLICANT AND AGREEMENT

DIVISION _____ DATE _____ PERMIT NUMBER **SC**

_____ _____
APPLICANT(S) FOR SERVICE NAME(S) OF PARTY TO BE BILLED

_____ _____
ADDRESS BILLING ADDRESS

_____ _____
CITY, STATE, and ZIP CODE CITY, STATE, and ZIP CODE

LOT NO. _____ ALLOTMENT _____

SERVICE ADDRESS _____

LOCATION	SECT. UNIT	BASE	SUFFIX		DEVELOPER #	CONTRACT #	REFUND #
☐☐	☐☐	☐☐☐☐☐	☐☐	☐	☐☐☐	☐☐☐	☐☐☐
						REFUND % SPLIT	

SUBSEQUENT CONNECTION
PER-FOOT FRONTAGE CHARGE $ _____ _____

RELATED FACILITIES CONTRIBUTION $ _____ _____

CAPITAL INVESTMENT FEE (if applicable) $ _____ _____

TOTAL DUE BY CUSTOMER $ _____ _____

I request the installation of a _____ (size) Company Service Line and (if applicable) a _____ (size) meter for the above noted premises.

The Applicant agrees to pay the service bills promptly as rendered and to observe the "General Rules and Regulations" of the Company.

In the event that the Applicant for service shall be entitled to refunds pursuant to Aqua's tariff and the regulations of the Public Utilities Commission of Ohio (PUCO), each such refund shall be made by check payable to the Applicant and mailed to the address set forth in this application. The Applicant hereby assigns his or her right to receive any such person or persons to whom Applicant shall in the future transfer and convey title to the real property bearing the address of the Applicant set forth in this Application and Aqua shall be entitled to make refund payments thereafter to such person or persons upon application being made for water service by such person or persons. Thereafter, Aqua shall have no further obligation to make payment of any such refunds to the Applicant. Applicant hereby acknowledges receipt from Aqua Ohio, Inc. a copy of the currently effective Ohio Administrative Code sections of the PUCO setting forth rules for Main Extensions, Subsequent Connection, and Tap-Ins.

Signing of this form by a customer for water or sewer service shall in no case be deemed to constitute a waiver by the customer of any rights or privileges granted or guaranteed to him/her by the laws or constitution of the State of Ohio or by those of the United States.

SIGNED _____ (Applicant) PREPARED BY _____

CHECK APPROPRIATE BLOCKS

☐ SINGLE RESIDENCE	☐ MULTI-UNIT	☐ INSPECTED
☐ DOUBLE RESIDENCE	☐ LONG SIDE	☐ INDUSTRIAL
☐ APARTMENT	☐ SHORT SIDE	☐ METER PIT
☐ COMMERCIAL	☐ CURB CONNECTION	☐ OTHER

STREET OR HIGHWAY PERMIT RECEIVED

☐ CITY ☐ TOWNSHIP ☐ COUNTY ☐ STATE
DATE OF METER SETTING _____ MAKE _____ NO. _____

REMARKS _____

APPENDIX B

Aqua Ohio, Inc.
Cross-Connection Survey

Owner: _____

_____

Water Service Street Address City Township County Zip

Owner Address (if different from Service Address) _____

Name of Contact: _____ Contact Phone No.: _____

Is this a New Water Service _____ or an Existing Water Service _____?

If Existing Water Service, please provide: Premise No. _____ Account No. _____

Does a Backflow Device currently existing on the property? No _____ Yes _____

If yes, provide Backflow Device Serial number: _____

Type of Water Service: Residential ____ Non-Residential _____ Fire Protection _____ Other: _____

If **Other**, describe water use: _____

Is there ***any*** other water source on or serving this property? No _____ Yes _____

If Yes, what type (i.e., well, cistern, recycle, pond, etc.): _____

Is a non-interrupted water service required? No _____ Yes _____

Water Service Line Size _____ Water Meter Size _____ Water Meter Location _____

For Residential water service - is there an underground lawn irrigation system? No _____ Yes _____

For all non-fire protection water service - what is the use of the water or premise (check all that apply)?

_____ Residential - Single family
_____ Residential - Multi-family
_____ Retail
_____ Office
_____ Medical (hospital, mortuary, dental, medical, etc. buildings)
_____ Automotive
_____ Manufacturing/Product Process (food, metal, paper, etc.)
_____ Institutional
_____ Irrigation (lawn, landscape, product, etc.)
_____ School
_____ Laboratory (school, commercial, manufacturing, etc.)
_____ Building with sewage ejector
_____ Heating If Checked, Steam Boiler _____ Hot Water Boiler _____ Chemical Treated Boiler _____
_____ Cooling If Checked, Cooling Tower No _____ Yes _____
_____ Chiller No _____ Yes _____
_____ Chemical Treated Chiller No _____ Yes _____
_____ Booster or Jockey Pump on water service? No _____ Yes _____ If Yes, Capacity (gpm) _____
_____ Auxiliary Water Storage on water service? No _____ Yes _____ If Yes, Type & Capacity _____

Questions for Fire Service

_____ New _____ Existing (modification / expansion) Service Line Size _____

Type: Wet Sprinkler _____ Dry Sprinkler _____ Dry Riser _____ Wet Riser _____

Proposed number of yard Fire Hydrants? _____

Booster Pump on Proposed Fire Line? No _____ Yes _____ If Yes, Capacity (gpm) _____

Jockey Pump on Proposed Fire Line? No _____ Yes _____ If Yes, Capacity (gpm) _____

Auxiliary Water Storage for Fire Protection? No _____ Yes _____ If Yes, Type & Capacity (gals) _____

Auxiliary Water Supply for Fire Protection? No _____ Yes _____ If Yes, Type & Capacity (gals) _____

Is a chemical additive used in the fire protection system? No _____ Yes _____

Have you reviewed Aqua Ohio, Inc.'s Cross-Connection Control Program document requirements? No _____ Yes _____

_____ _____

Individual completing the survey - Print Name & Sign Date

APPENDIX C

WATER UTILITY EASEMENT

For and in consideration of One Dollar ($1.00) and other good and valuable consideration, _____ , GRANTOR, does hereby give and grant unto AQUA OHIO, INC., an Ohio Corporation, its successors and assigns, GRANTEE, the perpetual right of way and easement to lay, re-lay, construct, install, maintain, operate, alter, inspect, repair, remove, replace, and renew at will, a pipeline or pipelines for conveying water and all appurtenances thereto with the right of ingress and egress at any time to and from such pipeline or pipelines and all appurtenances thereto on, under and through the following property:

SEE EXHIBIT A Legal Description/Easement Sketch

Permanent Parcel No. _____

It is agreed by and between Grantor and Grantee as follows:

1. That the Grantee shall have the right to remove fences, shrubbery, plantings, trees, landscaping, lawns, driveways, walks and paving within the easement area during initial construction or future maintenance of the pipeline or pipelines and all appurtenances thereto. The Grantee shall be responsible to restore the surface area of the easement as closely as possible to its original condition. The Grantee will pay damages for items which cannot be restored or repaired. If the amount of said damages cannot be mutually agreed upon, the same shall be ascertained and determined by three disinterested persons; one appointed by the Grantor, one by the Grantee, and the third by the two so appointed. The award of such three persons shall be final and conclusive.

2. That no building or structure of any kind shall or will be erected within boundaries of said easement by Grantor, nor shall anything be placed in the vicinity of said pipeline or pipelines and all appurtenances thereto which might be injurious to same. However, nothing herein shall interfere with the right of Grantor to erect fences, driveways, parking areas or walks above said pipeline or pipelines and all appurtenances thereto, *Grantor shall be responsible for the repairs, maintenance and replacement of all road pavements as a result of any waterline work.* Grantor shall not plant shade trees within the easement area or change the elevation of the ground surface over the pipeline or pipelines and all appurtenances thereto without approval of Grantee, which approval shall not be unreasonably withheld.

3. That Grantor may extend across, or grant easements to others to extend across said easement area, electric lines or pipelines for gas, sewage or storm water subject, however, to prior approval of same by Grantee, which approval shall not be unreasonably withheld. Grantor will indemnify and protect Grantee against all damages or claims for damages in any way arising from the crossing of said easement area by Grantor or those to whom Grantor has given easements for such purpose.

4. That upon removal of said pipeline or pipelines and all appurtenances thereto, the premises shall be restored as closely as possible to its original condition.

5. That this grant shall be binding upon the Grantor and Grantee and shall inure to the benefit of their respective heirs, executors, administrators, successors and assigns forever.

IN WITNESS WHEREOF, the undersigned have caused their name to be subscribed to this Water Utility Easement this _____ day of _____ , _____.

WITNESSES:

_____ _____
Signature (Print Name:)

_____ _____
Signature (Print Name:)

STATE OF OHIO)
) ss:
_____ COUNTY)

Before me, a Notary Public in and for said County, personally appeared _____ and _____ who acknowledged that they did sign the foregoing instrument and that it is their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my official seal at _____ this _____ day of _____, 20___.

_____
Notary Public

This instrument prepared by:
Aqua Ohio, Inc.
6650 South Avenue
Boardman, Ohio 44512

UTILITY EASEMENT; OPTION

KNOW ALL MEN BY THESE PRESENTS, that _____, the GRANTOR, being the owner of the premises hereafter described, GIVE, GRANT, and CONVEY to AQUA OHIO, INC., an Ohio Corporation, the GRANTEE, the right and easement to operate, maintain, repair, connect to, construct, and relocate, upon the terms hereinafter set forth, water mains, service connections, hydrants, and appurtenances, through, over, and across certain of the Grantor's land (hereinafter "site") situated in the _____, County of _____ and State of Ohio.

EXHIBIT A: EASEMENT DESCRIPTION AND SKETCH OF EASEMENT

Permanent Parcel No(s). _____.

Said easement shall encompass all water mains, hydrant connections, and service connections to meters, including but not limited to private fire protection lines and regular service lines (hereinafter "facilities") as constructed on the site and also shall permit Aqua Ohio, Inc. to occupy during service and repairs an area aboveground ten feet on each side of the longitudinal center line of underground facilities, and the use of reasonable areas in adjacent driveways and parking areas for the location of Aqua Ohio, Inc. equipment used in performing the necessary services.

TO HAVE AND TO HOLD the same unto said Grantee, its successors and assigns forever.

IT IS STIPULATED AND AGREED BETWEEN THE GRANTOR AND THE GRANTEE AS FOLLOWS:

1. Grantor shall have full use of the easement areas for all purposes which do not interfere with the normal operations and maintenance of the facilities located therein.

2. Grantor shall have the right to construct sidewalks or parking areas within said easements, but shall not construct any permanent building or other structure which would interfere with Grantee's ready access to facilities for operation, maintenance,

and repair purposes.

3. Grantor shall have the right to relocate said easement, and the facilities therein, to such other area or areas on the property of the Grantor as it may designate, provided, however, such relocation shall be done at the sole expense of the Grantor and provided further that said relocation shall be accomplished in a manner approved by the Grantee, so that Grantee may maintain continuity of service to other customers beyond the limits of the Grantor's property. Provided further that Grantor will give Grantee written notice, thirty (30) days in advance, of its desire to relocate said easement and Grantor will execute and deliver to Grantee a new easement on substantially the same terms as contained herein, covering the area to which said facilities are to be relocated. Grantee shall thereupon execute and deliver to Grantor a release of any existing easement pertaining to the area from which facilities are to be removed.

4. Grantee shall have the right of ingress and egress on the property of Grantor for the purpose of doing whatever is reasonably necessary to maintain, operate, and repair the facilities in said easement areas. For facilities owned by Grantor, Grantor shall be given prior reasonable notice of such entry. Grantor shall provide Grantee with immediate access at any and all times without prior notice to Grantor to the premises for the purposes of enabling Grantee to avoid loss of water due to failure of any facilities on said premises.

5. Upon completing maintenance and repair to facilities, Grantee shall restore the premises to substantially the same condition as existed before said maintenance and repair work.

6. Grantee further agrees that in the operation, maintenance and repair of such facilities, it will not unnecessarily interfere with the Grantor's property or the use thereof by Grantor, its tenants, licenses, invitees, employees, successors, and assigns. Grantee agrees to indemnify and save Grantor harmless from any and all loss, damage, or expense arising out of or in any manner connected with the use of said easement areas resulting from the negligence of Grantee.

7. Grantor is made aware that a Tariff is on file with the Public Utilities Commission of Ohio for Grantee's service area setting forth certain rules and regulations that are deemed necessary for the orderly conduct of the Grantee's business and service from Grantee and the terms hereof are subject to said Tariff.

8. Grantor shall reimburse Grantee promptly upon submission of invoices for cost, including overhead, incurred by Grantee in the maintenance and repair of said facilities, located within said easement areas.

9. The design and construction of facilities by Grantor shall be subject to the prior review and approval by Grantee, and upon completion of the facilities or any addition, repair or replacement thereto by Grantor, Grantor shall provide Grantee a statement of cost

for such facilities, certified by a registered engineer in a form acceptable to Grantee.

10. For the same consideration as for this Easement Agreement, namely the providing by Grantee of water service, Grantor grants to Grantee a perpetual option to assume ownership of all or part of the facilities located within the easement area, which option may be exercised by Grantee at any time upon giving written notice thereof to Grantor. Upon such exercise, Grantor will provide Grantee with a bill of sale or other appropriate documents of transfer of such facilities. Upon taking ownership of facilities, Grantee shall assume sole responsibility for the maintenance, repair and replacement of such facilities.

11. This easement and option shall inure to the benefit of and be binding upon the successors and assigns of the respective parties.

IN WITNESS WHEREOF, _____ has hereto set his/her hand(s) this _____ day of _____, 201___.

Signed and acknowledged
In the presence of:

_____ _____
Witness Signature - Print Name/Title Below

_____ _____
Witness

STATE OF OHIO)
)
COUNTY OF _____)

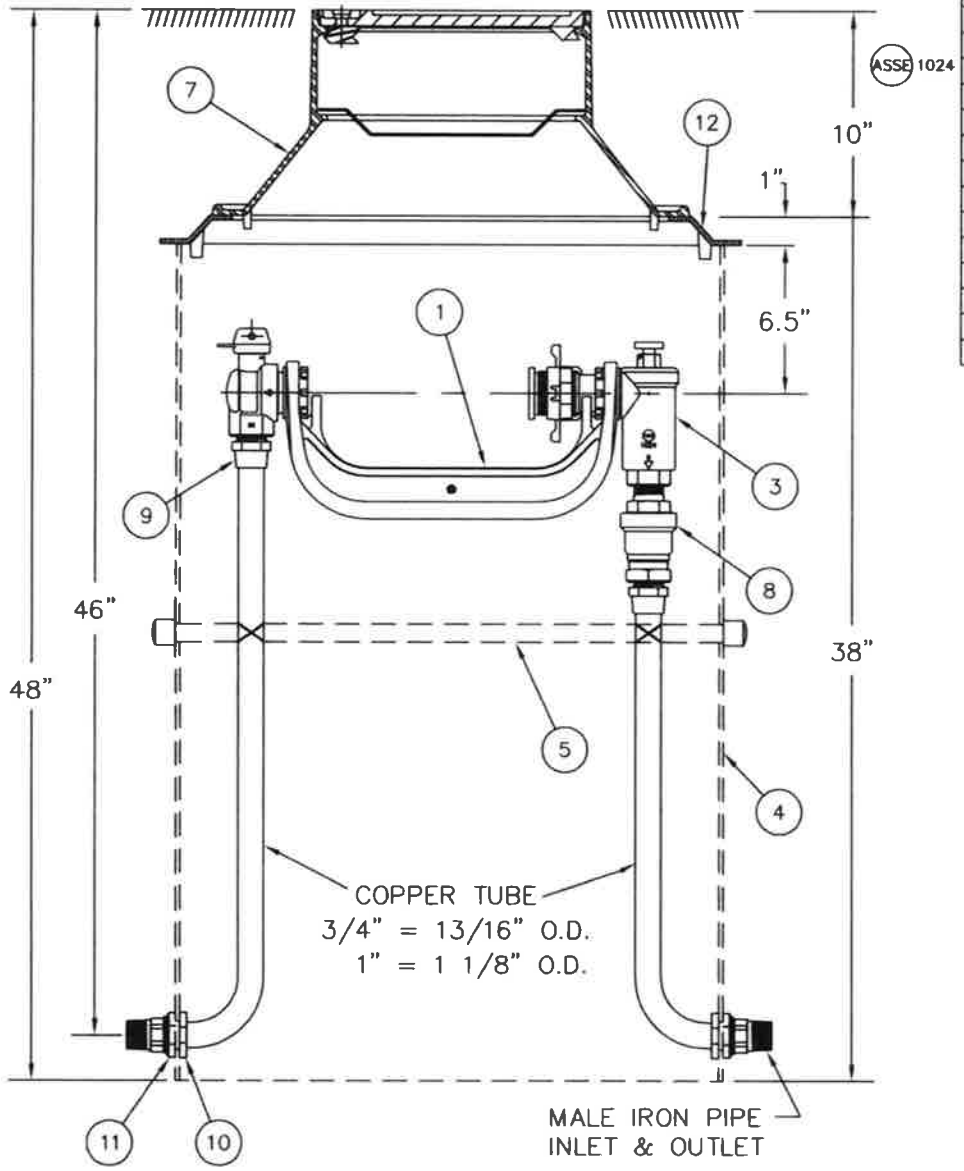
BEFORE ME, a Notary Public in and for said County and State, personally appeared the above _____, who acknowledged that he/she did sign the foregoing deed of easement and that the same is his/her free act and deed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my official seal on the day and year aforesaid.

_____
Notary Public

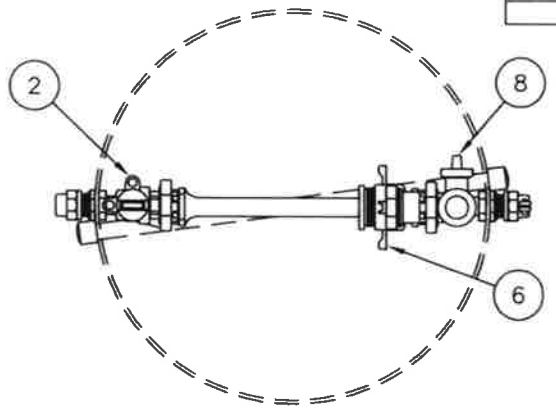
This instrument prepared by:
Aqua Ohio, Inc.
6650 South Avenue
Boardman, Ohio 44512

APPENDIX D



NO.	ITEM	QTY.	3/4" DWG or P/N	1" DWG or P/N
1	TWIN YOKE BAR	1	Y503	Y504
2	FULL-PORT ANGLE BALL VLV	1	BA91-323-W-NL	BA91-444-W-NL
3	CARTRIDGE DUAL CHECK VLE	1	HHCA91-323-D-NL	HHCA91-444-D-NL
4	DIAMETER PVC PIPE	1	20"	24"
5	12" PVC SUPPORT CAPS	1		
6	EXPANSION CONNECTION	2	EC-23-NL	EC-4-NL
7 *	COVER	1	W3-T	W3-T
8	BALL VALVE	1	B81-333-NL	B81-444-NL
9	SOLDER BUSHING	2	CS8-23-NL	CS8-44-NL
10	INLET & OUTLET CONNECTION	2	A-31400-02-NL	A-31400-02-NL
11	LOCK NUT	2	A-42716-01	A-42716-01
12 *	EXTENSION RING	1	NONE	EXT-2
	* ORDERED SEPARATELY			

REQUIRED ADAPTERS		
METER SIZE	YOKE	PART NO.
5/8"	Y503	A-13-NL *
5/8" x 3/4"	Y503	A-23-NL *
3/4"	Y503	NONE
5/8"	Y504	A-14-NL *
5/8" x 3/4"	Y504	A-24-NL *
3/4"	Y504	A-34-NL *
1"	Y504	NONE



Each part must be NSF/ANSI 61, Annex F & G compliant.

Entire unit must be NSF/ANSI 372 compliant.

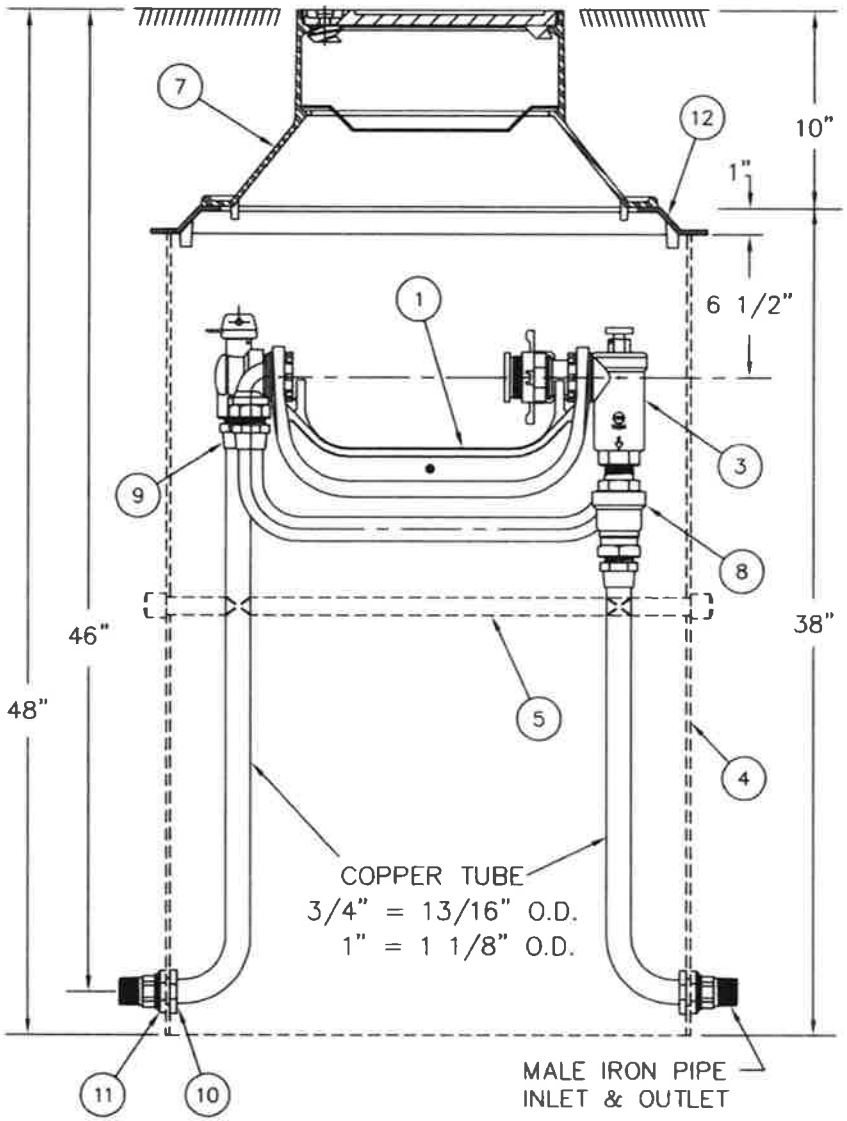
Rev. 5-6-2013

ASSY, SINGLE YOKE, 3/4" & 1" METER, BALL VALVE INLET & CHECK VALVE OUTLET

REF: FORD M. B. Co. PLAN A-95095-042 & 043

DRAWN BY	DATE	DRAWING NO.
DLG	1-3-2000	MB-1
CHK'D BY MJF	SCALE N.T.S.	

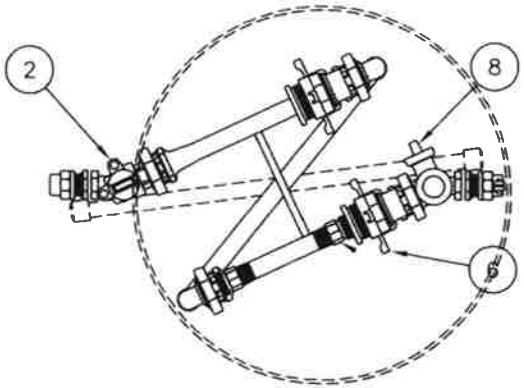
AQUA



			3/4"	1"
NO.	ITEM	QTY.	DWG or P/N	DWG or P/N
1	TWIN YOKE BAR	1	Y503	Y504
2	FULL-PORT ANGLE BALL VLV	1	BA91-323-W-NL	BA91-444-W-NL
3	CARTRIDGE DUAL CHECK VLE	1	HHCA91-323-D-NL	HHCA91-444-D-NL
4	DIAMETER PVC PIPE	1	20"	24"
5	12" PVC SUPPORT CAPS	1		
6	EXPANSION CONNECTION	2	EC-23-NL	EC-4-NL
7 *	COVER	1	W3-T	W3-T
8	BALL VALVE	1	B81-333-NL	B81-444-NL
9	SOLDER BUSHING	2	CS8-23-NL	CS8-44-NL
10	INLET & OUTLET CONNECTION	2	A-31400-02-NL	A-31400-02-NL
11	LOCK NUT	2	A-42716-01	A-42716-01
12 *	EXTENSION RING	1	NONE	EXT-2
	* ORDERED SEPARATELY			

ASSE 1024

REQUIRED ADAPTERS		
METER SIZE	YOKE	PART NO.
5/8"	Y503	A-13-NL *
5/8" x 3/4"	Y503	A-23-NL *
3/4"	Y503	NONE
5/8"	Y504	A-14-NL *
5/8" x 3/4"	Y504	A-24-NL *
3/4"	Y504	A-34-NL *
1"	Y504	NONE



Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

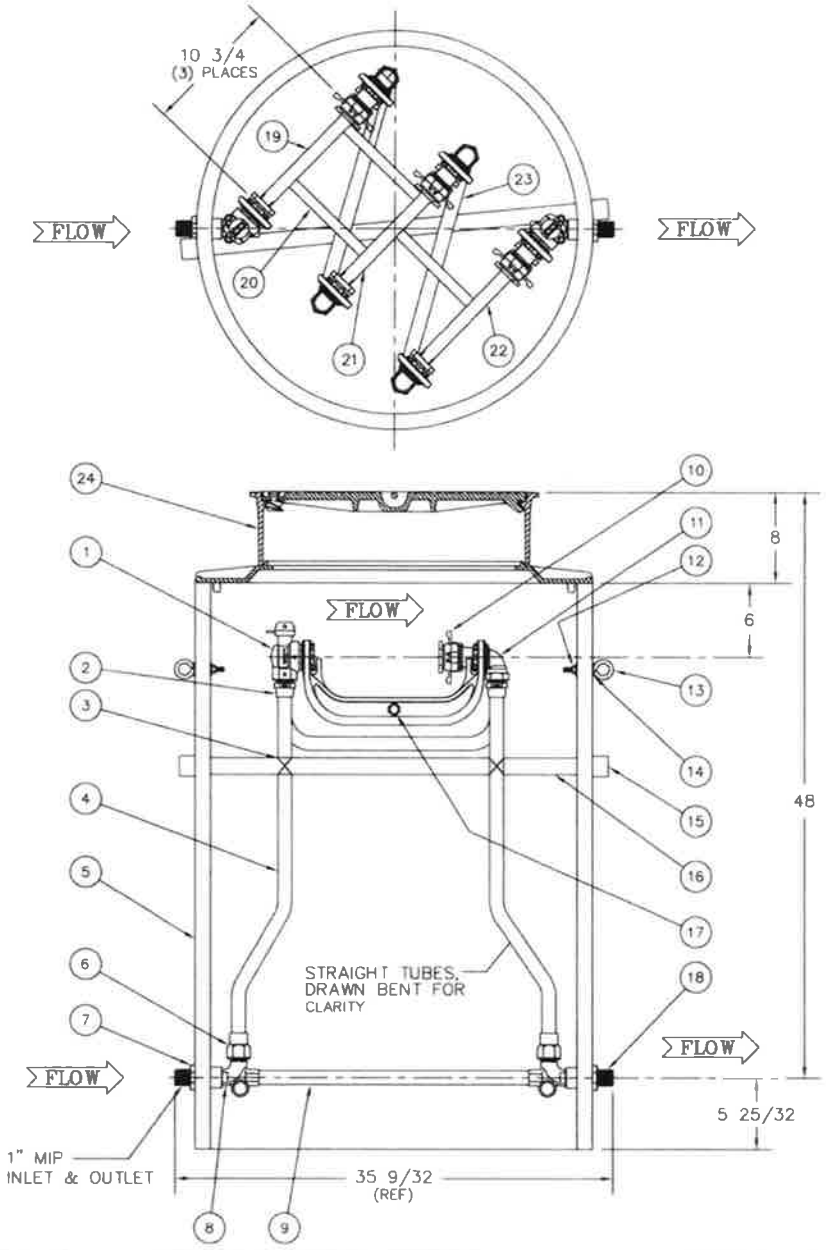
Rev. 5-6-2013

ASSY, 3/4" & 1" TWIN YOKE WITH
BALL VALVE INLET & CHECK VALVE OUTLET

REF: FORD M. B. Co. PLAN A-95095-040 & 041

DRAWN BY	DATE	DRAWING NO.
DLG	12-20-99	MB-2
CHK'D BY MJF	SCALE N.T.S.	

AQUA



ITEM	DESCRIPTION	QTY.	DWG. or P/N
1	ANGLE YOKE BALL VALVE	2	BA91-444W-NL
2	SOLDER BUSHING	6	CS8-44-NL
3	PLASTIC TIES	4	300370
4	1 1/8" OD COPPER TUBE	2	
5	30" CORRUGATED PVC TILE	1	3000282-LH
6	SOLDER ADAPTER	2	CS1-44-NL
7	LOCK NUT	2	A-42724-04
8	LINESETTER END	2	B-33000-23-NL
9	1 1/8" OD COPPER TUBE	1	
10	EXPANSION CONNECTION	3	EC-4-NL
11	ELL	4	L91-44-NL
12	LOCK NUT	2	800977
13	EYE BOLT	2	800975
14	FLAT WASHER	4	800976
15	1" PVC CAP	2	050424
16	1" PVC BRACE BAR	1	PS-BB-30
17	HEX BOLT	6	800310
18	NIPPLE	2	B-54204-03-NL
19	YOKE BAR w/(2) HOLES	1	B-20203-000-02
20	YOKE SPACER	3	TY-SPACER-LARGE
21	YOKE BAR w/(3) HOLES	1	B-20203-000-03
22	YOKE BAR	1	Y504
23	1 1/8" OD COPPER "U" TUBE	2	
24 *	METER BOX COVER	1	MC-30-T
	* ORDERED SEPARATELY		

REQUIRED ADAPTERS		
METER SIZE	YOKE	PART NO.
5/8"	Y504	A-14-NL *
5/8" x 3/4"	Y504	A-24-NL *
3/4"	Y504	A-34-NL *
1"	Y504	NONE

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

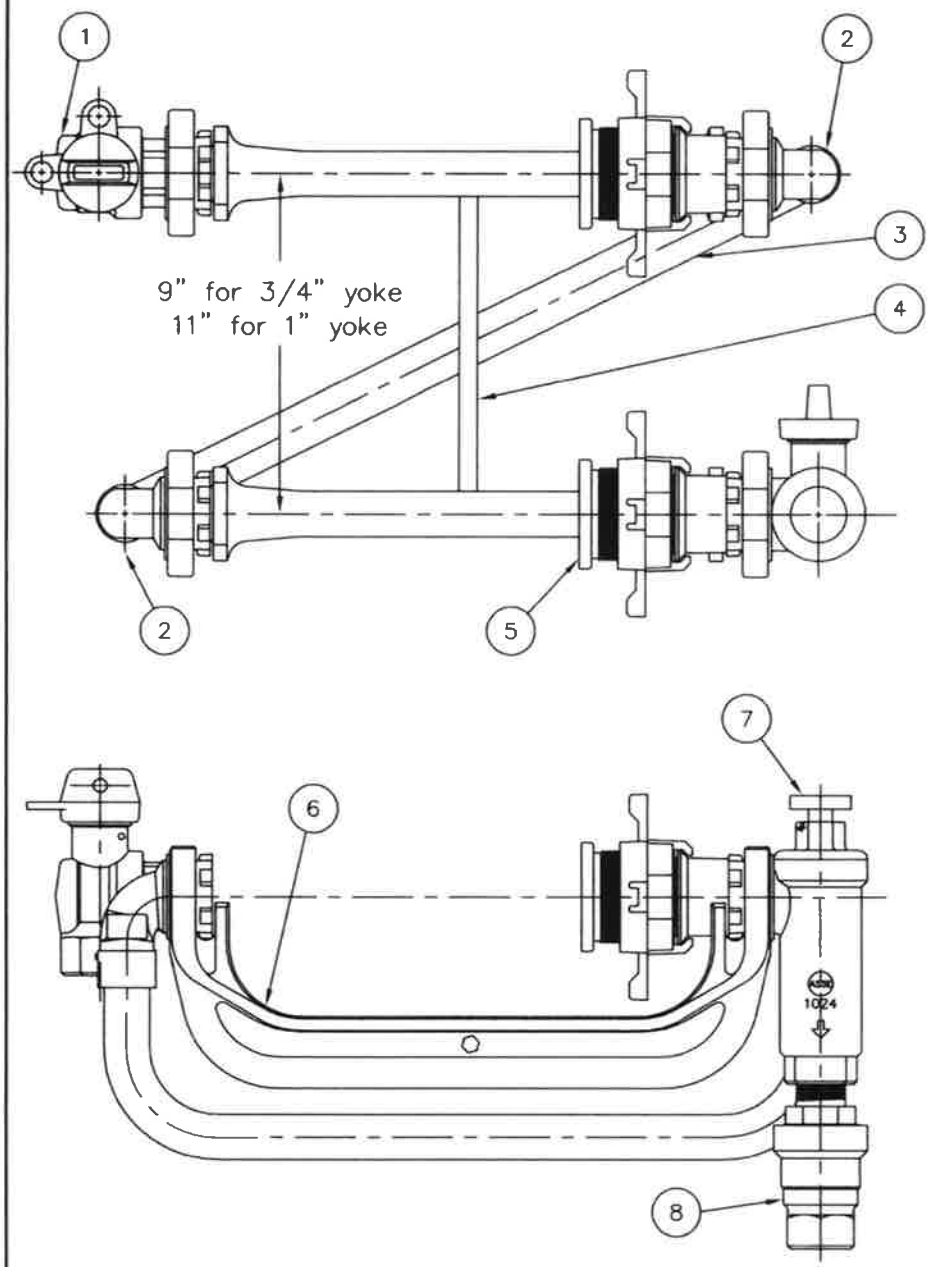
ASSY. 1" TRIPLE YOKE PIT SETTER
BALL VALVE INLET & OUTLET

REF. FORD M. B. Co. PLAN PYBB-488-95605-01

DRAWN BY	DATE	DRAWING NO.
DLG	8-27-04	MB-3
CHK'D BY MJF	SCALE NTS	

AQUA

Rev. 5-6-2013



3/4" TWIN YOKE SETTER

ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	3/4" ANGLE BALL VALVE	1	BA91-323W
2	SOLDER ELBOW	2	B-28003-03
3	15/16" O.D. COPPER CROSS OVER TUBE	1	A-36013-01
4	BRACE BAR	1	A-29001-01
5	EXPANSION CONNECTION	2	EC-23
6	YOKE BAR	2	Y503
7	CARTRIDGE DUAL CHECK VALVE (ASSE 1024)	1	HHCA91-323-D
8	3/4" BALL VALVE	1	B81-333

1" TWIN YOKE SETTER

ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	1" ANGLE BALL VALVE	1	BA91-444W
2	SOLDER ELBOW	2	L91-44
3	1 1/8" O.D. COPPER CROSS OVER TUBE	1	*
4	BRACE BAR	1	A-29001-01
5	EXPANSION CONNECTION	2	EC-4
6	YOKE BAR	2	Y504
7	CARTRIDGE DUAL CHECK VALVE (ASSE 1024)	1	HHCA91-444-D
8	1" BALL VALVE	1	B81-444

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

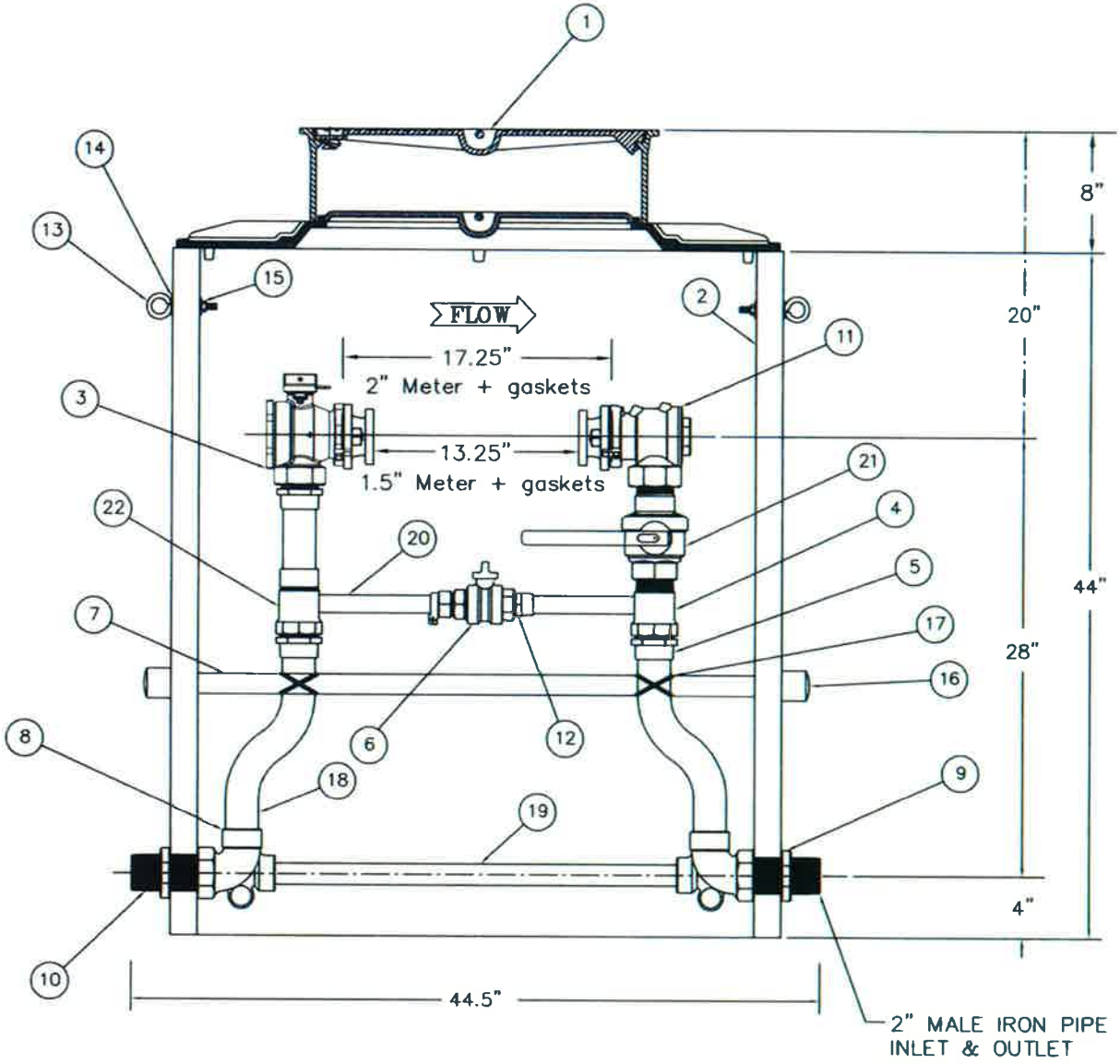
Rev. 6-10-13

ASSY, 3/4" & 1" TWIN YOKE SETTER WITH BALL VALVE INLET & CHECK VALVE OUTLET

REF: FORD M. B. Co. PLAN A-95095-038 & 039

DRAWN BY	DATE	DRAWING NO.
DLG	12-14-99	MBY-2
CHK'D BY MJF	SCALE 1/4=1	

AQUA



ITEM	DESCRIPTION	QTY.	DWG. or P/N
1	Monitor Cover w/Inner lid	1	MC-36-MB-T
2	36" Corrugated PVC Pit	1	300253
3	Angle Ball Valve	1	BFA13-777W-MSB-NL
4	Tee	1	T184-774-NL
5	Solder Bushing	3	CS8-77-NL
6	Ball Valve	1	B41-444W-NL
7	1" PVC Brace bar	1	PS-BB-36
8	Ell	2	CSTEE-7-S-NL
9	Lock Nut	2	800977
10	Nipple	2	A-43908-09-NL
11	Angle Dual Check Valve	1	HHFA31-777-MSB-NL
12	Solder Bushing	1	CS8-44-NL
13	Eye Bolt	2	800975
14	Flat Washer	4	800976
15	Lock Nut	2	800977
16	1" PVC Cap	2	050424
17	Plastic Tie	4	300370
18	2 1/8" OD Copper Tube	2	
19	1 3/8" OD Copper Tube	1	
20	1 1/8" OD Copper Tube	2	
21	Ball Valve	1	B81-777-HB-67-NL
22	Tee	1	T1S4-774-NL

* SOLD SEPARATELY

Each part must be NSF/ANSI 61, Annex F & G compliant.

Entire unit must be NSF/ANSI 372 compliant.

3-17-14

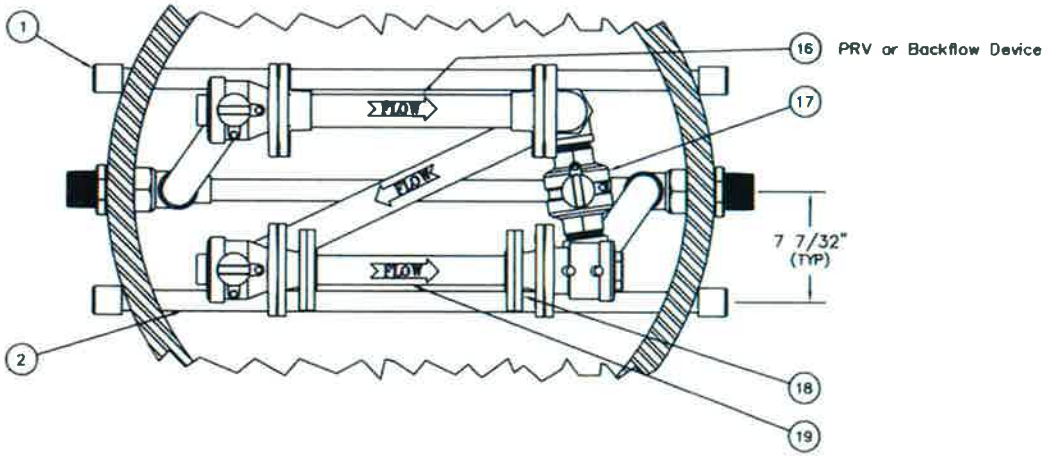
NOTE: ENTIRE UNIT SHALL COMPLY WITH NSF 372

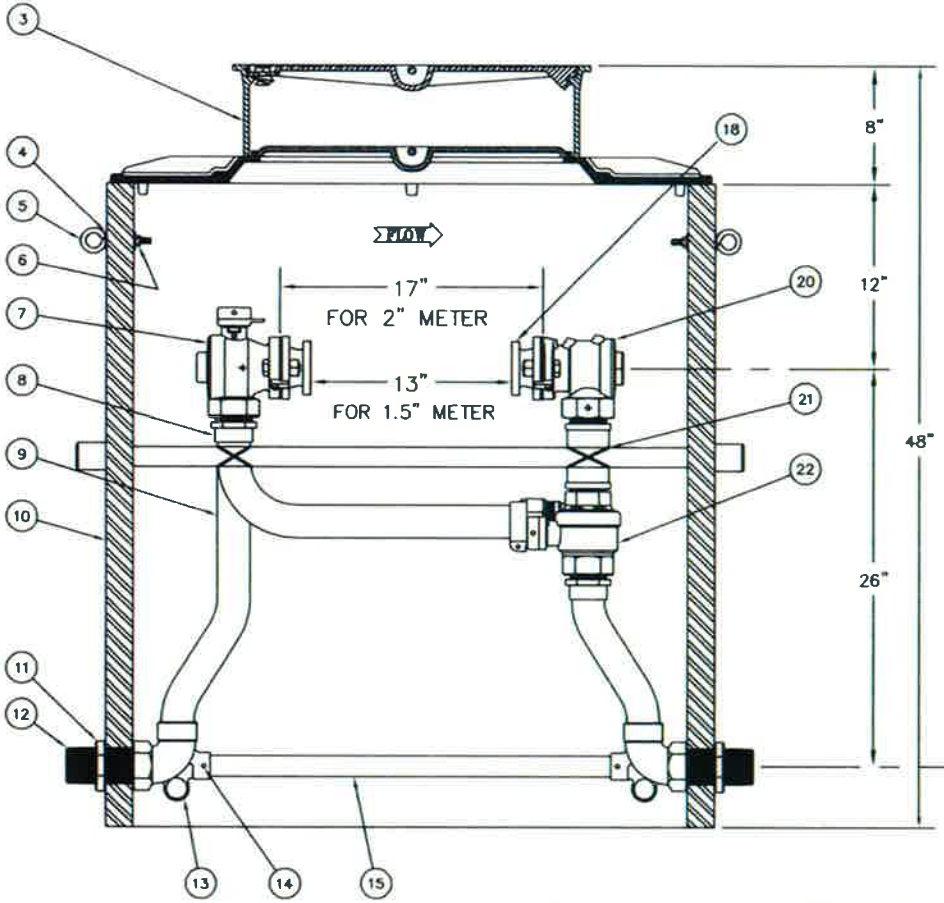
ASSY. 1.5" & 2" PITSETTER W/BYPASS
BALL VALVE Inlet & Outlet, CHECK VALVE Outlet

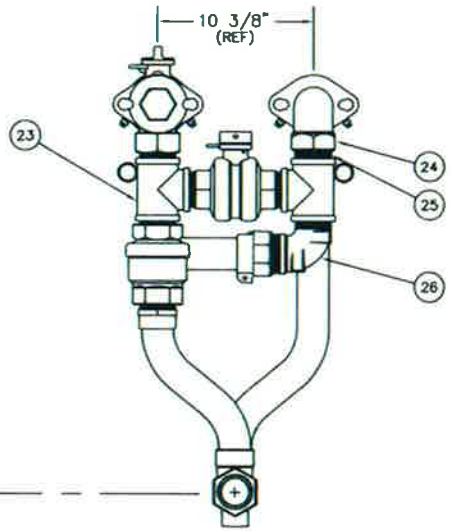
REF. FORD METER BOX CO. DWG # B-95455-118-NL

DRAWN BY	DATE 4-15-13	DRAWING NO. CSD-1-H
CHK'D BY MJF	SCALE 1=10	

AQUA







ITEM	DESCRIPTION	QTY.	DWG. or P/N
1	1" PVC CAP	4	050424
2	1" PVC BRACE BAR	2	PS-BB-36-39-437
3 *	MONITOR COVER w/INNER LID	1	MC-36-MB-T
4	FLAT WASHER	4	800976
5	EYE BOLT	2	800975
6	LOCK NUT	2	800977
7	FLANGED ANGLE BALL VALVE	2	BFA13-777W-MSB-NL
8	SOLDER BUSHING	3	CS8-77-NL
9	2 1/8" OD COPPER TUBE	3	
10	36" CORRUGATED PVC TILE	1	300263
11	LOCK NUT	2	A-42722-02
12	NIPPLE	2	A-43908-09-NL
13	TEE	2	CSTEE-7-S-NL
14	BRASS COTTER PIN	2	800910
15	1 3/8" OD COPPER TUBE	1	
16	2" IDLER (PRV or BF device)	1	IDLER-7
17	BALL VALVE	1	B88-777W-NL
18*	METER FLANGE ADAPTER/PR	1	A67-NL
19	1 1/2" IDLER (Meter)	1	IDLER-6
20	FLANGED ANGLE DUAL CK VL	1	HHFA31-777-MSB-NL
21	BLACK PLASTIC TIES	8	300370
22	BALL VALVE	1	B11-777-HB-67-NL
23	2" BRASS TEE	2	950347-NL
24	FLANGED ELL	1	LF31-77-MSB-NL
25	2" BRASS CLOSE NIPPLE	3	950250-NL
26	ELL	1	L84-77-NL
	* ORDERED SEPARATELY		

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

Rev. 3-11-2014

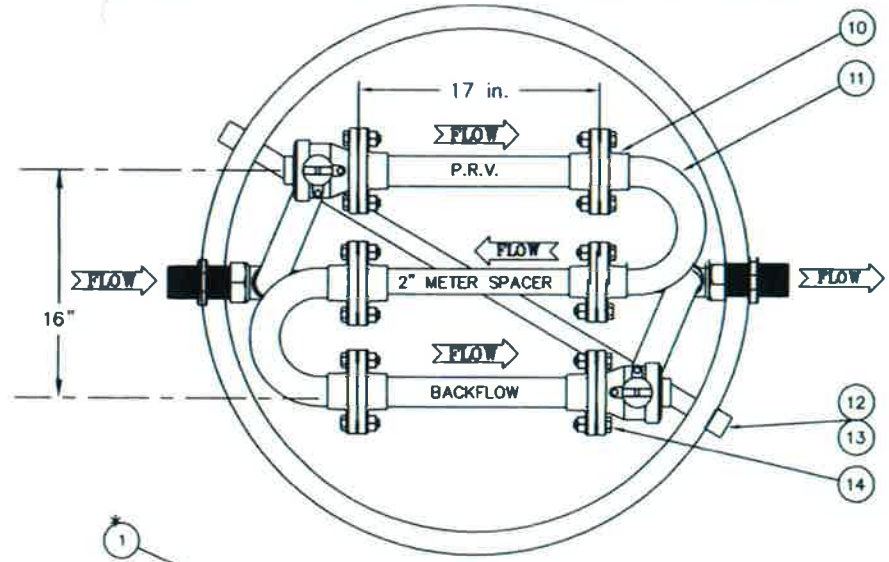
ASSY. 1.5" & 2" PIT SETTER, BALL VALVE IN TO DUAL CHECK VALVE OUT, W/BY-PASS

REF. FORD METER BOX CO. DWG # B-C3816-01

DRAWN BY DLG | DATE 8-1-02 | DRAWING NO. CSD-2

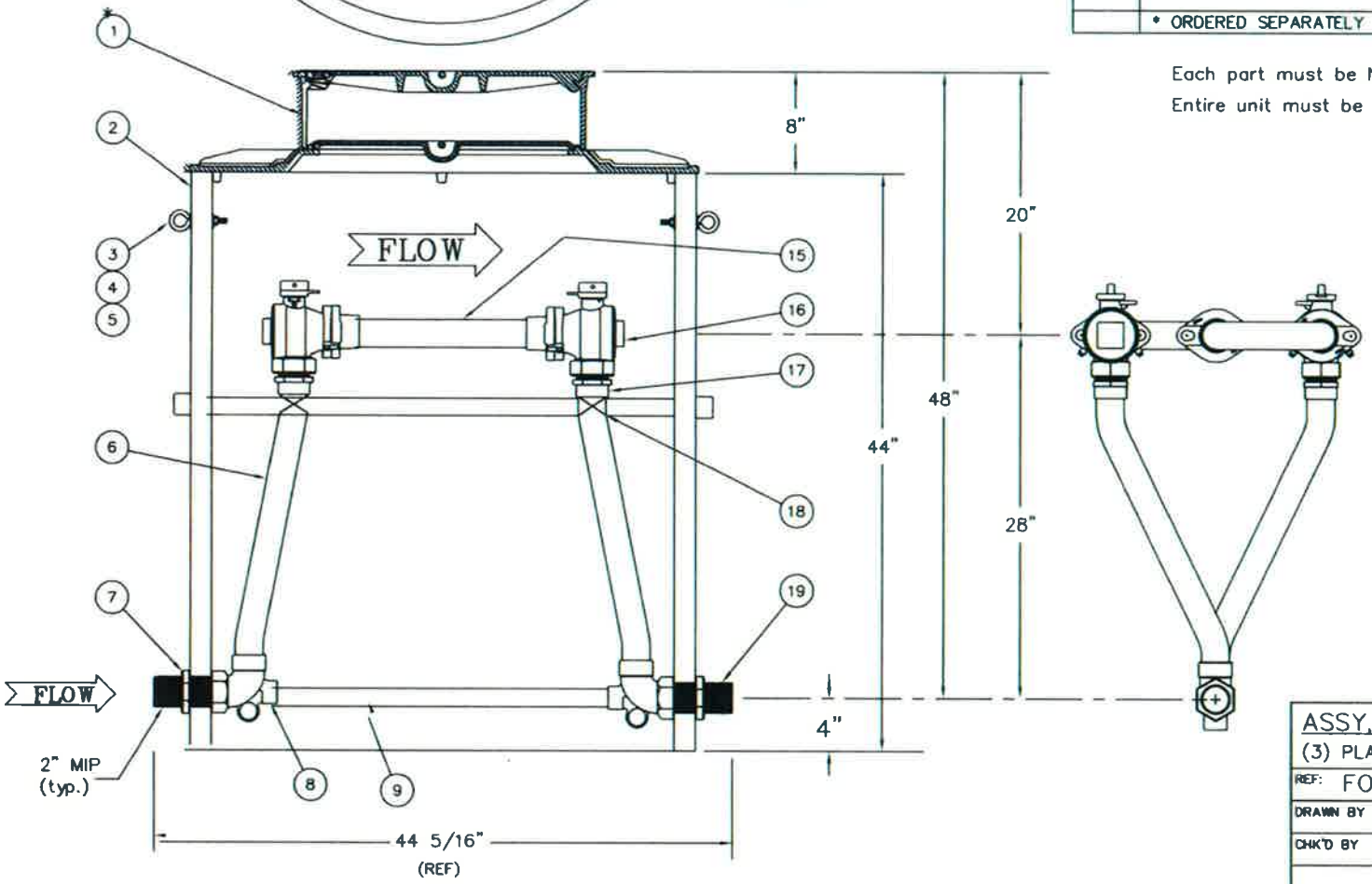
CHK'D BY MJF | SCALE 1/4=1-R

AQUA



ITEM	DESCRIPTION	QTY.	D[illegible]r P/N
* 1	MON COVER w/INNER LID, E-READ	1	MC[illegible]-MB-T
2	36" CORRUGATED PVC TILE	1	300253
3	EYE BOLT	2	800975
4	FLAT WASHER	4	800976
5	LOCK NUT	2	800977
6	2 1/8" OD COPPER TUBE	2	
7	LOCK NUT	2	A-42722-02
8	TEE	2	CSTEE-7-S-NL
9	1 3/8" OD COPPER TUBE	1	
10	METER FLANGE	4	CF3S-77-2-125-NL
11	2 1/8" OD COPPER "U" TUBE	2	
12	1" PVC BRACE BAR	1	PS-BB-36
13	1" PVC CAP	2	50424
14	FLANGE, BOLT & NUT (PAIR)	6	PSB
15	2" IDLER	3	IDLER-7
16	FLANGED ANGLE BALL VALVE	2	BFA13-777W-MSB-NL
17	SOLDER BUSHING	2	CSB-77-NL
18	PLASTIC TIES	4	300370
19	NIPPLE	2	A-43908-09-NL
	* ORDERED SEPARATELY		

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.



NOTE:
ALL METER FLANGES DRILLED
FOR 1 1/2" & 2" METERS

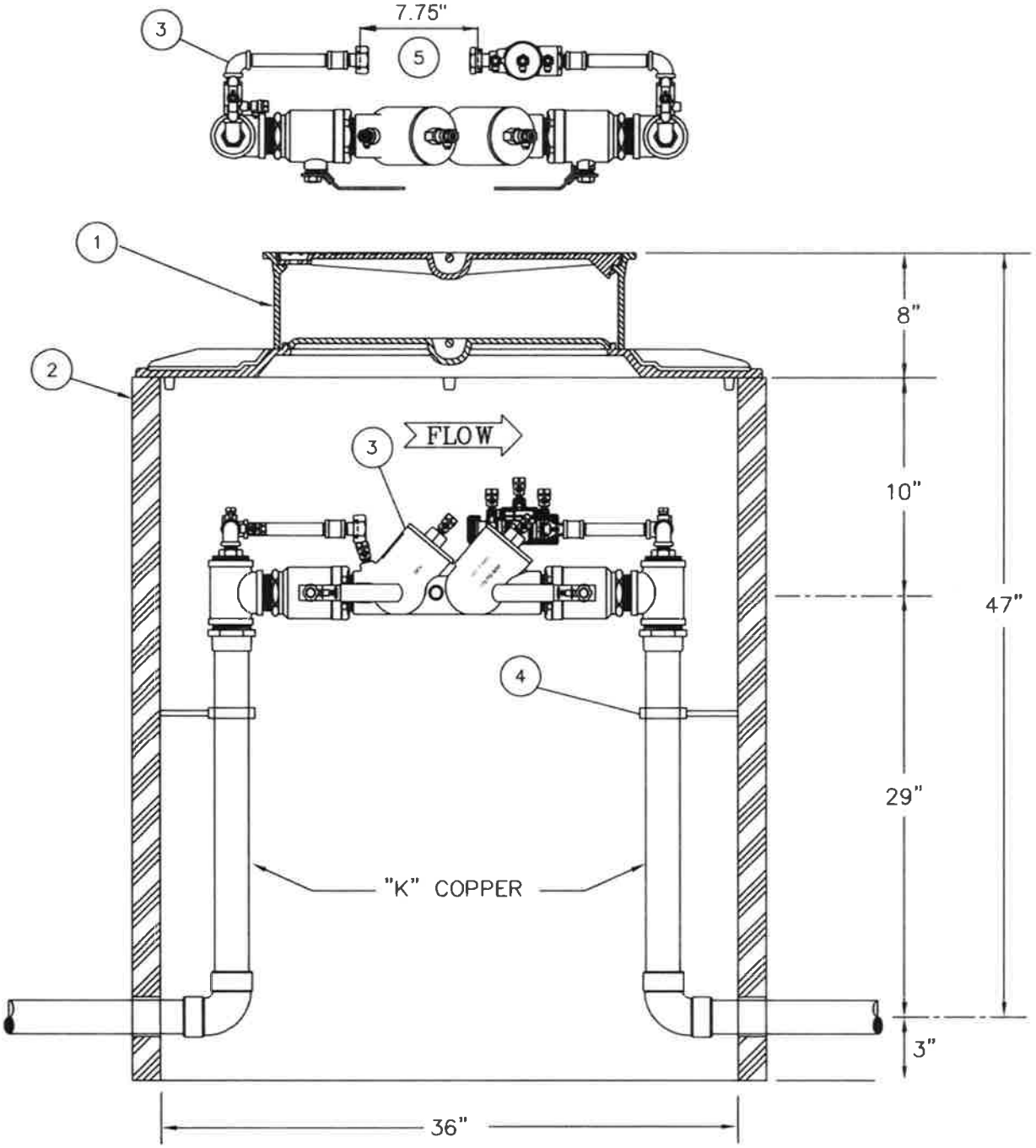
ASSY. 2" TRIPLE PIT SETTER, 17" SPACING
(3) PLACES, 48" SERVICE LINE DEPTH

REF: FORD M.B.Co. PLAN B-95595-01

DRAWN BY	DATE	DRAWING NO.
DLG	3-2-04	CSD-3
CHK'D BY MJF	SCALE 1/10=1	

AQUA

Rev. 3-12-2014



ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	MONITOR COVER W/INNER LID	1	MC-36-MB-T
2	36" x 42" PIT	1	none
3	1, 1.5, 2" DCDA Vert 40-600 Series	1	40-608-G2V
4	SUPPORT W/ ANCHOR	2	none
5	5/8" x 3/4" METER w/ gaskets	1	(by Water Co.)
3	2" Model 950XLTDA (Wilkins)		

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

DCDA Assembly must be UL & FM approved

Rev. 3-14-2014

1", 1.5", 2" DCDA in Custom Setter PIT

REF. APOLLO VALVES DWG # 40-608-G2V

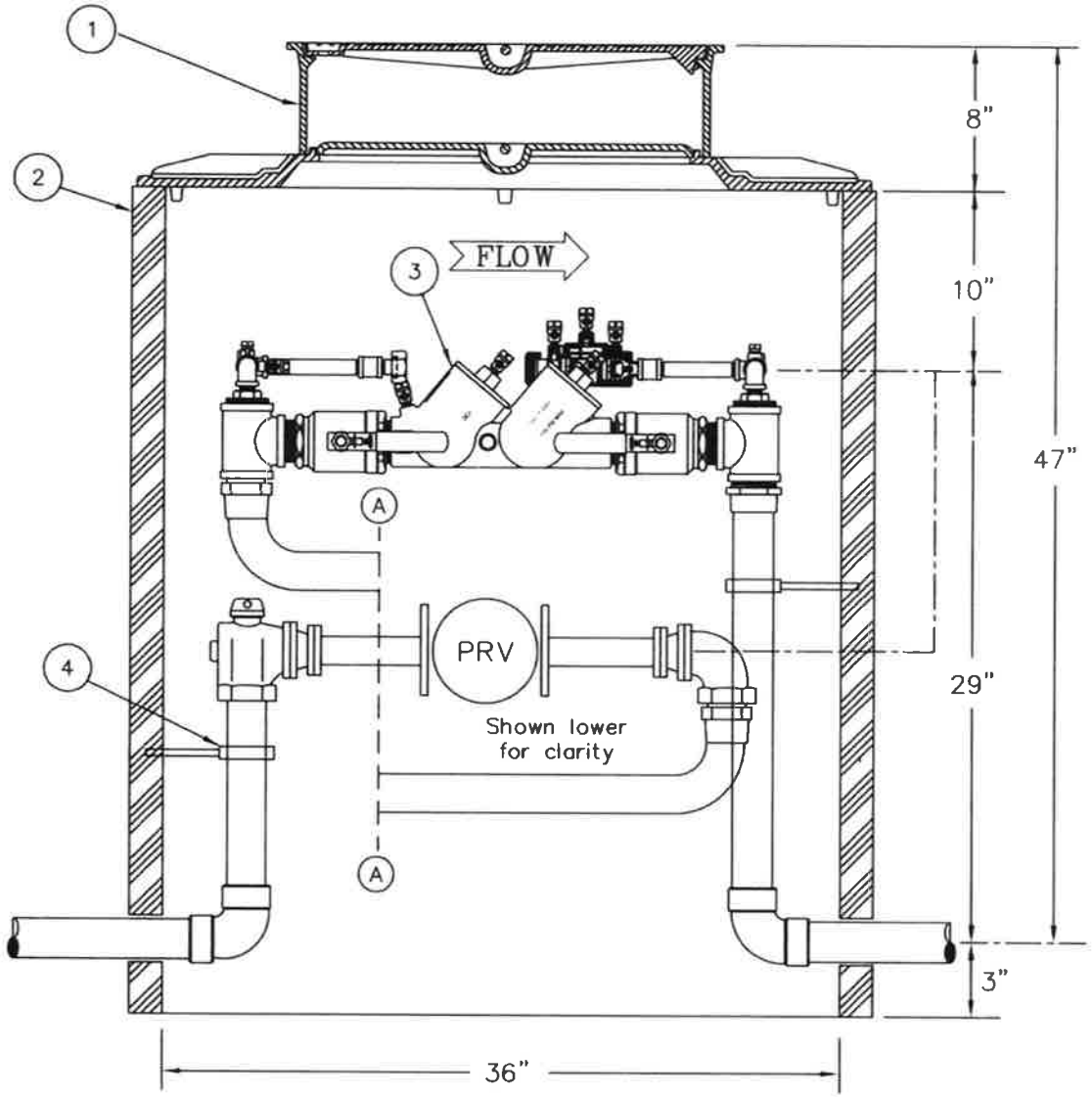
DRAWN BY | DATE 2-27-06 | DRAWING NO. CSF-1

CHK'D BY M.F | SCALE 1=10

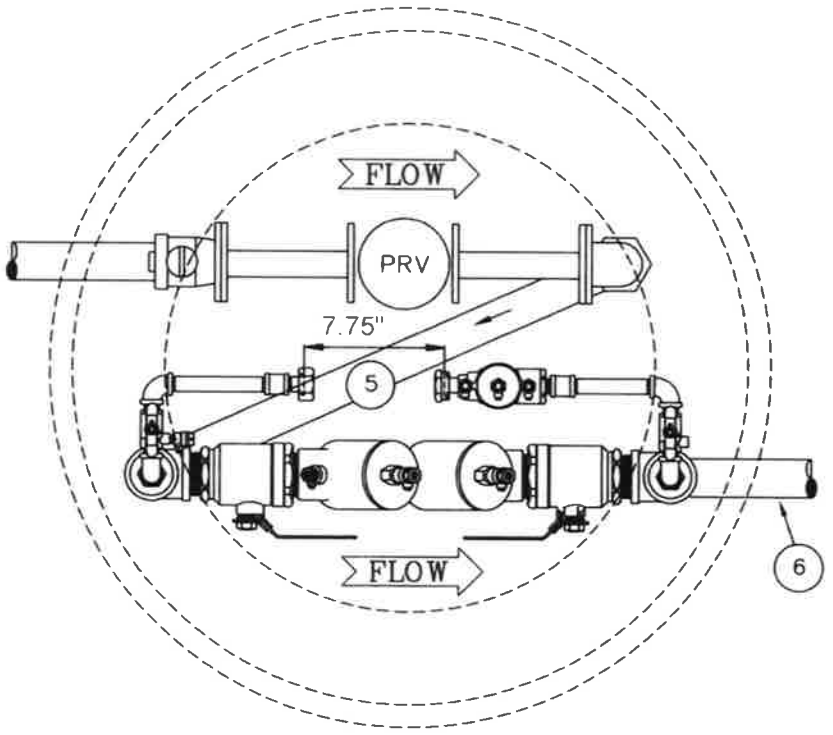
AQUA

DCDA Assembly must be UL & FM approved.

ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	FORD MONITOR COVER W/INNER LID	1	MC-36-MB-T
2	36" x 42" PIT	1	none
3	1, 1.5, 2"DCDA, Vert 40-600 Series	1	40-608-G2V
4	PIPE HANGER w- 1/2" ANCHOR	4	none
5	5/8" x 3/4" METER w/ gaskets	1	(by Water Co.)
6	"K" Copper		none
3	2" Model 950XLTDA (Wilkins)		



SIDE VIEW



PLAN VIEW

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

Rev. 3-17-2014

1", 1.5", 2" DCDA w-PRV Custom Setter PIT

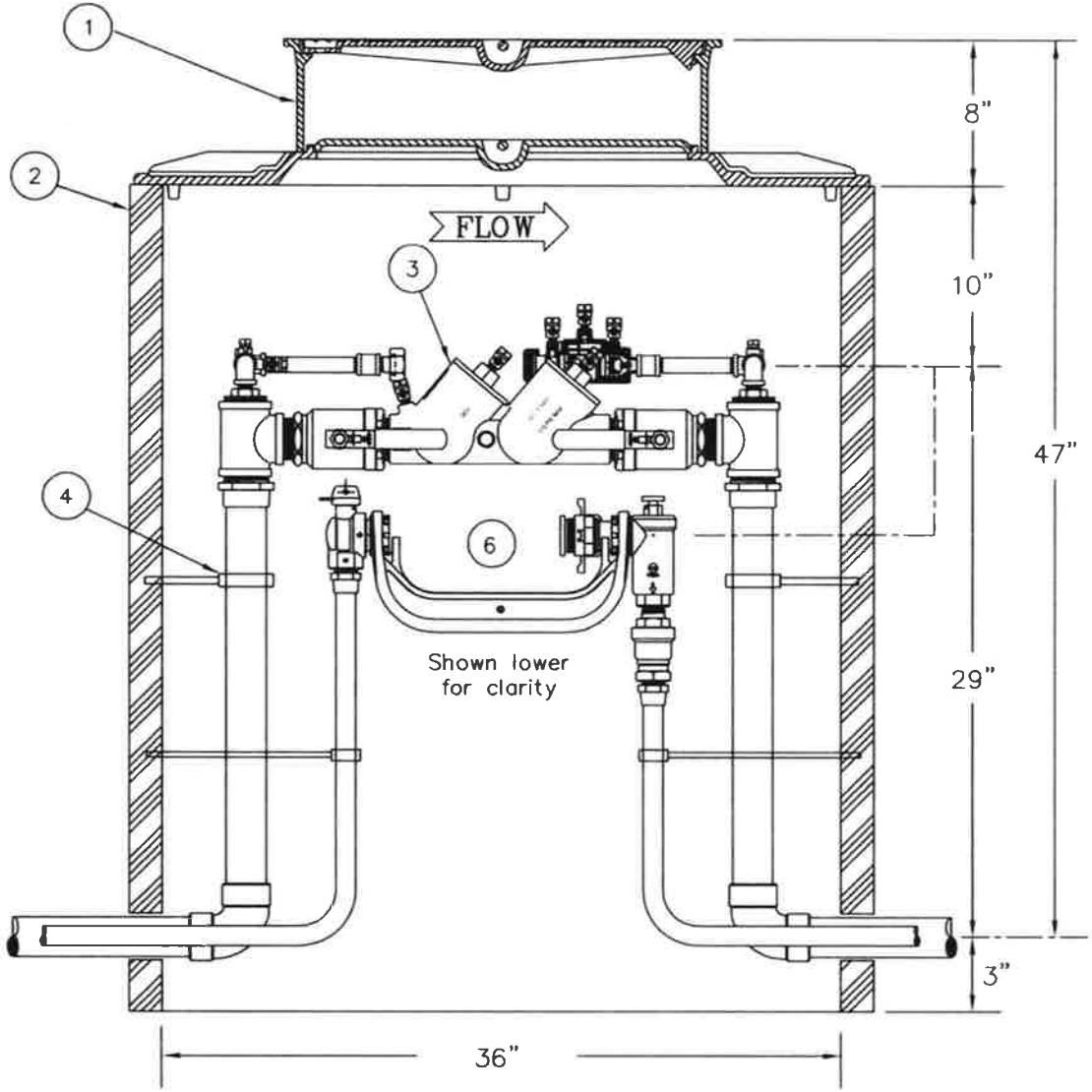
REF. Apollo Wv Dw'g G # 40-608-G2V & Ford M.B. Co. A-95085-042

DRAWN BY	DATE 8-11-08	DRAWING NO. CSF-2
CHK'D BY MJF	SCALE N.T.S.	

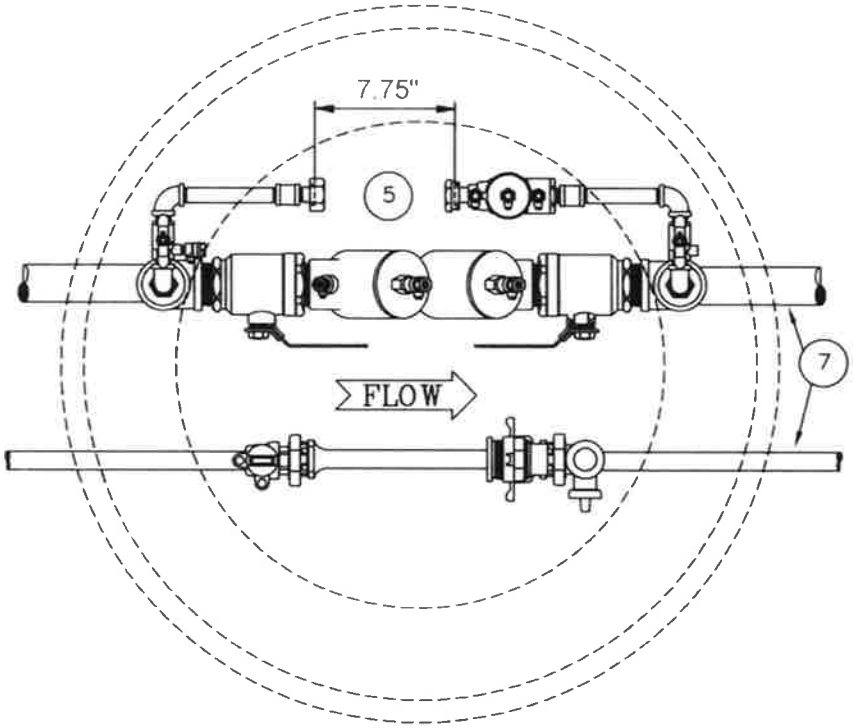
AQUA

DCDA Assembly must be UL & FM approved.

ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	FORD MONITOR COVER W/INNER LID	1	MC-36-MB-T
2	36" x 42" PIT	1	none
3	1" - 2" DCDA, Vert 40-600 Series	1	40-608-G2V
4	PIPE HANGER w- 1/2" ANCHOR	4	none
5	5/8" x 3/4" METER w/ gaskets	1	(by Water Co.)
6	METER IN SINGLE YOKE	1	FB-LP-1
7	"K" COPPER		
8			



SIDE VIEW



PLAN VIEW

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

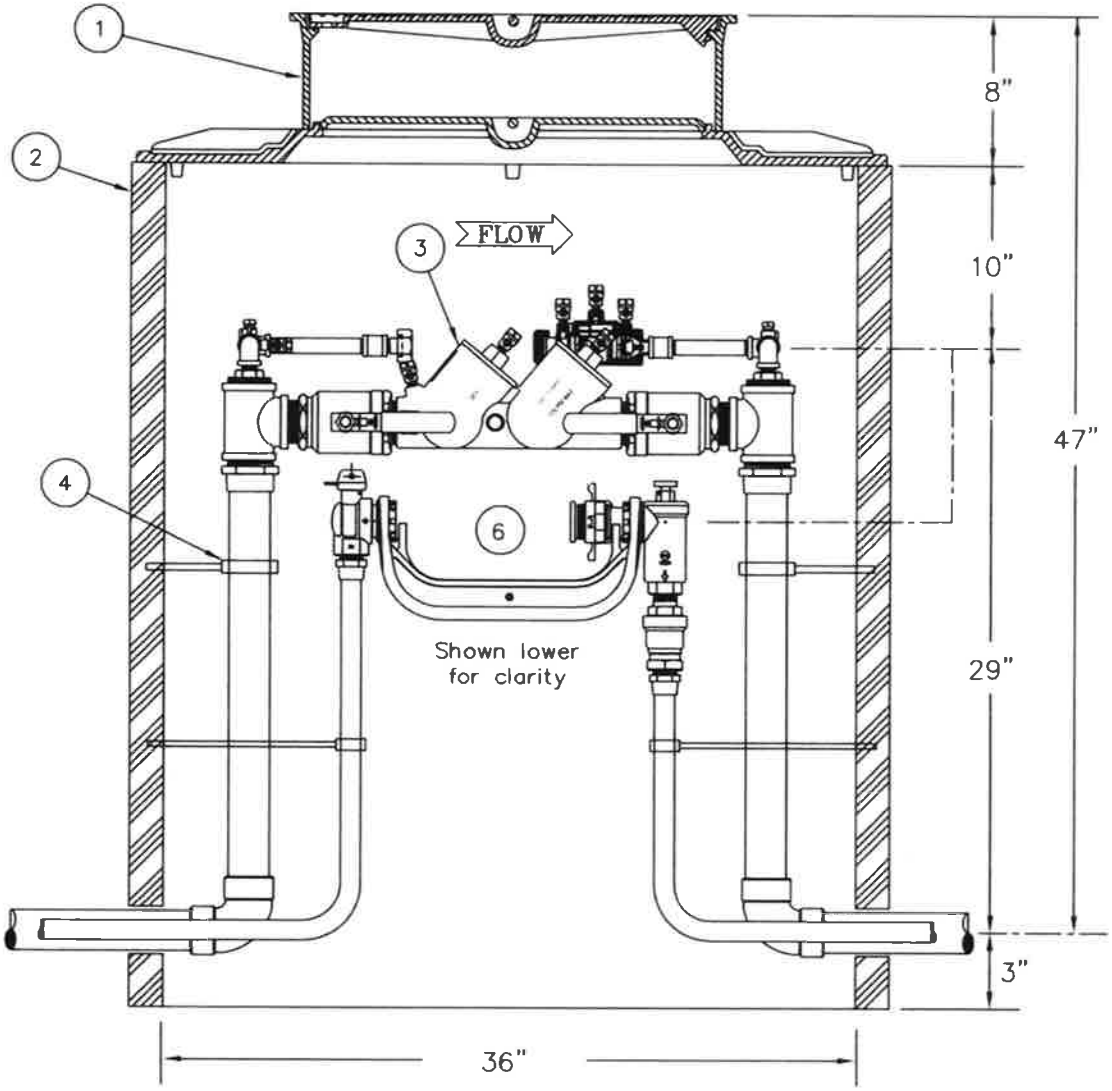
Rev. 3-12-2014

1" - 2" DCDA w- 3/4" - 1" LP Dom		
REF: Apollo Viv Dw'g G # 40-608-G2V & Ford M.B. Co. A-95085-042		
DRAWN BY	DATE 10-9-07	DRAWING NO. CSFD-1
CHK'D BY MJF	SCALE N.T.S.	

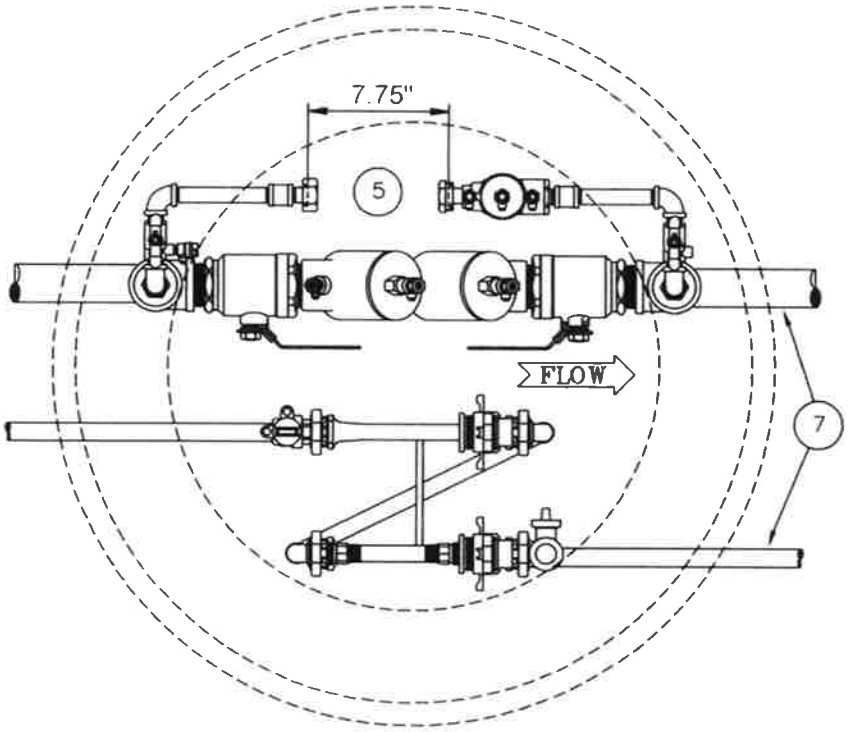
AQUA

DCDA Assembly must be UL & FM approved.

ITEM	DESCRIPTION	QTY.	DWG. OR P/N
1	FORD MONITOR COVER W/INNER LID	1	MC-36-MB-T
2	36" x 42" PIT	1	
3	1"- 2" DCDA, Vert 40-600 Series	1	40-608-G2V
4	PIPE HANGER w- 1/2" ANCHOR	4	
5	5/8" x 3/4" METER w/ gaskets	1	(by Water Co.)
6	METER & PRV IN TWIN YOKE	1	FB-HP-1
7	"K" COPPER		
8			



SIDE VIEW



PLAN VIEW

Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

Rev. 3-12-2014

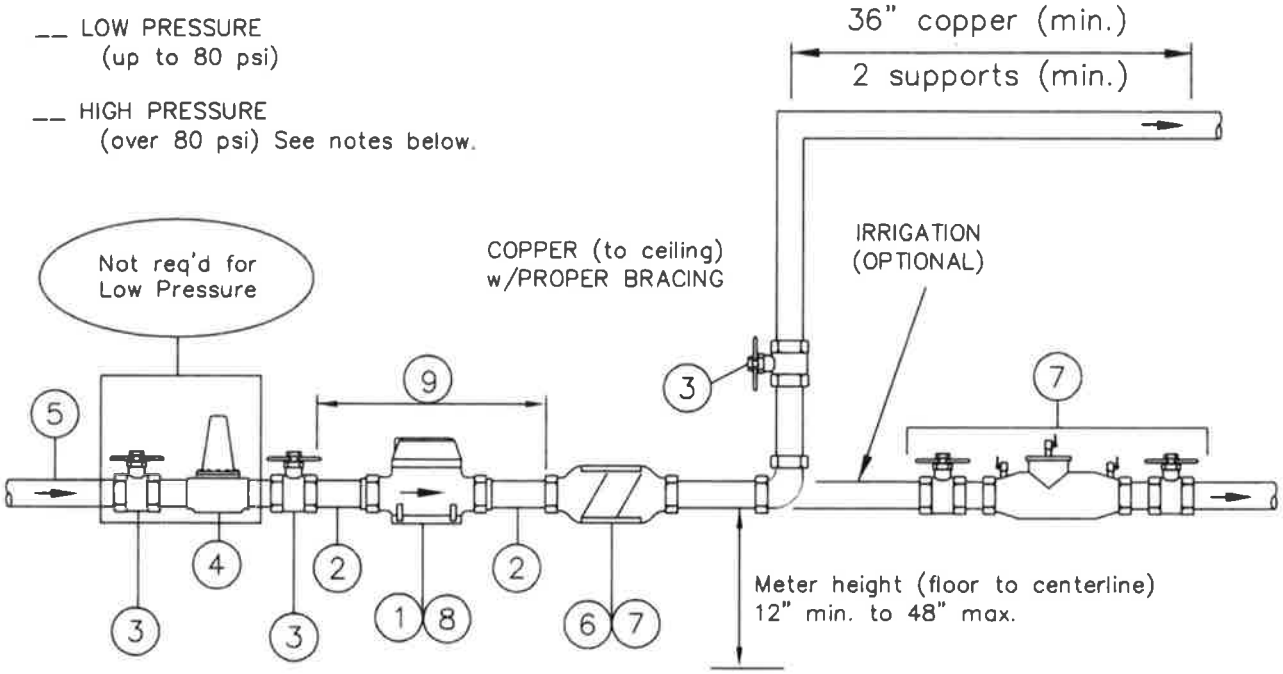
1" - 2" DCDA w- 3/4" - 1" HP Dom		
REF. Apollo Wv Dw'g G # 40-608-G2V & Ford M.B. Co. A-95095-042		
DRAWN BY	DATE 7-10-09	DRAWING NO. CSFD-2
CHK'D BY MJF	SCALE N.T.S.	

AQUA

DOMESTIC SERVICE – 5/8", 3/4", and 1" METERS

__ LOW PRESSURE
(up to 80 psi)

__ HIGH PRESSURE
(over 80 psi) See notes below.



	ITEM			
1	Meter (by Water Co.)	**5/8" x 3/4"**	**3/4"**	**1"**
2	Meter Couplings (standard length)	3/4"	3/4"	1"
	Ford Meter Box Part No.	C38-23-2.5	C38-23-2.5	C38-44-2.625
3	Full-port Ball Valve	3/4"	3/4"	1"
4	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER		
5	Line Size ("K" copper)	3/4"	3/4"	1"
6	Residential Dual Check Valve	3/4"	3/4"	1"
7	Backflow device - DCVA or RPZA (Irrig. or Non-Residential)	3/4"	3/4"	1"
	type determined by the Water Company.			
8	Laying Length of Meter	7 1/2"	9"	10 3/4"
9	Laying Length of Meter and Couplings	12"	13 3/8"	15 1/4"

Notes:

A. It is the CUSTOMER's responsibility to address THERMAL EXPANSION before the installation of a PRV or backflow device.

B. A pressure vacuum breaker must be installed on all hose–bib connections.

C. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

D. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two–stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

E. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

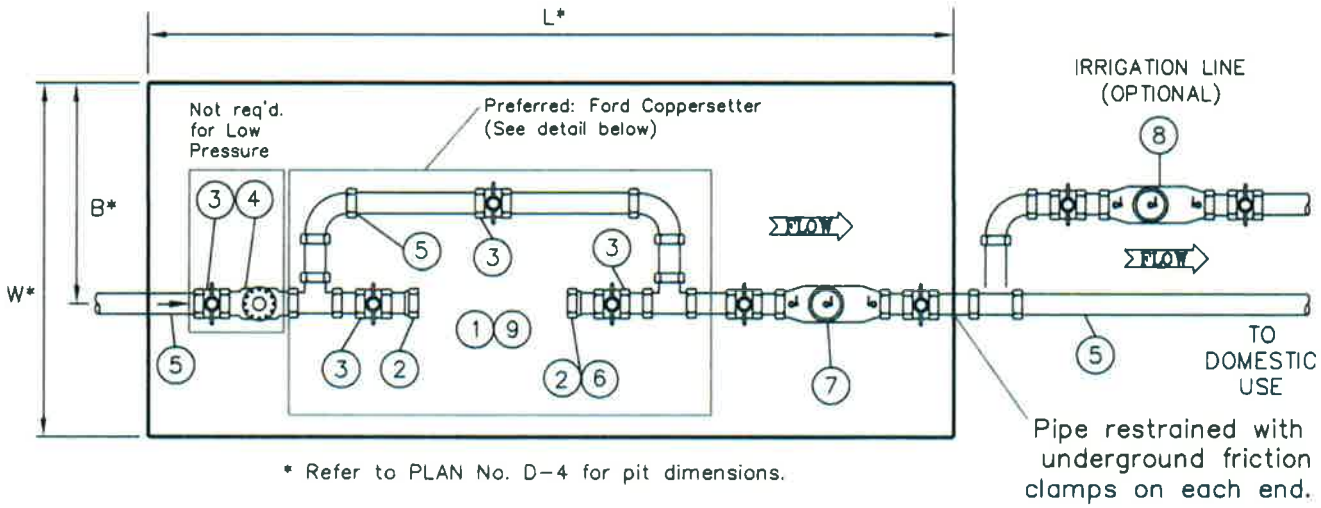
rev. 3–12–14

AQUA	
Domestic Service 5/8"–1" Meters	
ck'd by: MJF	Plan No. D–1

DOMESTIC SERVICE – 1.5" and 2" METERS

__ LOW PRESSURE (up to 80 psi)

__ HIGH PRESSURE (over 80 psi) See notes below.



* Refer to PLAN No. D–4 for pit dimensions.

FORD COPPERSETTER
Non–Residential (pictured below)
1.5"– VBB76–12B–11–66–NL
2"– VBB77–12B–11–77–NL
Residential
1.5"– VBHH76–12BHC–11–66–NL
2"– VBHH77–12BHC–11–77–NL

	ITEM		
1	Meter (by Water Co.)	1.5"	2"
2	Meter Flange - Bronze, 2-bolt pattern	1.5"	2"
	Ford Meter Box Part No.	CF31-66	CF31-77
3	Full-port Ball Valve (Mainline)	1.5"	2"
	Full-port Ball LOCKING Valve (by-pass)	1.5"	2"
4	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER	
5	Line Size ("K" copper)	1.5"	2"
6	Loc-Pac Meter Coupling (PIT ONLY)	1.5"	2"
	Ford Meter Box Part No. (for Copper)	CF34-66	CF34-77
	Ford Meter Box Part No. (for Brass)	CF35-66	CF35-77
7 *	Backflow device - DCVA or RPZA	1.5"	2"
8 *	Backflow device - DCVA or RPZA (Irrigation)	SIZED BY CUSTOMER	
*	* *type determined by the Water Company*		

Notes:

A. It is the CUSTOMER's responsibility to address THERMAL EXPANSION before the installation of a PRV or backflow device.

B. A pressure vacuum breaker must be installed on all hose–bib connections.

C. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

D. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two–stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

E. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

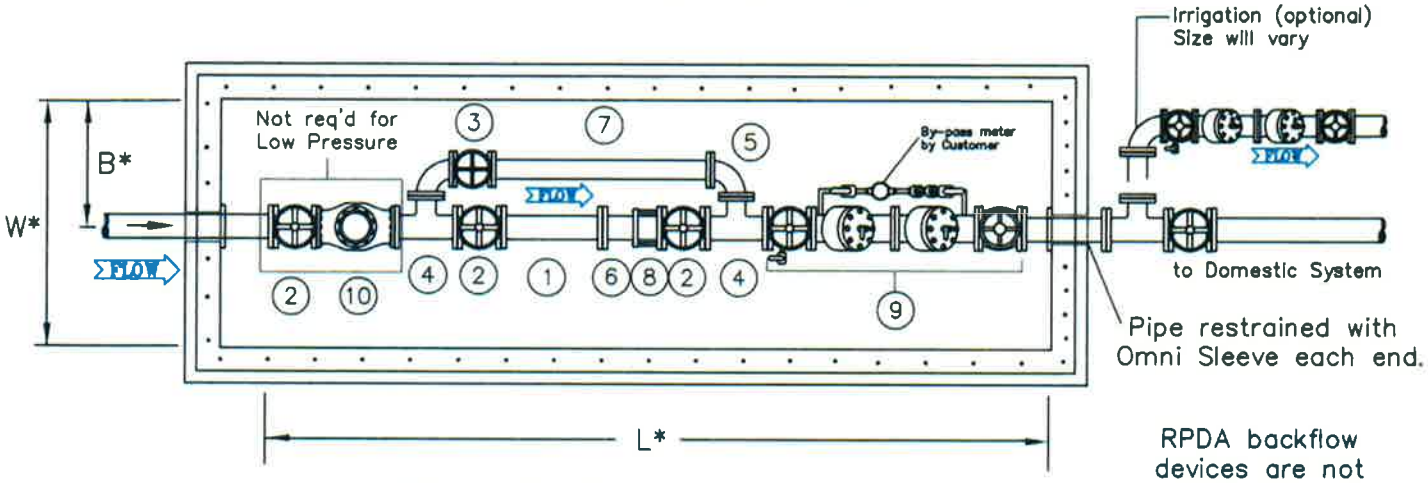
AQUA	
1.5" & 2" Domestic Services	
ck'd by: MJF	Plan No. D–1

rev. 3–18–14

DOMESTIC SERVICE – 3" through 10" METERS

__ LOW PRESSURE (up to 80 psi)

__ HIGH PRESSURE (over 80 psi) See notes below.



* Refer to PLAN No. D–4 for pit dimensions.

	DESCRIPTION					
1	Meter	3"	4"	6"	8"	10"
	Meter Length (flange to flange)	~~33.25"~~	~~33.25"~~	~~36.5"~~	~~53"~~	~~68"~~
2	R.S. Gate Valve, OS&Y, Flg (mainline)	3"	4"	6"	8"	10"
3	R.S. Gate Valve, OS&Y, Flg (by-pass)	3"	3"	4"	6"	6"
4	By-pass Tee	3" x 3"	4" x 3"	6" x 4"	8" x 6"	10" x 6"
5	Long Radius 90o Bend	3"	3"	4"	6"	6"
6	Spool Piece, Flg x PE (for exp. cpl'g.) ~~PIT ONLY~~	1' - 0" MINIMUM w/ 1" traverse gap in exp cpl'g				
7	Spool Piece, Flg x Flg (for by-pass)	LENGTH AS NEEDED				
8	Flanged Coupling Adaptor - ~~PIT ONLY~~	Ford - Style FFCA or Smith-Blair - Style 912				
9	Backflow device - DCDA or RPDA	3"	4"	6"	8"	10"
	as req'd by the Water Company					
10	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER				

RPZ not DCDA or RPDA on Domestic line

Notes:

A. It is the CUSTOMER's res THERMAL EXPANSION before the installation of a PRV or backflow de

B. A pressure vacuum breaker must be installed on all hose–bib connections.

C. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

D. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two–stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

E. Incoming service size should equal meter size. If the meter size is approved to be smaller than the service size, the meter space shall be replaced with a spacer for the approved meter size and concentric reducers on each side of the meter spacer. The length of the meter pit may increase.

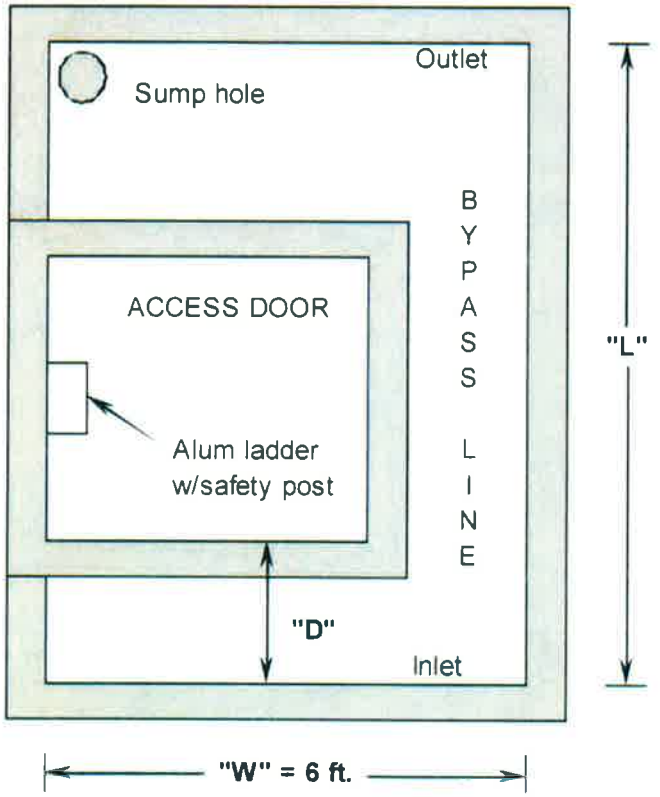
F. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

rev. 3–13–14

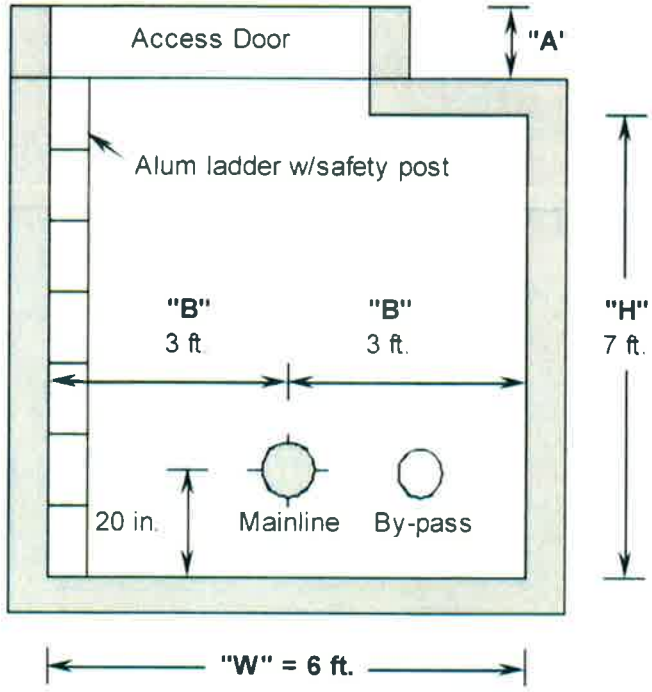
AQUA	
Domestic Service - 3" to 10"	
ck'd by: MJF	Plan No. D-3

SINGLE SERVICE PIT DIMENSIONS
for DOMESTIC Service

TOP VIEW



FRONT VIEW



Refer to Plan DS-1 for additional notes.

		Domestic Service Size					
Dim	**Description**	**3"**	**4"**	**6"**	**6"C**	**8"**	**10"**
L	Length - Low Pressure	9'	9'	10'	11'	12'	15'
L	Length - Low Pressure w/ Backflow	12'	13'	14'	15'	17'	19'
L	Length - High Pressure	10'	11'	13'	14'	15'	18'
L	Length - High Pressure w/ Backflow	14'	15'	17'	18'	20'	23'
W	Width	6 ft.					
H	Height	7 ft.					
B	Centerline of pipe to side wall	3 ft.					
D	* Front of Door Opening to Inlet Wall (Low Pressure)	2'	2'	3'	3'	3'	3'
D	* Front of Door Opening to Inlet Wall (High Pressure)	4'	4'	5'	5'	6'	7'
	Centerline of pipe to floor	20"					
	Backflow allowance (includes both valves)	38"	40"	49"	49"	53"	56"
	Pressure Reducing Valve (PRV) allowance	11"	13"	18"	18"	25"	30"
A	Height of raised Access Door	6" min. to 12" max.					
	Access Door Opening	4' x 4'				5' x 5'	

* Assumes inlet flange is 9 in. from inlet wall.
Inlet & Outlet flanges must be 9 in. (min.) from pit wall.

Pit dimensions are inside dimensions.

Pipe restrained with Omni Sleeve
in each end of pit wall.

AQUA	
SINGLE SERVICE PIT DIMENSIONS (Dom.)	
Ck'd by MJF	Plan No. **D-4**

rev. 3-10-14

Single Service PIT Calculations - DOMESTIC

					Combination Dom-Fire		
	Fitting	**3"**	**4"**	**6"**	**6"**	**8"**	**10"**
	Inlet Flange	9	9	9	9	9	9
	Tee	11	13	16	16	18	22
	Valve	8	9	10.5	10.5	11.5	13
	Meter	33.25	33.25	36.5	45	53	68
	Tail Pc w/exp jt	13	13	13	13	13	13
	Valve	8	9	10.5	10.5	11.5	13
	Tee	11	13	16	16	18	22
	Outlet Flange	9	9	9	9	9	9
	Gaskets	0.75	0.75	0.75	0.75	0.75	0.75
	TOTAL (in)	103.0	109.0	121.3	129.8	143.8	169.8
	TOTAL (ft)	8.6	9.1	10.1	10.8	12.0	14.1
LP Standard	**FINAL (ft) min**	**9**	**9**	**10**	**11**	**12**	**15**
	"extra" inches	5.0	-1.0	-1.3	2.3	0.3	10.3
Watts 774 DCDA	Backflow (inc valves)	38	40	48.5	48.5	52	55.5
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	141.3	149.3	170.0	178.5	196.0	225.5
	TOTAL (ft)	11.8	12.4	14.2	14.9	16.3	18.8
LP w/BF	**FINAL (ft) min**	**12**	**13**	**14**	**15**	**17**	**19**
	"extra" inches	2.8	6.8	-2.0	1.5	8.0	2.5
	Valve	8	9	10.5	10.5	11.5	13
	PRV	10.5	13	18	18	25	30
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	121.8	131.3	150.0	158.5	180.5	213.0
	TOTAL (ft)	10.1	10.9	12.5	13.2	15.0	17.8
HP Standard	**FINAL (ft) min**	**10**	**11**	**13**	**14**	**15**	**18**
	"extra" inches	-1.8	0.8	6.0	9.5	-0.5	3.0
	Backflow (inc valves)	38	40	48.5	48.5	52	55.5
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	160.0	171.5	198.8	207.3	232.8	268.8
	TOTAL (ft)	13.3	14.3	16.6	17.3	19.4	22.4
HP w/BF	**FINAL (ft) min**	**14**	**15**	**17**	**18**	**20**	**23**
	"extra" inches	8.0	8.5	5.3	8.8	7.3	7.3
	Front of Door Opening (in)	28	31	35.5	35.5	38.5	44
	Front of Door Opening (ft)	2.3	2.6	3.0	3.0	3.2	3.7
"D" LP	**Front of Door Opening (ft)**	**2**	**2**	**3**	**3**	**3**	**3**
	Front of Door Opening (in)	46.75	53.25	64.25	64.25	75.25	87.25
	Front of Door Opening (ft)	3.9	4.4	5.4	5.4	6.3	7.3
"D" HP	**Front of Door Opening (ft)**	**4**	**4**	**5**	**5**	**6**	**7**

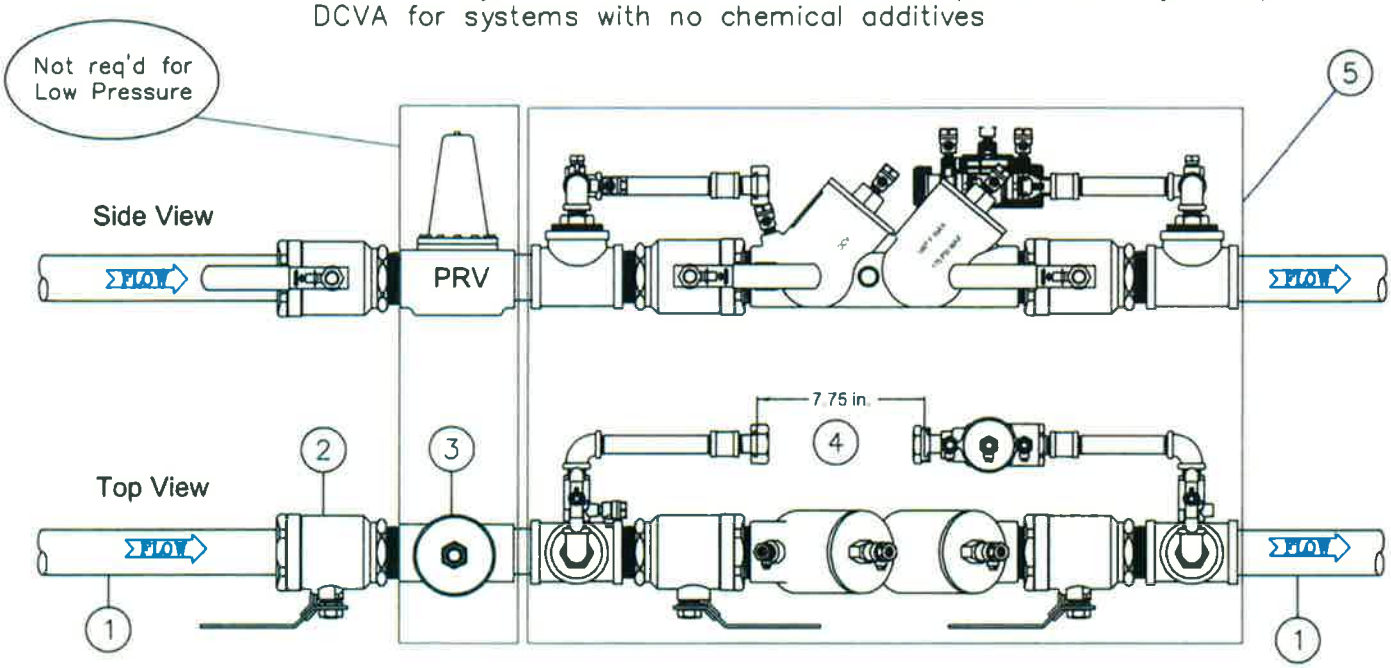
AQUA		
Single Service Pit Calculations - DOMESTIC		
Ck'd by MJF	3/6/2014	Plan No. **D-5**

FIRE SERVICE LINES – 1", 1.5", and 2"

Residential __ LOW PRESSURE (up to 100 psi) __ HIGH PRESSURE (over 100 psi) See notes below.

Non-Residential __ LOW PRESSURE (up to 150 psi) __ HIGH PRESSURE (where pressure may exceed 150 psi) See notes below.

RPZA for systems with chemical additives (anti-freeze systems)
DCVA for systems with no chemical additives



	ITEM			
1	Line Size ("K" copper) as approved by the Water Co.	1"	1.5"	2"
2	Full-port Ball Valve	1"	1.5"	2"
3	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER		
4	Meter (by Water Co.)	5/8" x 3/4"	5/8" x 3/4"	5/8" x 3/4"
5	Backflow device - DCVA or RPZA	1"	1.5"	2"
	DCDA - Apollo Valves part No. (shown above)	Series 40-600		
	RPDA - Apollo Valves part No.	Series 40-700		

Notes:

A. It is the CUSTOMER's responsibility to address THERMAL EXPANSION before the installation of a PRV or backflow device. All Fire systems should have a Pressure Relief Valve.

B. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

C. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two-stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

D. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

E. DCDA & RPDA Assemblies must be UL & FM approved.

rev. 3-13-14

AQUA	
Fire Service Lines 1", 1.5" & 2"	
ck'd by: MJF	Plan No. F-1

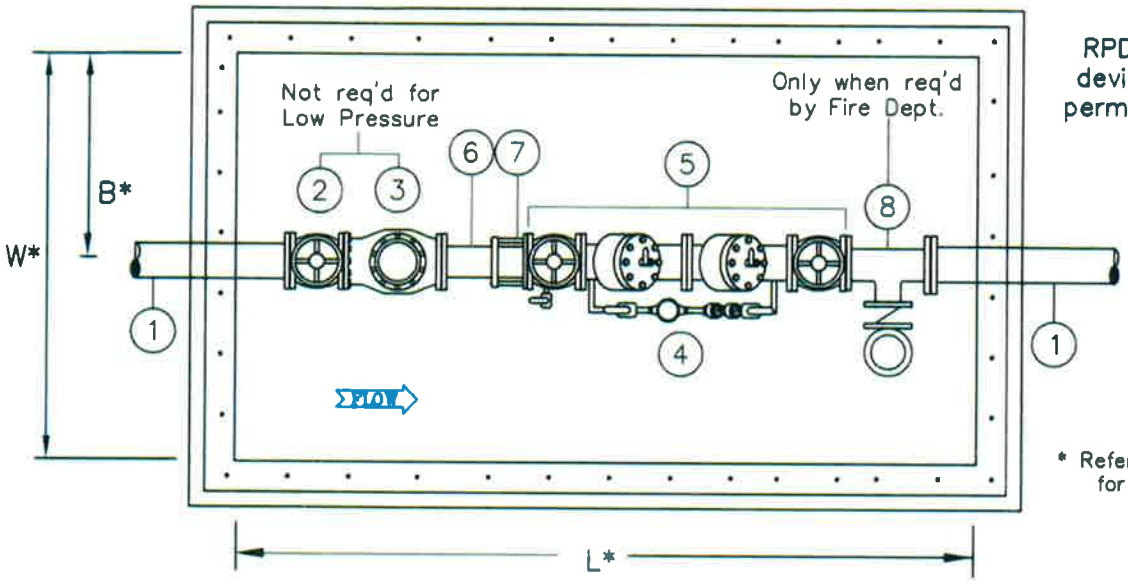
FIRE SERVICE LINES – 4", 6", 8", and 10"

"Closed System" has no fire hydrants

Residential __ LOW PRESSURE (up to 100 psi) __ HIGH PRESSURE (over 100 psi) See notes below.

Non-Residential __ LOW PRESSURE (up to 150 psi) __ HIGH PRESSURE (where pressure may exceed 150 psi) See note below.

RPZA for systems with chemical additives (anti-freeze systems)
DCVA for systems with no chemical additives



RPDA backflow devices are not permitted in pits.

* Refer to PLAN No. F-4 for pit dimensions.

	ITEM				
1	Line Size (Cement-lined D.I.P.) as approved by Aqua	4"	6"	8"	10"
2	R.S. Gate Valve, O.S.&Y., Flanged	4"	6"	8"	10"
3	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER			
4	Meter (by Aqua)	5/8 x 3/4"	5/8 x 3/4"	5/8 x 3/4"	5/8 x 3/4"
5	Backflow Device Assembly – DCDA or RPDA	4"	6"	8"	10"
6	Spool Piece, Flg x Flg – Length = 12 in. (min.)	4"	6"	8"	10"
7	Flanged Coupling Adapter	Ford Style FFCA or Smith-Blair Style 913			
8	Tee for FDC, only if req'd by local Fire Dept.	4"	6"	8"	10"
	Branchline sized by local Fire Department if required.	SIZED BY LOCAL FIRE DEPARTMENT			

Notes:

A. It is the CUSTOMER's responsibility to address THERMAL EXPANSION before the installation of a PRV or backflow device. All Fire systems should have a Pressure Relief Valve.

B. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

C. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two-stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

D. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

E. DCDA & RPDA Assemblies must be UL & FM approved.

AQUA	
"Closed" Fire Lines 4" to 10"	
ck'd by: MJF	Plan No. F-2

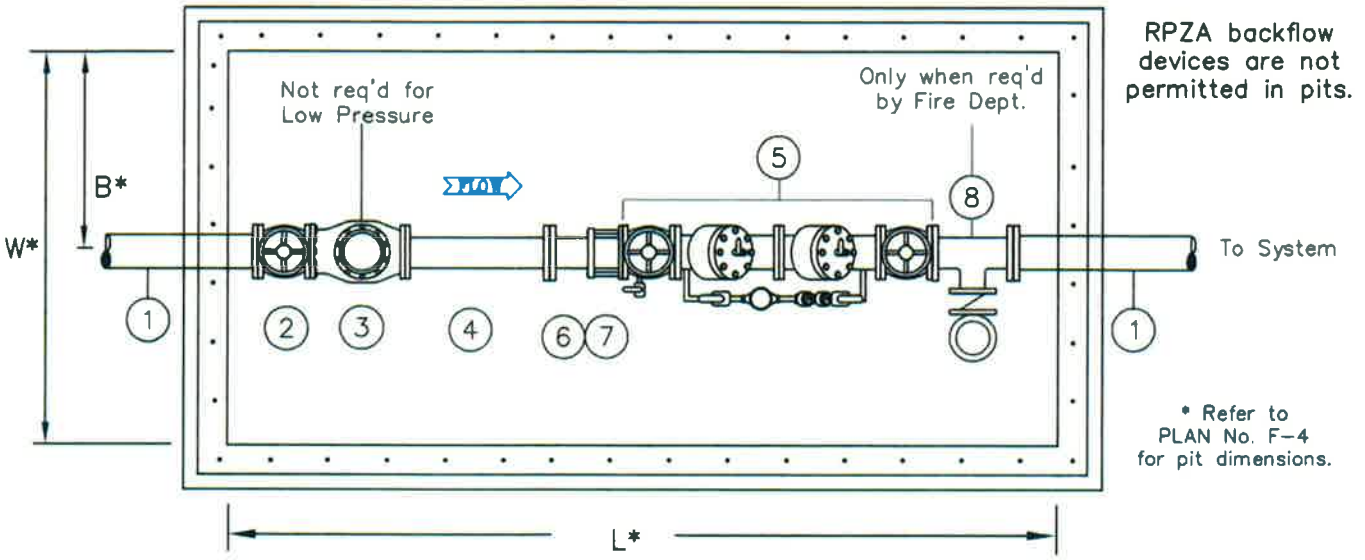
rev. 3-13-14

FIRE SERVICE LINES – 6", 8", and 10"

"Open System" has fire hydrants, meter pit is req'd

Non-Residential __ LOW PRESSURE (up to 150 psi) __ HIGH PRESSURE (where pressure may exceed 150 psi) See note below.

RPZA for systems with chemical additives (anti-freeze systems)
DCVA for systems with no chemical additives



RPZA backflow devices are not permitted in pits.

* Refer to PLAN No. F-4 for pit dimensions.

	ITEM				
1	Line Size (Cement-lined D.I.P.) as approved by Aqua		6"	8"	10"
2	R.S. Gate Valve, O.S.&Y., Flanged		6"	8"	10"
3	Pressure Reducing Valve (PRV)	SIZED BY CUSTOMER			
4	Meter (by Aqua)		45"	53"	68"
5	Backflow Device Assembly – DCDA or RPDA		6"	8"	10"
6	Spool Piece, Flg x Flg – Length = 12 in. (min.)		6"	8"	10"
7	Flanged Coupling Adapter	Ford Style FFCA or Smith-Blair Style 913			
8	Tee for FDC, only if req'd by local Fire Dept.		6"	8"	10"
	Branchline sized by local Fire Department if required.	SIZED BY LOCAL FIRE DEPARTMENT			

Notes:

A. It is the CUSTOMER's responsibility to address THERMAL EXPANSION before the installation of a PRV or backflow device. All Fire systems should have a Pressure Relief Valve.

B. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

C. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two-stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

D. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

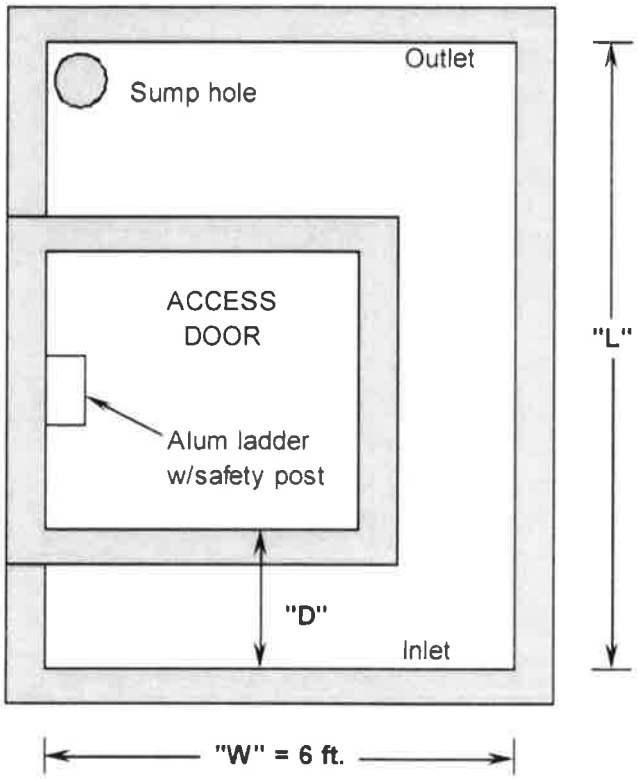
E. DCDA & RPDA Assemblies must be UL & FM approved.

rev. 3-13-14

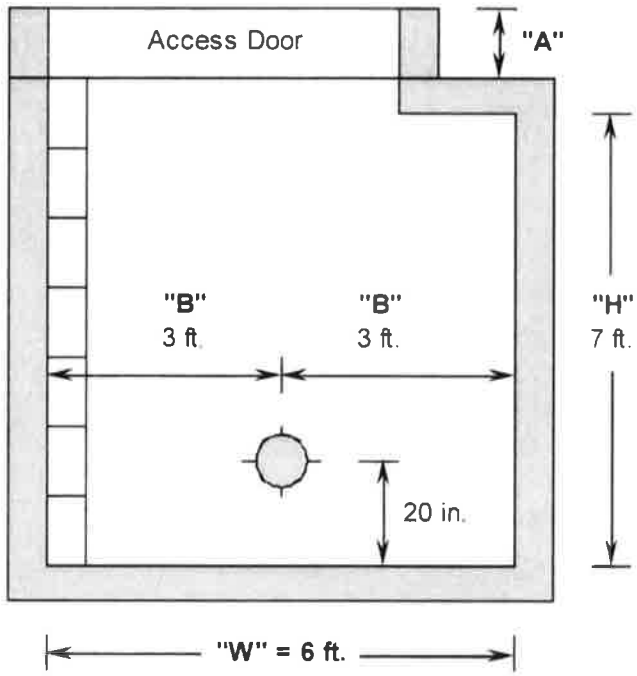
AQUA	
'Open' Fire Lines 6" to 10"	
ck'd by: MJF	Plan No. F-3

SINGLE SERVICE PIT DIMENSIONS
for FIRE Service

TOP VIEW



FRONT VIEW



Refer to Plan DS-1 for additional notes.

		"Open System"			"Closed System"				
Dim	Description	6"	8"	10"	3"	4"	6"	8"	10"
L	Length - Low Pressure (LP)	12'	13'	14'	n/a	6'	7'	7'	8'
L	Length - Low Pressure w/ FDC	13'	14'	16'	n/a	7'	8'	9'	9'
L	Length - High Pressure (HP)	13'	15'	17'	n/a	8'	9'	10'	11'
L	Length - High Pressure w/ FDC	14	16	19'	n/a	9'	11'	12'	13'
W	Width	6 ft.			6 ft.				
H	Height	7 ft.			7 ft.				
B	Centerline of pipe to side wall	3 ft.			3 ft.				
D	* Front of Door Opening to Inlet Wall - LP	1'	1'	1'	n/a	1'	2'	2'	2'
D	* Front of Door Opening to Inlet Wall - HP	3'	3'	4'	n/a	2'	3'	3'	3'
	Centerline of pipe to floor	20" min - 24" max			20" min. to 24" max.				
	Backflow allowance (inc.both valves)	49"	53"	56"	n/a	40"	49"	53"	56"
A	Height of raised Access Door	6" min to 12" max			6" min. to 12" max.				
	Access Door Opening	4' x 4'			4' x 4'				

* Assumes inlet flange is 9 in. from inlet wall.
Outlet flange must be 9 in. (min.) from outlet wall.

Pit dimensions are indide dimensions.

Pipe restrained with Omni Sleeve
in each end of pit wall.

AQUA	
SINGLE SERVICE DIMENSIONS (Fire)	
Ck'd by: MJF	Plan No. F-4

rev. 3-18-14

Single Service PIT Calculations - FIRE

		OPEN SYSTEM			CLOSED SYSTEM			
	Fitting	**6"**	**8"**	**10"**	**4"**	**6"**	**8"**	**10"**
	Inlet Flange	9	9	9	9	9	9	9
	Valve	10.5	11.5	13				
	Meter	45	53	68				
	Tail Pc w/exp jt	13	13	13	13	13	13	13
Watts 774 DCDA	Backflow (inc valves)	48.5	52	55.5	40	48.5	52	55.5
	Outlet Flange	9	9	9	9	9	9	9
	Gaskets	0.5	0.5	0.5	0.25	0.25	0.25	0.25
	TOTAL (in)	135.5	148.0	168.0	71.3	79.8	83.3	86.8
	TOTAL (ft)	11.3	12.3	14.0	5.9	6.6	6.9	7.2
LP Standard	**FINAL (ft) min**	**12**	**13**	**14**	**6**	**7**	**7**	**8**
	"extra" inches	8.5	8.0	0.0	0.8	4.3	0.8	9.3
	Tee	16	18	22	13	16	18	22
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	151.8	166.3	190.3	84.5	96.0	101.5	109.0
	TOTAL (ft)	12.6	13.9	15.9	7.0	8.0	8.5	9.1
LP Std. w/FDC	**FINAL (ft) min**	**13**	**14**	**16**	**7**	**8**	**9**	**9**
	"extra" inches	4.3	1.8	1.8	**-0.5**	0.0	6.5	**-1.0**
	Valve				9	10.5	11.5	13
	PRV	18	25	30	13	18	25	30
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	153.8	173.3	198.3	93.5	108.5	120.0	130.0
	TOTAL (ft)	12.8	14.4	16.5	7.8	9.0	10.0	10.8
HP Standard	**FINAL (ft) min**	**13**	**15**	**17**	**8**	**9**	**10**	**11**
	"extra" inches	2.3	6.8	5.8	2.5	**-0.5**	0.0	2.0
	Tee	16	18	22	13	16	18	22
	Gaskets	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	TOTAL (in)	170.0	191.5	220.5	106.8	124.8	138.3	152.3
	TOTAL (ft)	14.2	16.0	18.4	8.9	10.4	11.5	12.7
HP Std. w/FDC	**FINAL (ft) min**	**14**	**16**	**19**	**9**	**11**	**12**	**13**
	"extra" inches	**-2.0**	0.5	7.5	1.3	7.3	5.8	3.8

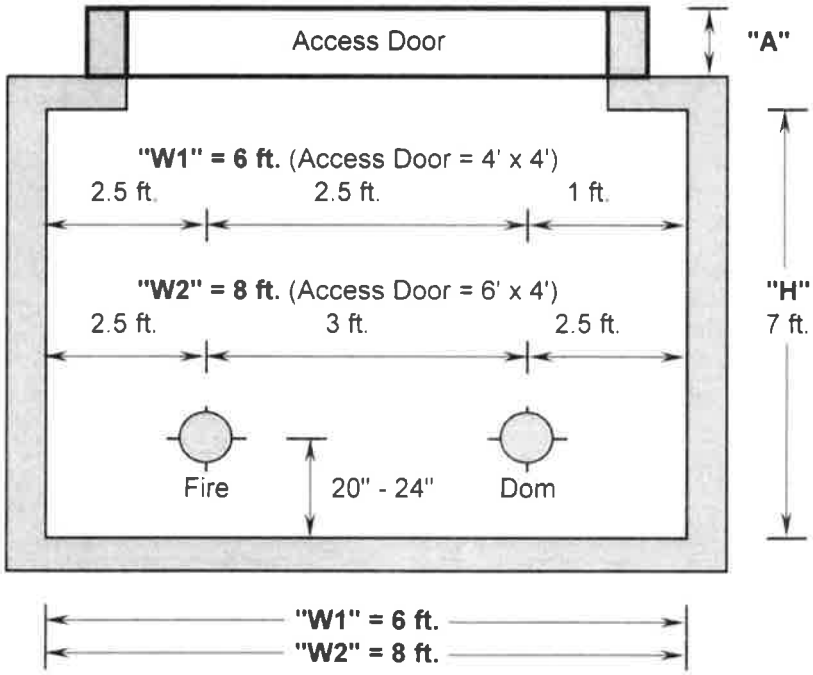
	Front of Door Opening (in)	19.5	20.5	22	9	9	9	9
	Front of Door Opening (ft)	1.6	1.7	1.8	0.8	0.8	0.8	0.8
"D" LP	**Front of Door Opening (ft)**	**1**	**1**	**1**	**0**	**0**	**0**	**0**
	Front of Door Opening (in)	37.5	45.5	52	22	28.5	36.5	43
	Front of Door Opening (ft)	3.1	3.8	4.3	1.8	2.4	3.0	3.6
"D" HP	**Front of Door Opening (ft)**	**3**	**3**	**4**	**0**	**0**	**0**	**0**

AQUA		
Single Service Pit Calculations - FIRE		
Ck'd by MJF	3/6/2014	Plan No. **F-5**

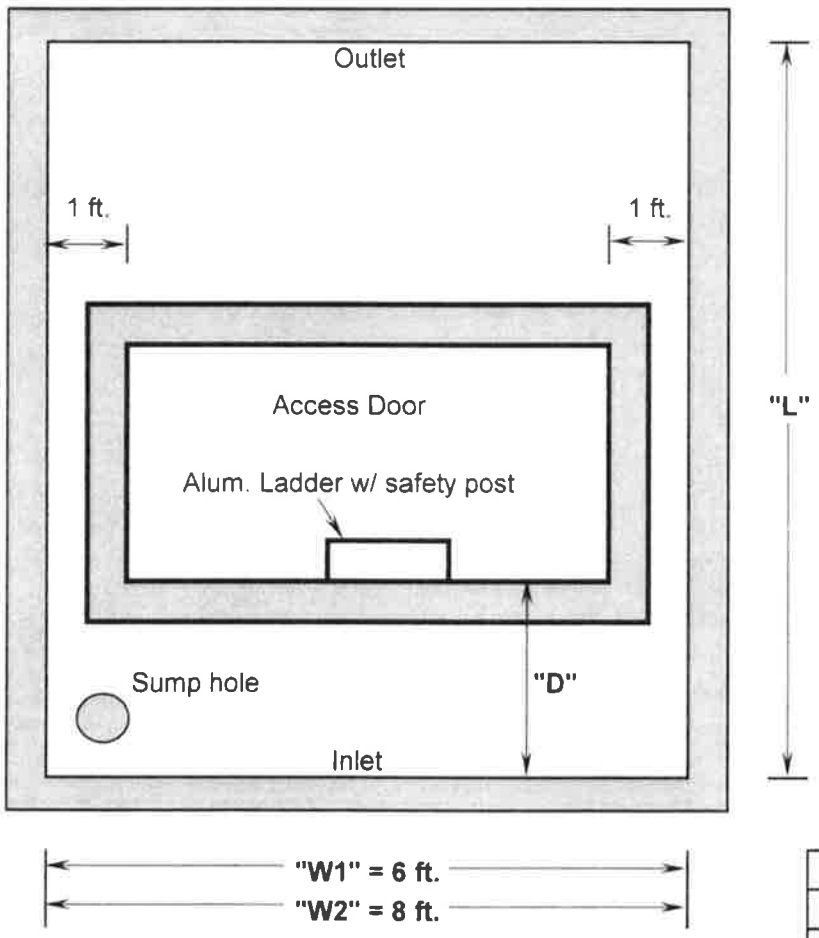
DUAL SERVICE PIT DIMENSIONS

For: Domestic lines up to 6"
Fire lines up to 10"

FRONT VIEW



TOP VIEW



"A" (Riser Height) = **6 in. min.**
= **12 in. max.**

"H" (Height) = **7 ft.**

"L" (Length)
obtained using these steps:

1.) Determine the length of the pit needed for the Domestic service. Refer to Plan No. D-4.
2.) Determine the length of the pit needed for the Fire service. Refer to Plan No. F-4.
3.) Select the longer dimension from #1 & 2 above. This is the Length of the Dual Service Pit.

"W1" (Width) = **6 ft.**
for Domestic services 2" & smaller
Access Door = **4 ft. x 4 ft.**

"W2" (Width) = **8 ft.**
for Domestic services 3" & larger
Access Door = **6 ft. x 4 ft.**

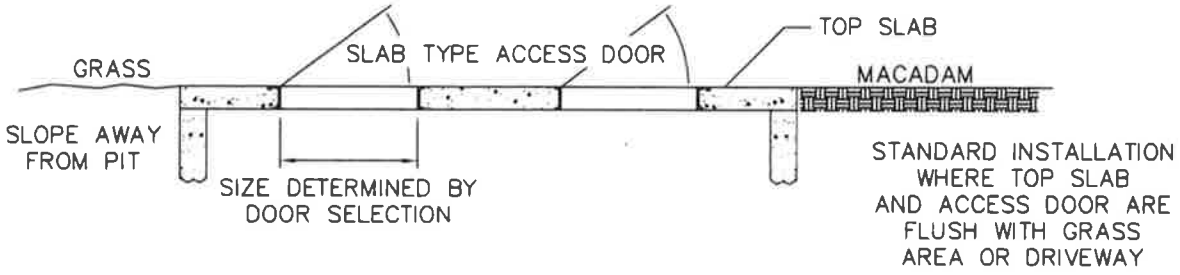
"D" (Inside wall to door opening)
Use Single Service dimensions of Fire line. See Plan F-4. (Assumes inlet flange is 9" from wall)

* Aluminum ladder w/ safety post to be centered between Fire & Dom lines on the inlet side of the pit.
* Doors must be centered directly over the FIRE meter.
* Doors may be recessed in the top of the pit or mounted on top of the pit.
* Grade must be sloped away from pit in all directions.
* Pipe restrained with Omni Sleeve in each end of pit wall.

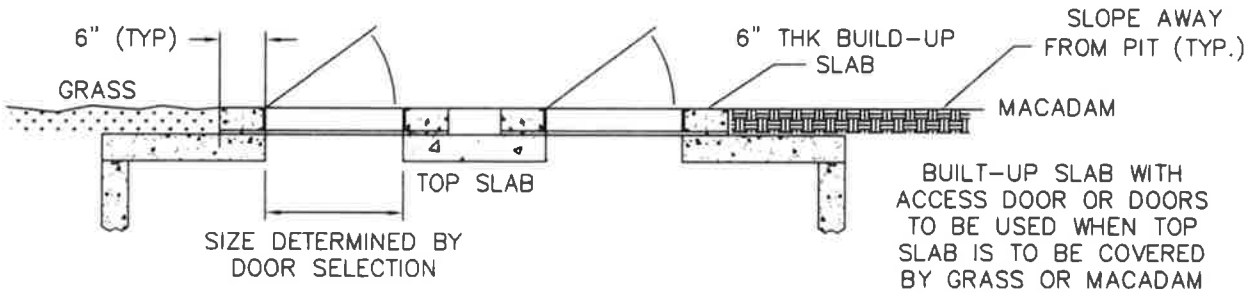
AQUA		
DUAL SERVICE PIT DIMENSIONS		
Ck'd by MJF	3/6/2014	Plan No. **DS-1**

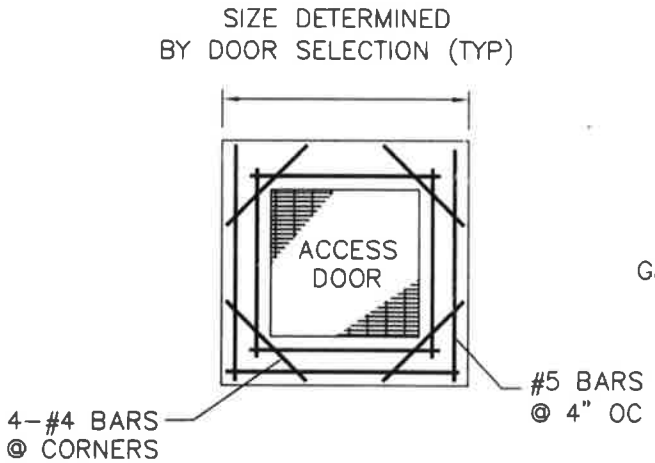
METER PIT DOOR DETAILS

ACCESS TO PIT (OPTION #1)

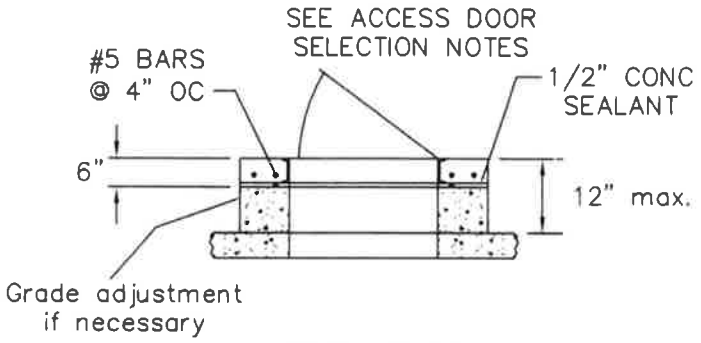


ACCESS TO PIT (OPTION #2)





PLAN VIEW
BUILD-UP SLAB

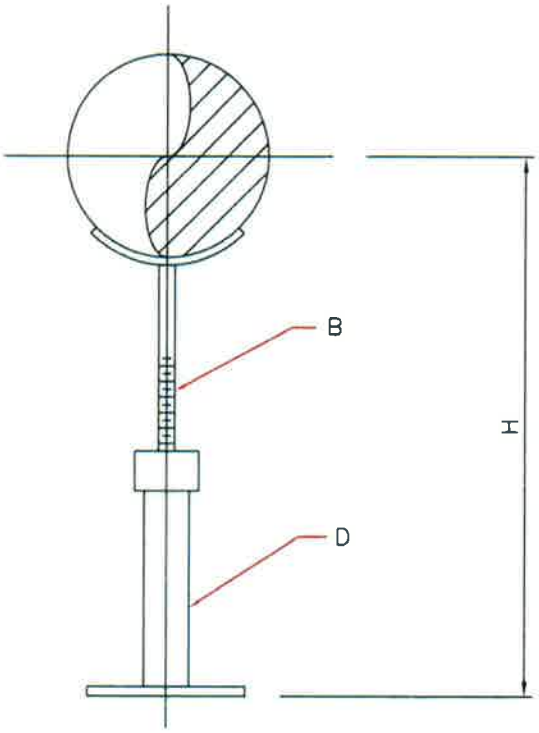


ELEVATION
BUILD-UP SLAB

AQUA	
Access Door Detail	
ck'd by: MJF	Plan No. P-1

rev. 06-10-13

PIPE SUPPORT



These pipe supports are made up of the following materials: The saddle is cut to size from heavy plate steel and forged to shape. The supporting column is steel pipe – see tables below and ANSI 125 pound companion flange forms the base.

For the adjustable support, the shank is solid steel rod, threaded. The pipe support is adjustable by means of a heavy steel nut mounted on a reinforced malleable iron cap covering the top of the support column.

NOTE: Flanged pipe supports are acceptable.

ADJUSTABLE PIPE SUPPORT
Length of threaded shanks will allow up to 6 inches for adjustment

Size of Pipe to be Supported – Inches		Dimentions of Materials Used				Size of Supporting Pipe D Inches	Height H Inches
		Saddle	Shank B Inches		Flange		
	OD	Inches	Size (min)	Length	OD Inches		
3	3.96	3/8 X 2	3/4 ROD	8	7 1/2	2 Std	20
4	4.80	3/8 X 2	3/4 ROD	8	9	2 Std	20
6	6.90	3/8 X 2	3/4 ROD	8	11	2 Std	20
8	9.05	1/2 X 2	3/4 ROD	8	13 1/2	2 Std	20
10	11.10	1/2 X 2	3/4 ROD	8	16	2 Std	20

AQUA

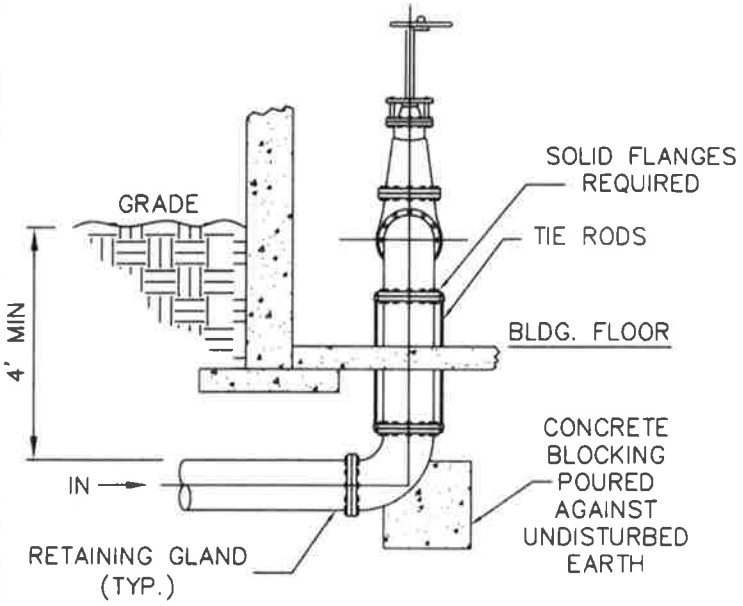
Pipe Support Detail

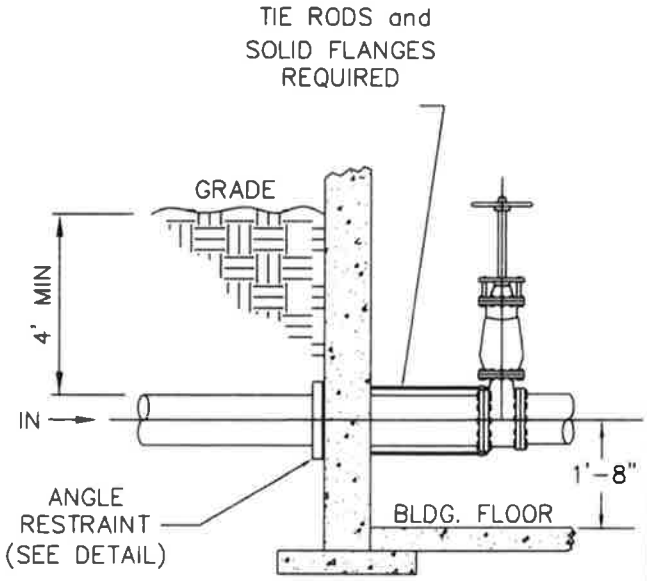
rev. 06-07-13

ck'd by: MJF

Plan No. P-2

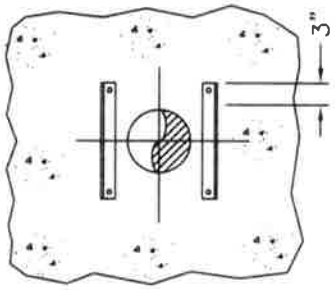
ANCHOR & BLOCKING DETAILS



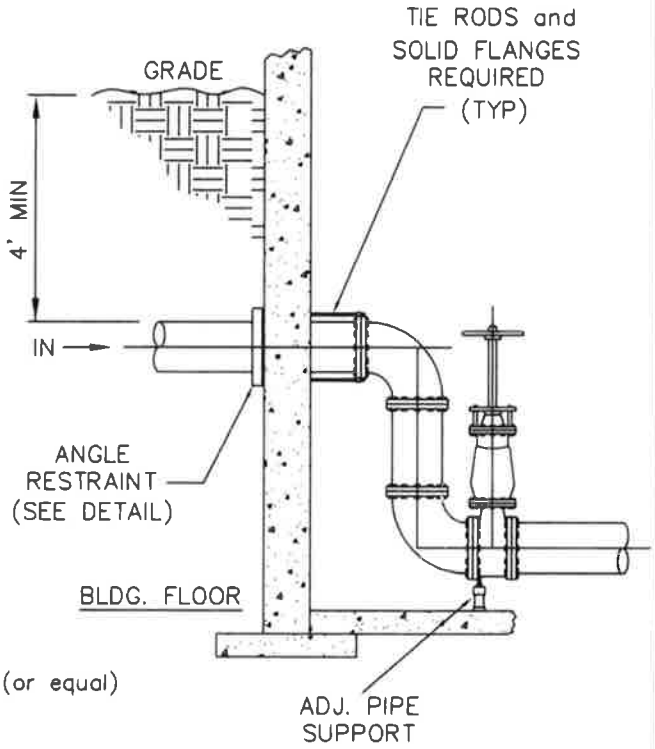


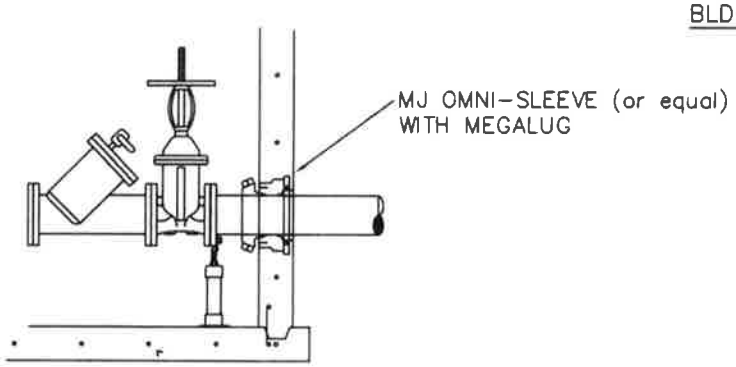
3"x 3"x 3/8" REACTION ANGLE IRON
OR 3" x 2" RECTANGULAR STRUCTURAL TUBE

MINIMUM OF (2) RODS PER FLANGE REQ'D.
ROD DIAMETER TO EQUAL BOLT SIZE DIAMETER.



RESTRAINT FOR BUILDING





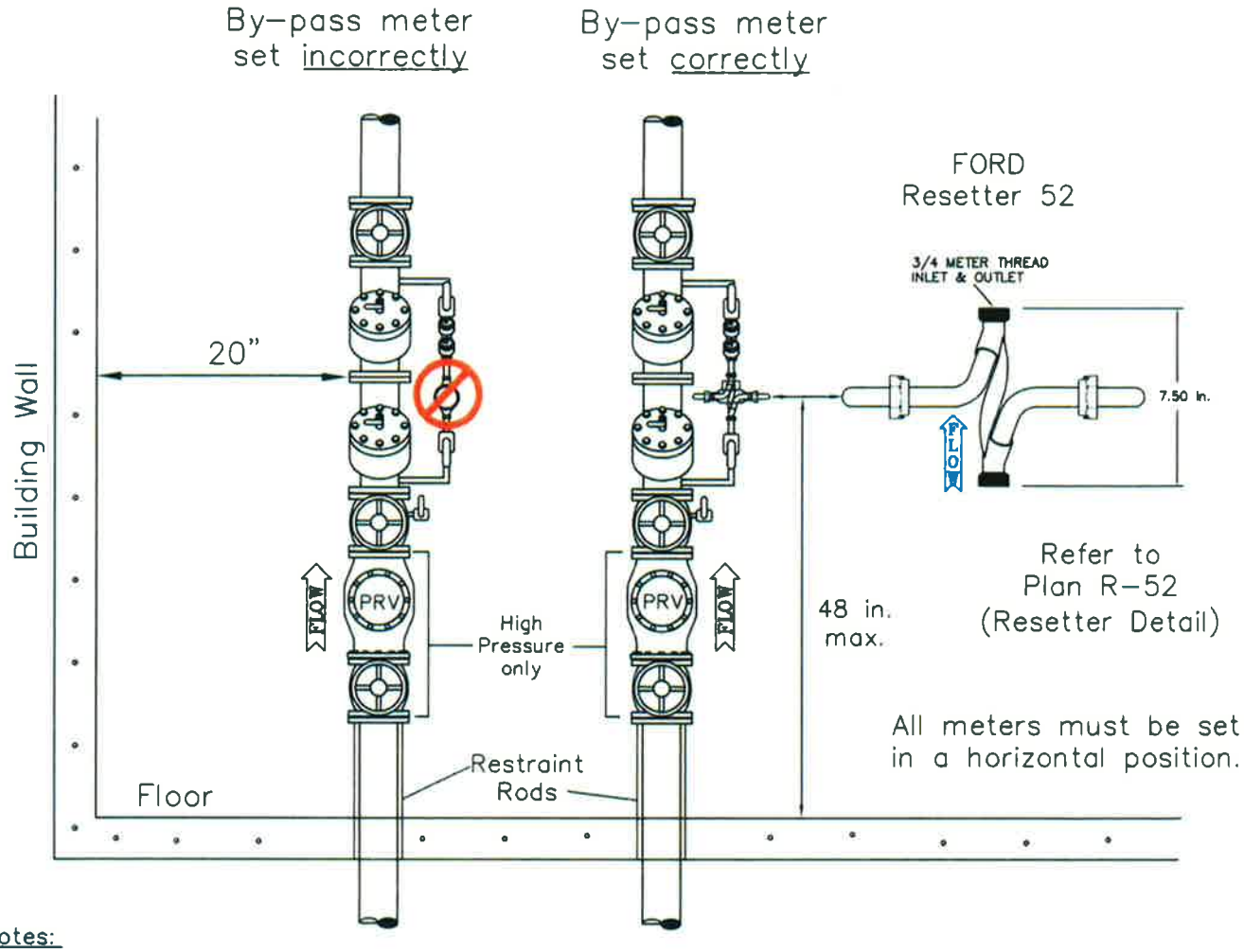
RESTRAINT FOR METER PIT

AQUA	
Anchor & Blocking Details	
ck'd by: MJF	Plan No. P-3

rev. 06-10-13

VERTICAL BACKFLOW INSTALLATIONS

This diagram shows an approved vertical installation for a Double Check Detector Assembly (DCDA) on Class 1 and 2 "Closed" Fire Sprinkler Systems.



Notes:

A. Reduced Pressure Detector Assemblies (RPDA) are NOT approved for vertical installations. DCDA must be approved by the manufacturer for vertical installations.

B. RPZ & Vertical Installations are not approved in meter pits/vaults.

C. The Customer is required to have the meter resetter installed on all vertical backflow detector assemblies.

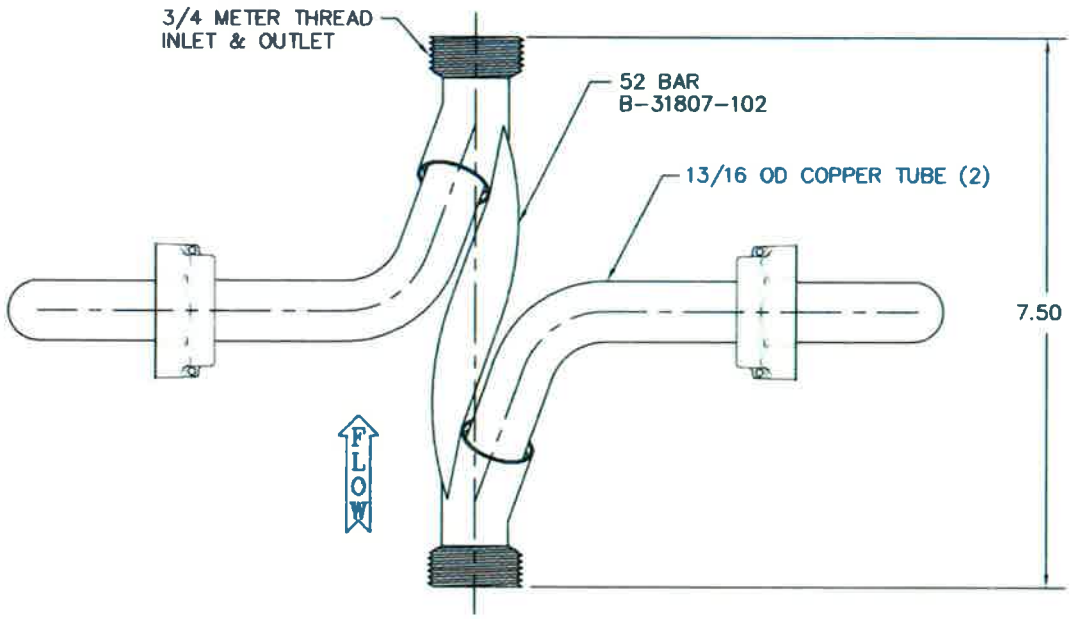
D. Water Company Rules & Regulations require that all of the specifications are met and a meter is set before water service is turned on.

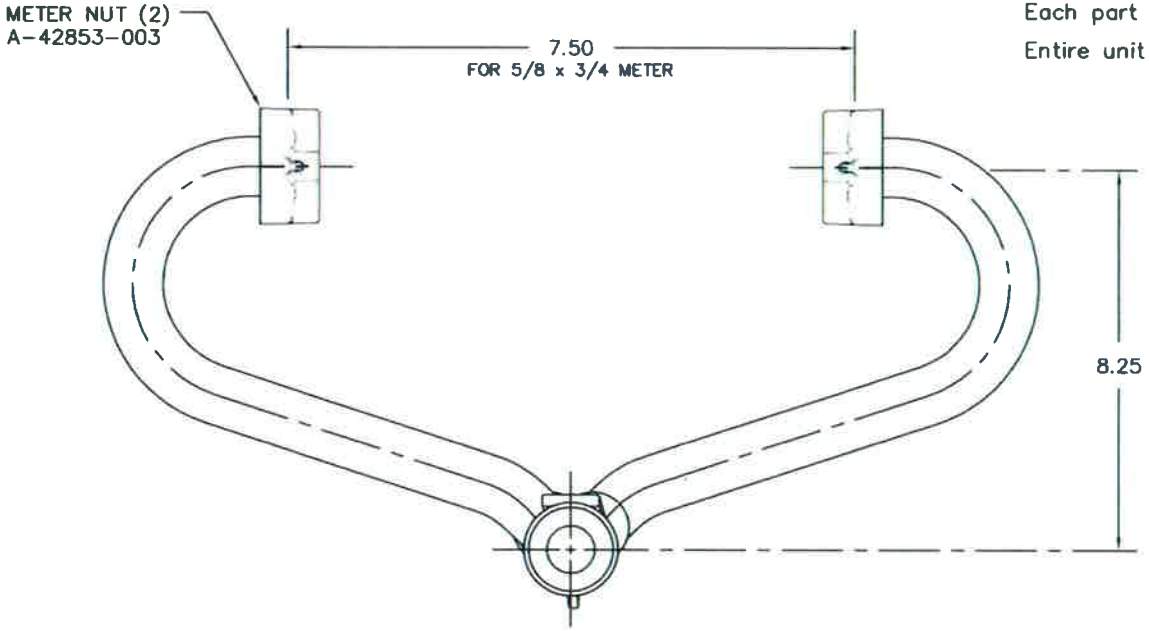
E. It is the CUSTOMER's responsibility to size the pressure reducing valve(s) to fit their flow needs. Two–stage reduction may be needed where there is a wide variation between the initial pressure and the reduced pressure. Parallel installation may be needed where there is a wide variation of reduced pressure requirements, where it is vital to maintain a continuous water supply, or other reasons for improved performance.

F. Each part must be NSF/ANSI 61 (Annex F & G) compliant. Entire unit must be NSF/ANSI 372 compliant.

rev. 06–17–13

AQUA	
ck'd by: MJF	Plan No. BFV–1





Each part must be NSF/ANSI 61, Annex F & G compliant.
Entire unit must be NSF/ANSI 372 compliant.

RESETTER-52

ASSY. BASEMENT RESETTER, 5/8 x 3/4 METER, PLAIN TUBE INLET & OUTLET		
REF. FORD METER BOX CO. DWG # B-95393-005		
DRAWN BY RWH	DATE 3-8-10	DRAWING NO. R-52
CHK'D BY MJF	SCALE 1/2=1	
AQUA		

Rev. 5-10-2013

APPENDIX E

Aqua Ohio, Inc.
Cross Connection Control Program

Aqua Ohio, Inc.
Corporate Headquarters
6650 South Avenue
Youngstown, Ohio 44512
330-726-8151

Effective July 31, 2014

Applicable at the Following Public Water Systems

Franklin County /Lawrence County / Preble County /Lake White Division

Aqua Ohio - Blacklick Public Water System	OH2502412
Aqua Ohio - Huber Ridge Public Water System	OH2502512
Aqua Ohio - Lake Darby Public Water System	OH2502612
Aqua Ohio - Timberbrook Public Water System	OH2502712
Aqua Ohio - Worthington Hills Public Water System	OH2502812
Aqua Ohio - Lake White Public Water System	OH6600312
Aqua Ohio - Lawrence County Public Water System	OH4400803
Aqua Ohio - Preble County Water System	

Marion / Tiffin Division

Aqua Ohio - Marion Public Water System	OH5100414
Aqua Ohio - Tiffin Public Water System	OH7400614

Mentor / Ashtabula Division

Aqua Ohio - Mentor Public Water System	OH4301511
Aqua Ohio - Auburn Public Water System	OH2803612
Aqua Ohio - Norlick Public Water System	OH8601012
Aqua Ohio – Seneca Public Water System	OH8601512
Aqua Ohio - Shepard Hills Public Water System	OH7704212
Aqua Ohio - Ashtabula Public Water System	OH0400711
Aqua Ohio – Village of Jefferson Public Water System	OH0401812

Stark / Mansfield / Portage Division

Aqua Ohio – Massillon Public Water System	OH7604512
Aqua Ohio - Mansfield #1 Public Water System	OH7002812
Aqua Ohio - Mansfield #2 Public Water System	OH7005912
Aqua Ohio - Mansfield #3 Public Water System	OH7005812
Aqua Ohio - Mansfield #4 Public Water System	OH7001412
Aqua Ohio - Mansfield #5 Public Water System	OH7004912
Aqua Ohio - Mansfield #6 Public Water System	OH7005612
Aqua Ohio - Mansfield #7 Public Water System	OH7001612
Aqua Ohio - Mansfield #8 Public Water System	OH7003212
Aqua Ohio - Mansfield #9 Public Water System	OH7002512
Aqua Ohio - Mansfield #10 Public Water System	OH7006612
Aqua Ohio - Sites Lake Public Water System	OH7003312
Aqua Ohio - Aurora East Public Water System	OH6700512
Aqua Ohio - Beechcrest Public Water System	OH6705212

Struthers Division

Aqua Ohio - Struthers Public Water System	OH5001611

INDEX

SECTION I INTRODUCTION

1) Purpose

a) Aqua Ohio (the Water Company) has the responsibility to implement and conduct a Cross Connection Control Program (the Program). Legal authority to conduct the Program is based in part on the requirements of the federal Safe Drinking Water Act (SDWA); the Ohio Environmental Protection Agency rules; the Public Utilities Commission of Ohio's approved Water Company's Tariffs; and the Ohio Administrative Code (OAC).

b) This Cross Connection Control Program applies to all premises served by the public water systems owned and/or operated by Aqua Ohio.

c) The purpose of Aqua Ohio's Cross Connection Control Program is to:

i) Protect the public potable water supply served by Aqua Ohio from the possibility of contamination or pollution by containing within the consumer's internal distribution system or the consumer's private water system, such contaminants or pollutants that could backflow or back siphon into the public water system.

ii) Promote the elimination or control of cross-connections, actual or potential, between the consumer's internal potable water system and non-potable water systems, plumbing fixtures, and industrial piping systems.

iii) Provide a continuing cross-connection control program that will systematically and effectively prevent the contamination or pollution of the potable water distribution system.

iv) To educate consumers of their legal duty and responsibility to their internal plumbing system in such a manner as to not create a potential threat of contamination to to the public water supply system.

v) To take reasonable efforts to protect the Water Company's public water system against actual or potential backflow by containing within a consumer's premise, any pollution or contamination that has entered or may enter, the consumer's water system through an undiscovered or uncontrolled cross-connection on said premise.

vi) Ensure compliance with relevant Federal, State, and local regulations regarding cross connection control.

2) Policy

a) Aqua Ohio's responsibility for water quality begins at the source and includes all the public water distribution systems and ends at the user's service connection. If, in judgment of the Water Company, an approved backflow prevention device is necessary at the water service connection to any consumer's premise for the safety and protection of the public water system, the Water Company shall give notice to the consumer to install an approved backflow device at each service connection to his premise. The consumer shall immediately install such approved device or devices at his own expense, and failure, refusal or inability on the part of the consumer to install such device or devices shall constitute grounds for discontinuing water service to the premise until such device or devices have been installed and tested by a Qualified Backflow Assembly Installer.

b) It is prohibited for any person, firm, or corporation at any time to make or maintain or cause to be made or maintained, temporarily or permanently, for any period of time, any cross-connection between plumbing pipes or water fixtures being served with water by Aqua Ohio and any other source of water supply. It is also unlawful to maintain any sanitary fixture or other appurtenances or fixtures, which by reason of their construction may cause or allow backflow of water or other substances into the public water supply system and/or the service of water pipes or fixtures of any consumer of Aqua Ohio.

c) This Cross Connection Control Program is not designed to relieve any consumer from the independent responsibility of preventing contamination of the Water Company's water distribution system or to suggest that the Water Company should be responsible for abatement of cross-connections which may exist within the consumer's premise.

d) Aqua Ohio has no responsibility over water systems on private property and takes no legal responsibilities for their safe operation.

e) In the event of accidental contamination or pollution of the Water Company's public water system, the consumer, if he is so aware, shall ***immediately notify*** the Water Company so that the appropriate measures may be taken to contain and isolate the contaminate and/or pollutant. The liability for all costs related to a contamination incident rests solely with the consumer.

f) The responsibility for and all costs required to comply with the Water Company's Cross Connection Control Program rests solely with the consumer.

g) Unless the Water Company is advised in writing by the premise owner, all notices associated with the implementation of the Water Company's Cross Connection Control Program will be sent to the premise's service address.

h) The use of the approved backflow prevention device at the water service connection does not in any way affect or eliminates the need for individual fixture devices or air-gaps as may be required by the Ohio Building Code.

SECTION II DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of this Cross Connection Control Program:

Air-Gap Separation (AG) means a physical break between a supply pipe and a receiving vessel. The air-gap shall be at least double the diameter of the supply pipe measured vertically above the flood rim of the receiving vessel, in no case less than one inch.

Approved Backflow Prevention Assembly (Device) means any testable assembly that is approved by one of the following: the Research Foundation for Cross Connection Control of the University of Southern California (USC), American Water Works Association (AWWA), American Society of Sanitary Engineering (ASSE), or American National Standards Institute (ANSI), or certified by the National Sanitation Foundation (NSF) to be in compliance with industry specifications, and the Water Company.

Auxiliary Supply means any water supply on or available to the premise other than the Water Company's public water supply.

AWWA Standard means an official standard developed and approved by the American Water Works Association (AWWA).

Backflow means the undesirable reversal of the normal flow of water or mixtures of water and other liquids, gases, or other substances into the distribution system of the public water supply due to backpressure and/or backsiphonage.

Backsiphonage: Backflow resulting from a negative or reduced pressure in the water distribution supply.

Booster Pump means any device which is intended to increase the in-line water pressure.

Chemigation: Utilizing underground sprinkler systems to apply herbicides and pesticides.

Containment: The term "containment" means that protection of the public water system is maintained by the application of a proper backflow prevention assembly on the line supplying water to a premise or building so that any contamination is contained within the premise and does not enter the pipelines of the Water Company's public water system.

Contamination: The term "contamination" means an impairment of the quality of potable water by sewage, industrial fluids, waste liquids, compounds or other materials to a degree which creates an actual or potential hazard to the public health through poisoning or through the spread of disease.

Cross-Connection means any arrangement whereby backflow can occur. The term "cross-connection" means any actual connection between a public water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or other assemblies through which backflow could occur, shall be considered to be cross-connections. The term "direct cross-connection" shall mean a cross-connection that is subject to both backsiphonage and backpressure. The term "indirect cross-connection" shall mean a cross-connection that is subject to back-siphon only.

Consumer/Customer means the owner or person in control of any premises supplied by or in any manner connected to a public water system.

Consumer's water system means any water system, located on the consumer's premises, supplied by or in any manner connected to a public water system. A household plumbing system is considered to be a consumer's water system.

Designated Backflow Prevention Specialist: The designated Water Company employee(s), trained in backflow prevention, who serve(s) as the Water Company's designated consumer contact for technical cross connection/backflow related issues.

Director means the Director of the Ohio Environmental Protection Agency or his duly authorized representative.

Double Check Valve Assembly (DC): The term "double check valve assembly" means an assembly of two independently operating approved check valves with tightly closing resilient seated shutoff valves at each end of the assembly and properly located test cocks.

Hazard, Degree of: The term "degree of hazard" can be categorized as:

Low Hazard	=	Pollution Hazard (aesthetically objectionable)
High Hazard	=	System Hazard (may cause damage to the system piping)
High Hazard	=	Health Hazard (is a threat to the health of the water user)
Severe High Hazard	=	Severe Health Hazard (presents a threat of death)

Hazardous Substance means a contaminant to the public water supply.

Health Hazard means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well-being of users. The word "severe" as used to qualify "health hazard" means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death.

Interchangeable Connection means an arrangement or device that will allow alternate but not simultaneous use of two sources of water.

Internal Protection means the appropriate type or method of backflow prevention within the consumer's potable water system at the point of use, commensurate with the degree of hazard.

Non-potable Water means water not safe for drinking, personal, or culinary use.

Non-residential consumers: Refers to all consumers except for residential consumers.

Person means the state, any political subdivision, public or private corporation, individual, partnership, or other legal entity.

Pollution or Pollution hazard means an impairment of the quality of the water to a degree that does not create a hazard to the public health but does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

Potable Water means water which is satisfactory for drinking, culinary, and domestic purposes and meets the requirements of the SDWA and the Ohio Environmental Protection Agency.

Premise means any and all areas on a water user's property which are served or have the potential to be served by the public water system.

Pressure Vacuum Breaker means an assembly consisting of a spring loaded check valve which closes tightly when the pressure in the assembly drops below one (1) PSI or when zero flow occurs, plus an air relief valve that opens to break a siphon when the pressure in the assembly drops to one (1) PSI.

Primacy Agency means the State Agency(s) having authority or jurisdiction over cross connection control.

Process Fluids means any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form of concentration such as would constitute a health, pollution, or system hazard if introduced into the public or a potable consumer's water system. This includes, but is not limited to:

a) polluted or contaminated waters;
b) process waters;
c) used waters originating from the public water system which may have deteriorated in sanitary quality;
d) cooling waters;
e) contaminated natural waters taken from wells, lakes, streams, or irrigation systems;
f) chemicals in solution or suspension;
g) oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes.

Public Water Supply or System means any publicly or privately owned water system operated as a public utility under applicable local authority to supply water for domestic purposes.

Qualified Backflow Assembly Installer is a plumber licensed by the State of Ohio or a plumber working under the direct supervision of a licensed plumber, who meets all applicable State requirements.

Qualified Backflow Assembly Tester must be certified by either the Ohio Department of Commerce (DOC) or by the Operator Training Committee of Ohio (OTCO). Other certifications may be accepted at the discretion of the Water Company.

Residential Consumer: Refers to a one, two or three family dwelling used solely for residential purposes.

Reduced Pressure Principle Backflow Prevention Assembly (RP) means an assembly consisting of two independently operating approved check valves together with a hydraulically operating, mechanically independent, pressure differential relief valve located between the check valves and at the same time below the first check valve. The assembly shall include properly located test cocks for the testing of the check and relief valves and tightly closing resilient seated shut-off valves at each end of the assembly.

Service Connection refers to the point of connection of a user's piping to the public water supplier's facilities.

Supplier of Water means the owner or operator of a public water system.

System Hazard means a condition posing an actual or potential threat of damage to the physical properties of the public water systems or a potable consumer's water system.

Used Water means any water supplied by the Water Company through its public water supply to a consumer's water system after the water has passed through the service connection and is no longer under the control of the Water Company.

Water Company in the context of this document, means "Aqua Ohio" as a company or an authorized agent or individual of Aqua Ohio as a representative of the Water Company.

Water Customer/Consumer means any person obtaining water from the Water Company's public water system owned or operated by the Water Company.

SECTION III BACKFLOW PROTECTION REQUIREMENTS

1) General Provisions

a) An unprotected cross-connection to the public water supply is prohibited.

b) If, in the judgment of the Water Company the integrity of the public water system is or can be endangered by backflow from an actual or a potential cross connection within the plumbing system of a water consumer, the Water Company may order the installation of an approved backflow prevention method or device at the water service connection to the premise.

c) No water service connection shall be installed or maintained to any premise where actual or potential cross connections to the public potable or consumer's water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the Water Company.

d) No connection shall be installed or maintained a connection between the public water system or consumer's water system and an auxiliary water system unless the auxiliary water system, the method of connection, and the use of such auxiliary water system has been approved by the Water Company and by the Director of the Ohio Environmental Protection Agency. If such a connection is approved then an approved backflow prevention device shall be installed at any point of connection that is approved between a public water system or a consumer's water system and an auxiliary water system.

e) This Cross Connection Control Program is designed for containment protection of the Water Company's water distribution system. When a backflow device is required, the water consumer shall install, at the consumer's expense, an approved backflow prevention assembly as close as possible to the meter, on the consumer's side of the meter, as practicable and before any water line branching occurs, with the exception of underground sprinkler systems where the assembly may be installed on the branch line serving the sprinkler system when notified by the Water Company. The installation and testing of the backflow assembly, when required, shall be a condition for continued service for existing consumers and before a new service will be granted. The installation of all backflow prevention assemblies required by this Program must be performed by a Qualified Backflow Assembly Installer.

f) This Cross Connection Control Program applies to all consumers of the Water Company.

g) As a general policy, the Water Company will not require backflow protection on residential consumers' water services. The Water Company will require backflow protection on residential consumers when any of the following conditions exist:

i) The premise has an auxiliary water supply;
ii) the premise has an underground sprinkler system;
iii) the premise has a private fire protection system that contains antifreeze, fire retardant or other chemicals and/or has a connection whereby water can be pumped into the system from any other source; or
iv) the premise has a reported history of cross connections being established or re-established.

h) All non-residential commercial, industrial, and public authority facilities shall be evaluated

for cross connection control and the need to have backflow protection installed for containment. As a general policy, the Water Company will not require backflow protection in facilities that have only drinking fountains, restrooms, and kitchen facilities having non-commercial type water using appliances subject to review by the Water Company.

i) Wherever backflow protection is determined to be required on a water supply line entering a water consumer's premise, all such water supply lines from the Water Company's mains entering such premise, shall be protected by an approved backflow prevention assembly.

j) Temporary unauthorized connections to the public water supply are prohibited and shall be reported to the Water Company immediately, unless authorized by the Water Company in writing. If a temporary connection is permitted the proper metering and backflow prevention assembly, as approved by the Water Company, will be required.

k) An approved backflow prevention device shall be installed on each service line to a consumer's water system serving, but not limited to, the following types of facilities:

i) Premises having an animal care or boarding facility
ii) Premises having a beauty salon
iii) Premises having a hospitals, mortuaries, medical clinics, nursing homes, or dental office
iv) Premises having a Laboratory
v) Premises having piers, docks, or a waterfront facility
vi) Premises having a sewage treatment plant, sewage pump station, or stormwater pumping station
vii) Premises having a food or beverage processing facility
viii) Premises having a chemical plant
ix) Premises having a metal plating industry
x) Premises having a petroleum processing or storage plant
xi) Premises having radioactive material processing plant or reactor
xii) Premises having a car wash facility
xiii) Premise having an auxiliary water system unless such auxiliary water system is accepted as an additional water source by the Water Company and the water source is approved by the Director of the Ohio Environmental Protection Agency.
xiv) Premises, because of security requirements or other prohibitions or restrictions make it impossible or impractical to conduct a complete Cross Connection Control Survey
xv) Premises where any substance is handled in such a fashion as to create an actual or potential hazard to the public water supply system. This shall include systems having sources or auxiliary systems containing process fluids or waters originating from the public water system which is no longer under the control of the Water Company
xvi) Premises having internal cross-connections that, in the judgment of the Water Company, are not correctable or intricate plumbing arrangements which make it impractical or impossible to conduct a complete cross-connection survey
xvii) Premises determined by the Water Company to potentially be a severe health, health system or pollutant hazard to the Water Company's water distribution system

l) The use of self-draining yard hydrants are prohibited unless a backflow device is installed.

2) Type of Protection Required

a) The type of protection required by the Water Company shall depend upon the degree of cross-connection hazard which may exists as follows:

i) An approved air gap separation or an approved reduced pressure principle backflow prevention device shall be installed where the public water supply system may be contaminated with substances that are dangerous to the public health and could cause a severe health hazard.

ii) An approved air gap separation or an approved reduced pressure principle backflow prevention device shall be installed where the public water supply system may be contaminated with substances that could cause a health or system hazard.

iii) An approved air gap separation or an approved reduced pressure principle backflow prevention device or double check valve assembly shall be installed where the public water supply system may be polluted with substances that would be objectionable but not dangerous to health or may cause a pollution hazard.

b) The water consumer may choose a higher level of backflow protection than required by the Water Company.

c) The degree of hazard will be determined through the Cross Connection Control Survey process, or the new customer review process. Situations will be considered on a case by case basis and the appropriate backflow protection shall be determined by the Water Company.

3) Fire Protection Systems

a) Fire protection systems shall have a Post-Indicator-Valve (PIV) which can isolate the fire protection system from the Water Company's water system.

b) If the fire protection system has a fire department connection, the fire department connection shall be installed so as to prevent the water pumped into the fire department connection from being discharged into the Water Company's water system.

c) Fire protection systems shall be equipped, as a minimum, with a double check valve assembly equipped with a side leak detection meter.

d) All fire protection systems connected to the Water Company's water supply shall be protected using a RP unit when any of the following conditions exist:

i) The fire protection system contains antifreeze, fire retardant, or other chemicals; or

ii) There is a connection whereby water can be pumped into the fire protection system from any other source or an auxiliary water system is used as a secondary source of water for a fire protection system provided:

(1) At premises where the auxiliary water system may be contaminated with substances that could cause a system, health or severe health hazard, a public

water system or a consumer's water system shall be protected against backflow by installation of an approved reduced pressure principal backflow device or an approved reduced pressure detector assembly;

(2) At all other premises, a public water system or a consumer's water system shall be protected against backflow by installation of an approved reduced pressure assembly, or an approved reduced pressure detector assembly, or an approved double check valve assembly. Or an approved double check detector assembly;

(3) A public water system or a consumer's water system shall be the primary source of water for the fire protection system;

(4) The fire protection system shall be normally filled with water from a public water system or a consumer's water system;

(5) The water in the fire protection system shall be used for fire protection only; with no other use of water from the fire protection system downstream from the approved backflow prevention device.

4) Booster Pumps

a) No person shall install or maintain a water service connection to any premise where a booster pump has been installed on the service line to or within such premise, unless such booster pump is equipped with a low suction pressure cut-off switch or controller to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch (10 psi) gauge or less. The low pressure cutoff control for non-fire pumps shall conform to Ohio EPA's "Specifications for Low Suction Pressure Cut-Off Control for Stationary Domestic Booster Pumps."

b) For booster pumps used for fire suppression installed after the May 1, 2003, no person shall install or maintain a water service connection to any premise not included in paragraph (a) of this rule where a booster pump has been installed on the service line to or within such premise, unless such booster pump is equipped with a minimum pressure sustaining valve on the booster pump discharge, which throttles the discharge of the pump when necessary so that suction pressure will not be reduced below ten pounds per square inch (10 psi) gauge while the pumping is operating. The low pressure cutoff control for non-fire pumps shall conform to Ohio EPA's "Specifications for Low Suction Pressure Cut-Off Control for Stationary Fire Pumps."

c) For booster pumps used for fire suppression installed prior to May 1, 2003, no person shall install or maintain a water service connection to any premise not included in paragraph (a) of this rule where a booster pump has been installed on the service line to or within such premise, unless such booster pump is equipped with a low suction pressure cut-off controller to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch (10 psi) gauge or less, or a minimum pressure sustaining valve on the booster pump discharge, which throttles the discharge of the pump when necessary so that suction pressure will not be reduced below ten pounds per square inch (10 psi) gauge while the pumping is operating. The low pressure cutoff control for non-fire pumps shall conform to Ohio EPA's "Specifications for Low Suction Pressure Cut-Off Control for Stationary Fire Pumps."

d) It shall be the responsibility and duty of the consumer to maintain the low suction pressure cut-off device or minimum pressure sustaining valve in proper working order and to certify to the Water Company, at least once every twelve months that the device is operable and maintained in continuous operation. Tests shall be at the expense of the consumer by a Qualified Backflow Assembly Tester.

SECTION IV BACKFLOW PREVENTION ASSEMBLIES

1) Backflow Prevention Assemblies

a) Only backflow prevention assemblies which are approved by one of the following entities shall be used: the Research Foundation for Cross Connection Control of the University of Southern California (USC), American Water Works Association (AWWA), American Society of Sanitary Engineering (ASSE), or American National Standards Institute (ANSI), or certified by the National Sanitation Foundation (NSF) to be in compliance with industry specifications and shall be of a model or construction approved by the Water Company and the Director of the Ohio Environmental Protection Agency.

2) Backflow Prevention Assembly Installation

a) Installation will be in accordance with all applicable plumbing codes. The assembly should be located as close to the water meter as practicable, on the consumer's side, and before any branching occurs, with the exception of underground sprinkler systems where the assembly may be installed on the branch line serving the sprinkler system. The consumer must not remove the water meter. The assembly must be installed by a Qualified Backflow Assembly Installer. In addition, any backflow device required by these regulations shall be installed at a location and in a manner approved by the Water Company.

b) Backflow prevention assemblies shall be located in an area that provides a safe environment for testing and maintenance. The area should be easily accessible, dry, and free from dirt/debris, extreme cold, heat, and electrical hazards.

c) When Double Check Valve Assemblies are installed in pits or vaults, the pit or vault shall be of water tight construction, be so located and constructed as to prevent flooding and shall be maintained free from standing water by means of either a sump pump or a suitable drain. Such sump pump or drain shall not be connected to sanitary sewer nor permit flooding of the pit or vault by reverse flow from its point of discharge. An access ladder and adequate natural or artificial lighting shall be provided to permit maintenance, inspection and testing of the backflow prevention device.

d) Existing backflow prevention devices approved by the Water Company at the time of installation and properly maintained shall, except for inspection, testing and maintenance requirements, be excluded from the requirement of Section IV-1 of this regulation providing the Water Company is assured that they will satisfactorily protect the public potable water system. Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the Water Company finds that the maintenance of the device constitutes a hazard to health, the device shall be replaced by a backflow device meeting the requirements of these regulations.

e) If an uninterrupted supply of water is required to a facility, backflow assemblies shall be installed in parallel to allow for testing and maintenance.

f) Backflow prevention devices should be sized hydraulically taking into account both the volume requirements of the service and the pressure drop through the assembly. A pressure loss through the backflow prevention assembly will be experienced by the consumer. The pressure reduction varies with the size and type of assembly installed. The consumer will be responsible for providing any increase in pressure required as a

result of the pressure loss through the backflow prevention assembly.

g) Installation of a backflow prevention assembly will create a "**closed**" piping system within the premise being served. This "closing" of the system can cause periodic high pressure if the system includes a water heating device. The result may be an unacceptable high pressure condition known as **Thermal Expansion** which is a potential hazard. Pressure buildups as a result of heating or other means will not be alleviated through the backflow assembly. Consumers are responsible for insuring that temperature/pressure relief valves are installed on their plumbing systems and that they are maintained in good working condition.

h) The need for replacement of existing backflow prevention assemblies that do not meet all of the above installation requirements will be determined by the Water Company on a case by case basis.

i) Reduced pressure principle backflow prevention devices shall be installed above ground level or floor level, whichever is higher.

j) The consumer shall be responsible for protecting backflow devices from freezing.

3) Backflow Prevention Assembly Testing and Maintenance

a) The owner(s) of any premise on which, or an account in which, a backflow prevention assembly is installed, shall be responsible for having the assemblies tested by a Qualified Backflow Assembly Tester. A backflow prevention assembly shall be tested after installation, relocation or repair, and once every twelve months, thereafter, unless more frequent testing is required by applicable state/local regulations. The Water Company may require a more frequent testing schedule if determined to be necessary. No assembly shall be placed in service unless it is functioning as required and an assembly shall be serviced, overhauled, or replaced whenever it is defective.

b) The Water Company will notify affected consumers by mail when testing of an assembly is needed and also supply the affected consumer with the necessary form that shall be completed each time an assembly is tested, relocated, or repaired.

c) It shall be the duty of the consumer at any premise on which backflow prevention devices required by these regulations are installed to have inspections, test, and overhauls made in accordance with the following schedule, or more often where inspections indicate a need:

i) Air gap separations shall be inspected at the time of installation and at least every twelve months thereafter;

ii) Double check valve assemblies shall be inspected and tested for tightness at the time of installation and at least ever twelve months thereafter.

iii) Reduced pressure principle backflow prevention devices shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter.

iv) Interchangeable connections shall be inspected at the time of installation and at least every twelve months thereafter.

d) Inspections, tests, and overhauls of backflow prevention devices shall be made at the expense of the water consumer and shall be performed by a person approved by the Water Company as qualified to inspect, test and overhaul backflow prevention devices.

e) Whenever backflow prevention devices required by these regulations are found to be defective, they shall be repaired, overhauled or replaced at the expense of the consumer without delay.

f) The water consumer shall maintain a complete record of each backflow prevention device from purchase to retirement. This record shall include all tests, inspections, repairs and overhauls. Records of inspections, tests, repairs and overhaul shall be submitted to the Water Company.

g) Backflow prevention devices shall not be bypassed, made inoperable, removed or otherwise made ineffective without specific written authorization by the Water Company.

4) Backflow Prevention Assembly Relocation, Repair or Replacement

a) Written approval must be obtained from the Water Company before a backflow prevention assembly is relocated or permanently removed.

b) Relocation: An assembly may be relocated following confirmation by the Water Company that the relocation will continue to provide the required protection and satisfy installation requirements. Removal and reinstallation of the assembly must be done by a Qualified Backflow Assembly Installer. A test is required following the relocation of the assembly.

c) Repair/Replacement: An assembly may be removed for repair or replacement, provided the service line is shut off and water use is discontinued until the repair/replacement is completed and the assembly is tested and found to be operating correctly. Alternatively, the service connection may be equipped with other temporary backflow protection, approved by the Water Company, if continuous service is required. Repair or replacement of the assembly must be done by a Qualified Backflow Assembly Installer. All replacement assemblies shall be of a model or construction approved by the Water Company and must be commensurate with the degree of hazard present. A test is required following the repair or replacement of the assembly.

SECTION V ADMINISTRATIVE PROCEDURES

1. New Customers

   a. All new customers applying for service taps, including residential, will be evaluated at the time of service application for the type of backflow assembly required to be installed. The Water Company reserves the right to inspect the customer's plumbing before service is rendered. Compliance with this requirement will be a condition of water service. Customers determined to need a backflow prevention assembly will be informed by letter of the type of assembly to install. Installation of backflow prevention assemblies shall be in accordance with all State and local plumbing codes.

2. Cross Connection Control Survey (Survey)

   a. A Cross Connection Control Survey (Survey) of non-residential consumers will be conducted on a periodic basis, not to exceed ten (10) years or each time there is a change in the water consumer occupying a non-residential premise. The Survey of non-residential customers will be repeated every ten (10) years except for those customers who have devices installed that are tested annually as required by law and test reports on those devices are received by Aqua Ohio and kept current.

   b. The Aqua Ohio Cross Connection Control Survey Questionnaire form will be mailed every ten (10) years to non-residential consumers. A notice letter will be sent to non-residential consumers with the Cross Connection Control Survey form attached.

   c. The Cross Connection Control Survey will be used to determine the following:

      i. If the consumer meets the requirements for the installation of a backflow prevention device
      ii. The need for an upgrade in the level of backflow prevention at the facility
      iii. The need for a follow-up inspection of the facility
      iv. The need for the existing backflow prevention assembly to be entered into the data management system.

   d. Based upon the results of the Survey one or more of the Consumer Notification Letters may be sent to the premise/facility.

   e. The consumer's premise shall be open at all reasonable times to the Water Company, or its authorized representative, for the conduction of a survey and investigations of water use practices within the consumer's premise to determine whether there are actual or potential cross connections to the consumer's water system through which contaminants or pollutants could backflow into the public potable water system.

   f. Upon request by the Water Company, or its authorized representative, the consumer shall furnish information on water use practices within his premise.

   g. It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices on his premise to determine whether there are actual or potential cross connections in his water system through which contaminants or pollutants could backflow into the consumers water system or the Water Company's public water system.

3. Cross Connection Control Survey Follow-Up

   a. Consumers who fail to respond to the initial Survey letter and questionnaire within 60 days will be mailed a follow-up letter allowing them an additional 45 days to complete the questionnaire. Consumers who have not responded after the additional 45 days will be mailed a third and final request to complete the Survey questionnaire within 30 days or be considered to be in need of an RP assembly on their incoming service line(s). If they still do not respond and move to comply, their water service may be disconnected.

   b. Termination procedures shall be conducted in accordance with all applicable consumer service rules and regulations for such actions.

   c. Those consumers who respond to the Survey and are determined from the information provided by the consumer not to need a backflow prevention device will have their account so annotated.

   d. Those consumers who respond to the Cross Connection Control Survey and indicate there are backflow prevention devices installed on their plumbing systems that are required to be tested, such as RP or DC, will be notified by letter of the requirement for testing once every twelve months by a Qualified Backflow Assembly Tester. The consumer will also be informed that a copy of the test must be sent to the Water Company for its files.

   e. Consumers who respond to the Survey and based on the information provided by the consumer, appear to be in need of backflow prevention devices on their service lines, will be mailed a letter requiring the consumer to have a qualified backflow assembly installer inspect their systems and install if required, a backflow assembly.

4. Consumer Notification - Assembly Installation

   a. The Water Company will notify the water consumer by mail of the need to install a backflow assembly. The consumer will be given 60 days (Compliance Due Date – CDD) from the date of the letter to install the assembly, unless applicable regulations require a different time frame.

   b. If the water consumer does not install the backflow assembly by the Compliance Due Date (CDD) a second notice will be sent ten (10) days after the Compliance Due Date to each water consumer who does not install the required assembly(s).

   c. If no action is taken within 30 days after the Compliance Due Date a third and final notice will be sent requesting compliance and informing the water consumer of the Water Company's intent to discontinue service if no action is taken within 15 days.

   d. Termination procedures shall be conducted in accordance with all applicable consumer service rules and regulations for such actions.

5. Consumer Notification – Annual Testing and Maintenance

   a. The Water Company will send letters at least 30 days in advance of the annual Anniversary Due Date (ADD) to notify each affected water consumer when it is time for the backflow prevention assembly installed on their service connection to be tested. The consumer will be required to have the assembly tested by the annual due date unless

applicable regulations require a different time frame.

b. A second notice will be sent to each water consumer that does not complete the required backflow prevention assembly test 30 days after the annual Anniversary Due Date (ADD) prescribed in the first notice.

c. If no action is taken within 60 days after the annual Anniversary Due Date a third and final notice will be sent requesting compliance and informing the water consumer of the Water Company's intent to discontinue service if no action is taken within 15 days.

d. Termination procedures shall be conducted in accordance with all applicable consumer service rules and regulations for such actions.

6. Consumer Notification - Assembly Failure

a. If the Water Company receives a backflow assembly test result indicating the assembly failed the annual test a letter will be sent to the water consumer requiring the assembly to be repaired or replaced and tested. The consumer will be given 30 days (Compliance Due Date – CDD) from the date of the letter to have the assembly repaired, replaced, and retested, unless applicable regulations require a different time frame.

b. A second notice will be sent to each water consumer that does not complete the required assembly repair and assembly test within 10 days of the Compliance Due Date (CDD) prescribed in the first notice.

c. If no action is taken within 30 days after the Compliance Due Date (CDD) a third and final notice will be sent requesting compliance and informing the water consumer of the Water Company's intent to discontinue service if no action is taken within 15 days.

d. Termination procedures shall be conducted in accordance with all applicable consumer service rules and regulations for such actions.

7. Consumer Notification - Upgrade of Backflow Prevention Assembly

a. If a water consumer's backflow prevention assembly is determined by the Water Company to be insufficient for the level of protection required, the Water Company will send a notice to the water consumer requesting the assembly be replaced with an approved backflow prevention assembly of a type specified by the Water Company. The consumer will be given 60 days (Compliance Due Date from the date of the letter to replace and test the assembly, unless applicable regulations require a different time frame.

b. A second notice will be sent to each water consumer that does not complete the required assembly replacement and test within 10 days of the Compliance Due Date (CDD) prescribed in the first notice.

c. If no action is taken within 30 days after the Compliance Due Date (CDD) a third and final notice will be sent requesting compliance and informing the water consumer of the Water Company's intent to discontinue service if no action is taken within 15 days.

d. Termination procedures shall be conducted in accordance with all applicable consumer/customer service rules and regulations for such actions.

8. Dispute Resolution

   a. If a consumer disagrees with the Water Company's requirements to install a backflow prevention device, the consumer has the option, at their expense, to have their plumbing system inspected by a Qualified Backflow Assembly Tester. In order to have the Water Company withdraw the requirements to install a backflow prevention device, the Qualified Backflow Assembly Tester must provide the Water Company a signed letter stating the consumer's plumbing system is in compliance and does not possess an actual or potential cross-connection that may allow or cause contamination to the public water supply. The Water Company will review this additional information, but reserves the right to make the final decision to protect its water supply.

SECTION VI WATER SERVICE TERMINATION

1. General

   a. When the Water Company encounters a water consumer connection that represents a clear and immediate hazard to the public water supply, and the hazard cannot be immediately abated, the Water Company shall immediately institute the procedures for discontinuing the water service. The Water Company will notify the water consumer of the reasons for discontinuing the water service and the corrective action to be taken by the water consumer before the service can be restored. This will be done in accordance with all applicable consumer service rules and regulations.

2. Basis for Termination

   a. Conditions that create a basis for water service termination shall include, but are not limited to, the following items:

      i. Refusal to install a required backflow prevention assembly,
      ii. Refusal to test a backflow prevention assembly,
      iii. Refusal to repair a faulty backflow prevention assembly,
      iv. Refusal to replace a faulty backflow prevention assembly,
      v. Direct or indirect connection between the public water system and a sewer line,
      vi. Unprotected direct or indirect connection between the public water system, and a system or equipment containing contaminants,
      vii. Unprotected direct or indirect connection between the public water system and an auxiliary water system, or
      viii. A situation that presents an immediate health hazard to the public water system.

4. Water Service Termination Procedures

   a. Termination procedures will be conducted in accordance with all the applicable consumer/customer service rules and regulations for such actions.

SECTION VII PROGRAM MANAGEMENT

1. Cross Connection Control Program Manager

   a. The Environmental Compliance Manager shall be responsible for the implementation and auditing of the Water Company's Cross Connection Control Program for effectiveness and compliance.

   b. The Cross Connection Control Program manager shall review the Water Company's Cross Connection Control Program at least once every five (5) years and determine if any modifications or changes are to the Program are appropriate.

2. Data Management

   a. An electronic data management system, (TOKAY) shall be used for storing all Cross Connection Control Program data. The data management system shall incorporate the necessary functions to maintain an up-to-date database of backflow prevention information such as device location, type of device, installation date, test date, etc.

   b. The data management system shall be audited at least once every five (5) years to verify the accuracy and completeness of the Cross Connection Control Program data.