Prepared for:

Lewes BPW
107 Franklin Avenue
Lewes, DE 19958

CROSS-CONNECTION CONTROL PLAN

For

Lewes BPW

Lewes BPW Approved: (insert date)

Prepared by:

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1. 1. INTRODUCTION

1.1. Purpose

The purpose of this document is to outline the Lewes BPW Cross-Connection Control (CCC) policies for all commercial, governmental, residential, and miscellaneous facilities having service connections to the Lewes BPW public water supply, and is summarized as follows:

- Protect the public water supply from contaminants and pollutants that could backflow through the service connection(s)
- Promote the elimination of actual and/or potential Cross-Connections between the public water supply and non-potable water systems, plumbing fixtures and sources or systems containing substances of unknown or questionable quality
- Promote the elimination of actual and/or potential Cross-Connections between the facility potable water supply and non-potable water systems, plumbing fixtures and sources or systems containing substances of unknown or questionable quality
- Provide guidance for the maintenance of a continuing program for protection from the potential of service line and internal Cross-Connections within the facility

1.2. Legality

In accordance with the Delaware Department of Health and Social Services (DDHSS), Division of Public Health, Lewes BPW proclaims this program as a continuing effort to maintain pure, clean, safe potable water. Lewes BPW shall comply with the Cross-Connection Control Rules in the 16 *Del. Admin. Code* § 4662-21.0

By reference to the DDHSS Code requirement "*we hereby establish the " Lewes BPW Cross-Connection Control Program*." This program was adopted by the hereby above described organization on (insert date) and made effective on (insert date).

1.3. Lewes BPW Resolution

Legal authority to carry out and enforce the Lewes BPW Cross-Connection Control Program is provided in the Lewes BPW Resolution No. _____. A copy of said Resolution and Resolution can be found in Appendix A of this plan.

2. AUTHORITY/ADMINISTRATOR

The Lewes BPW shall be the Authority and the Administrator of the Cross-Connection Control (CCC) Program. This Cross-Connection Control Program shall include, but not be limited to:

- Establish Authority
- Local Resolution (See Appendix A)
- Applicable Rules and Regulations
- Inspection Process and Requirements
- Approved Backflow Prevention Devices and Assemblies
- Testing Requirements of Backflow Prevention Assemblies
- Data Management
- Reporting
- Public Education and Awareness

2.1. Inspector

Lewes BPW or Designated Agent (Administrator/Agent) conducting inspections (site assessments) on behalf of the Lewes BPW must be designated or approved by Lewes BPW. The Administrator/Agent must meet both 1) an experience component and 2) a certification/training component.

Experience

Acceptable experience may include one (1) or more of the following:

- Be employed by a Utility, Water Purveyor, Building Department, or body of jurisdiction and must meet the qualifications and training requirements as dictated by the Authority conducting inspections/surveys on behalf of the Lewes BPW
- Have held a similar position (CCC Inspector) with a previous municipality
- One-year full time experience in conducting Cross-Connection control inspections in commercial, institutional, industrial facilities, and/or residential facilities

Inspector Certification/Training

Acceptable certification/training may include one (1) or more of the following:

- Meet American Society of Sanitary Engineer Standards (ASSE) 5020 and completed their Cross-Connection Inspector Course (40 hours)
- Possess a certificate of completion from one of the following:
    - America Society of Sanitary Engineers (ASSE) Certified Cross-Connection Control Surveyor
    - University of Southern California (USC) Cross-Connection Control Specialist Course (40 hours)
    - University of Florida TREEO Center (UFTREEO) Cross-Connection Control Program Manager Course (40 hour)

3. INSPECTIONS (Site Assessments)

3.1. Inspection

Authorized Inspectors, having proper identification, shall be permitted to enter the building/premises at any reasonable time for the purpose of inspection for the presence or absence of Cross-Connections, testing, repair, and maintenance of any part of the plumbing system or any Cross-Connection control device connected to the water system. The Authority shall deny or discontinue, after reasonable notice to the occupants, water service to any building/premises for refusal or failure to arrange for a Cross-Connection inspection. The Authority shall deny or discontinue water service if there is reason to believe the building/premises pose a potential for danger to the public and/or occupants.

3.2. Responsibility of the Owner

The Owner shall be responsible for the protection of the public water supply from contamination due to backflow through the water service connection. The Authority may require Owner, at their expense, to install, alter, replace, or repair any plumbing connected to the public water system that may pose a threat to public health. Failure, refusal or the inability on the part of the Owner to correct any deficiency or violation immediately shall be unlawful and the Authority may deny or discontinue water service to the premises. The owner shall be responsible for the elimination of all unprotected Cross-Connections, to include service line protection and any connections downstream of the service line supply to the building(s).

3.3. Service Line Protection Inspection

a) Existing service line connections should be reassessed/inspected at an interval of no less than every ten (10) years (unless the service line is protected with an approved Reduced Pressure Backflow Prevention Assembly or properly installed air gap) to determine if the existing backflow preventer/method is appropriate for the level of hazard, or if service line protection is required.

b) New service line connections should be assessed *prior* to introduction of new service to determine what method of backflow protection is required.

c) Existing and/or new commercial service line backflow prevention assemblies/methods shall be Reduced Pressure Backflow Preventers (RPBP). All commercial customers are required to have, at a minimum, an RPBP installed immediately after the water meter or before the entrance of the building prior to any connections.

d) Failure to install backflow protection as required by the Authority may precede disciplinary action from the Authority.

3.4. Internal Plumbing System Inspection

a) Internal plumbing systems may require inspection at the discretion of the General Manager. The facilities internal water use practices shall be reviewed to determine whether there are actual or potential Cross-Connections to the plumbing system through which contaminants or pollutants could backflow into the public water supply and/or the facilities internal plumbing system.

3.5. Inspection/Survey Forms

An *Inspection/Survey Form* shall be used in every inspection, as required, and will be filed in a location as identified in Section 3.8, along with other pertinent information accumulated. This form will be used to record both existing backflow prevention devices discovered and any requirements for additional backflow prevention devices at the time of the inspection.

3.6. Inspection Procedures

Cross-Connection control inspections shall be completed as follows:

a) Identify building to be inspected and schedule inspection.
b) Meet on-site with facility contact/owner.
c) Explain the Cross-Connection Control Program to the facility contact/owner before inspection of the facility.
d) Inspect/Evaluate the status of service line protection – complete all inspection forms as required (See line item “e” below).
e) Inspect the building downstream of the service line if required and complete the Inspection Form(s) as applicable/required with the following information:

- Visually review all exposed piping and water outlets/uses downstream of the service connection
- Document all existing backflow prevention assemblies, devices and methods (including make, model#, size, serial # if applicable) that are currently protecting Cross-Connections on the *Existing Devices and Assemblies Form*
- Describe the point of use or equipment supplied for each backflow prevention assembly, device or method on the *Existing Devices and Assemblies Form*
- Use the *CCC Requirements Form* to provide specific requirements for corrective action
- Fill out an *Inspection Form* to document general findings; provide a “Compliance Status” and any follow up action to be taken. If no action is required (*i.e., Compliant*), provide a date of the next inspection due, if applicable. If the facility requires corrective action (i.e., Non-Compliant), provide a due date to complete corrective action(s) as designated on *CCC Requirements Form*
- Date all forms with the date of the in-field inspection

f) In addition to the field forms, a piping diagram or schematic of the plumbing system may be requested or required.

3.7. Request for Internal Cross-Connection Control Information

The Authority has the right to request specific Cross-Connection control information to include but not limited to service line protection methods, assembly test records, CCC Program information, piping drawings, etc.

3.8. Record Keeping and Data Management Software

All data obtained from the *Inspection Forms, Existing Devices Forms* and *Requirements Forms* will be input into a data management system and held for a period of no less than ten (10) years to facilitate the CCC Program. This information will include:

- Address and location
- Owner name and contact information
- Required re-inspection frequency
- Degree of hazard classification
- List of assemblies
- Location of assemblies
- Make, model, and size of assemblies
- Testing and maintenance of assemblies
- Description of other Cross-Connections within the facility
    - Air gaps
    - Non-testable devices

Additionally, all written backflow incident reports and annual Cross-Connection Control Program activities reports shall be maintained for a period of no less than ten – (10) years.

4. BACKFLOW PREVENTION ASSEMBLIES AND DEVICES

4.1. Responsibility

With respect to backflow prevention devices/assemblies or methods Lewes BPW shall require the following:

a) Installation and maintenance of assemblies, devices and/or methods to protect all existing Cross-Connections shall be the responsibility of the Owner and will be completed in accordance with manufacturers' guidelines and existing regulation as noted in Section 4.5(a).

4.2. Approved Backflow Prevention Assemblies and Devices

a) Lewes BPW accepts backflow prevention devices, assemblies, and methods (downstream of service line protection) as recognized by the 2012 International Building Code and the Lewes BPW's Standard Specifications and Details Manual.
b) ASSE recognized backflow prevention device, assemblies and methods intended to protect the public water supply at the point of the service connection must be used.
c) New installation of Reduced Pressure Backflow Prevention Assemblies intended for service line protection must conform to AWWA Standards C510 and C511 and the ASME Standards.

4.3. Service Line Backflow Prevention Assembly Protection

With respect to backflow prevention assemblies installed at the service line, the Authority will require the following:

a) Service line protection shall be required at commercial properties that are classified as high hazard and/or at the discretion of the General Manager.
b) Where service line protection is required, the owner shall receive formal written notification detailing the requirement and instructions pertaining to the need for protection from thermal expansion (see *Containment Notification* located in Appendix C).
c) Service connections to fire protection systems shall be required in accordance with the AWWA M-14 Manual, 3rd Edition. The continued use of UL-listed alarm check valves shall be accepted on any existing connection deemed to be a low hazard by the Authority/Agent.
d) If an existing fire protection system requires a higher degree of protection than that of which is currently installed and additional or new backflow prevention devices are required that may affect the hydraulics of the system, the owner shall receive formal written notification detailing the requirement and the owners responsibility to hire a registered professional engineer or a certified fire-protection system contractor in order to ensure there will not be an adverse effect on the operation of the system.
e) The installation of a Reduced Pressure Backflow Prevention Assembly as service line protection shall be required at all commercial, industrial and governmental facilities which are also served by reclaimed water or where auxiliary water systems exist.
f) The installation of residential Dual Checks or Double Checks shall be required as service line protection at all residential homes which are also served by reclaimed water or where an auxiliary water system exists.

g) Backflow prevention assemblies, devices or methods installed as service line protection shall be installed immediately downstream of the water meter and prior to the first branch line in the plumbing system.
h) New Installation of Reduced Pressure Backflow Prevention Assemblies and Double Check Valve Assemblies must conform to AWWA Standards C510 and C511.
i) The installation of Reduced Pressure Backflow Prevention Assemblies, Pressure Vacuum Breaker Assemblies and Atmospheric Vacuum Breakers below grade or in an underground pit shall be prohibited.
j) The installation of Double Check Valve Assemblies and residential Dual Checks below grade or in an underground pit shall be accepted under the following conditions:
    1) If the test cocks are plugged
    2) If adequate drainage is provided to maintain a normally dry location
k) Assemblies located at the service line shall be tested upon installation, upon repair, upon responding to a reported backflow incident, and on an annual basis.

4.4. Lawn Irrigation Systems

Lawn irrigation systems which are supplied from a dedicated service line shall be equipped with a Reduced Pressure Backflow Prevention Assembly ~~immediately~~ downstream of the water meter and prior to the first irrigation branch line. Lawn irrigation systems installed in such a manner that the supply originates downstream of the potable service line connection to a building shall be equipped with a Reduced Pressure Backflow Prevention Assembly or a Pressure Vacuum Breaker at the point of origination of the system. These assemblies must be installed in accordance with the DE Plumbing Code IPC 2018, Section 608 and the manufacturers' installation requirements.

4.5. Testing of Backflow Prevention Assemblies

a) All backflow prevention assemblies and testable residential dual and double check valves located at the service line and downstream shall be tested upon installation, upon repair, upon responding to a reported backflow incident, and on an annual basis. Assemblies must be tested in accordance with applicable standards referenced within the DE Plumbing Code IPC 2018, Section 608 and/or ASSE 5000 Series. All testable backflow prevention equipment installed at a residential property will be tested annually.
b) Equipment used to field test assemblies must be certified and calibrated for accuracy annually.
c) Assembly test form(s) to record test results will be maintained by the Owner and submitted to the Authority as required.
d) The Owner shall have all assemblies tested by a tester having completed the 40 hour ASSE Backflow Prevention Assembly Tester Training and Certification Course. All testers must also complete a recertification exam at an interval not to exceed once every two years.
e) Lewes BPW shall reserve the right to direct and administer testing and/or maintenance of any backflow prevention assemblies installed as service line protection. All costs associated with testing and any necessary repairs of these assemblies shall be the responsibility of the owner.
f) Failure to test assemblies and submit appropriate test forms located at the

service line may result in termination of water service.

4.6. Backflow Prevention Device Maintenance and Inspection

a) Residential dual checks installed as service line protection shall be replaced, or overhauled at an interval acceptable to the DDHSS which is no longer than every ten (10) years to ensure that the device is (1) appropriate for the degree of hazard and (2) also to ensure that the backflow prevention device is working properly.

4.7. Assembly and Device Abbreviation List

Hydro Designs, Inc Device Legend			
A.S.S.E Standard	Legend	Acronym	Testable Device
1001	Atmospheric Type Vacuum Breakers	AVB	No
1002	Anti-siphon Fill Valves (Ballcocks)	ASBC	No
1011	Hose Connection Vacuum Breaker	HBVB	No
1012	Backflow Preventer w/Intermediate Atmospheric Vent	VDCV	No
1013	Reduced Pressure Backflow Prevention Assembly	RPBP	**Yes**
1015	Double Check Valve Backflow Prevention Assembly	DCV	**Yes**
1019	Vacuum Breaker Wall Hydrants	HBIVB	No
1020	Pressure Vacuum Breaker Assembly	PVB	**Yes**
1022	Backflow Preventer for Carbonated Beverage Machine	VMBP	No
1024	Dual Check Valve Type Backflow Preventers	DC	No
1024	Residential Dual Check	RDC	Yes/No
1035	Laboratory Faucet Backflow Preventer	LFVB	No
1037	Pressurized Flushing Devices (Flushometers)	PFD	No
1047	RP Detector Backflow Prevention Assembly	RPDA	**Yes**
1048	Double Check Detector Backflow Prevention Assembly	DDCV	**Yes**
1052	Hose Connection Backflow Preventer	HCBP	No
1055	Chemical Dispensing Systems	AG	No
1056	Spill Resistant Vacuum Breaker Assembly	SVB	**Yes**
1057	Freeze Resistant Yard Hydrant W/Backflow		No
A112.1.2	Air Gap	AG	No
	Single Check Valve	SCV	No

5. NEW SERVICE INSPECTION

5.1. Procedures

All plumbing plans and permits for a proposed building shall be reviewed by the Authority, Plumbing Inspector, Building Inspector and building contractor(s). The Authority's Cross-Connection Control Plan and Backflow Prevention requirements will be reviewed with the responsible party.

5.2. Inspections

The Authority/Designated Agent conducting the Cross-Connection control inspection shall inspect the building for compliance with the Cross-Connection Control Program.

5.3. Compliance

Upon completion of the Cross-Connection control inspection and determination that the building is in compliance and has met any required actions of this plan, a certificate of occupancy and water service may be initiated as applicable.

5.4. Non-Compliance

If the building does not comply with the Cross-Connection Control Program the Authority shall enforce this plan as required. The water service and the certificate of occupancy will not be initiated until compliance is achieved and approved.

6. PIPING IDENTIFICATION

6.1. Requirements

6.1.1. When two or more piping systems are used for water in a building extreme care should be taken not to interconnect the systems. There may be a potable water system and systems carrying lesser quality water such as for fire protection or re-use. To help prevent the possibility of two systems being interconnected, pipes must be identified adequately. Legends and color coding should be based on the American Standards Association "Scheme for Identification of Piping Systems" (ANSI Z535.1-199) or an identification plan accepted by the Authority and prominently posted throughout the facility.

6.1.2. Color-coding and/or labeling should not be used solely to identify the contents of pipes but should be used supplementary to the use of legends. Potable water lines must be painted and/or labeled and the words "Potable Water" put on the pipe at appropriate intervals. Pipes carrying water for fire protection must be painted or labeled. Piping systems carrying other material, or water for other purposes, must also be clearly identified with the appropriate legends and color-coding. Flow arrows should be included to indicate the direction of flow.

6.1.3. Buildings which do not comply with the identification of piping system requirements on the effective date of this plan, must be painted or labeled in accordance with this section. Identification must be completed as soon as reasonably possible.

6.1.4. When the piping system layout creates an unusual or extreme situation in a limited area of inaccessibility, as determined by the General Manger, the Authority may permit the use of permanently attached durable sign(s), or such segments of piping may require substitute techniques to achieve positive identification. The use of substitute techniques shall not deviate from ANSI Z535.1-199 standards and must be approved by the Authority.

6.1.5. All openings from which secondary water may be obtained shall have at all times a sign prominently posted within two (2) feet of the opening bearing the following warning: WATER UNSAFE FOR DRINKING. Such sign shall be at least eight (8) inches by ten (10) inches in size, prominently lettered in contrasting colors, with no letters less than one (1) inch in height. Signs are to be furnished and maintained by the owner of the secondary supply and must be of material and design acceptable to the Authority.

7. EMERGENCY RESPONSE PLAN

7.1. Emergency Response Plan Procedures

Lewes BPW shall develop and maintain an Emergency Response Plan (ERP) document intended to facilitate in properly responding to a backflow event. The written ERP shall be readily available to designated personnel.

Investigative actions to address an actual or potential backflow event are intended to:

a) Protect the distribution system from the spread of a contaminant detected in the water supply
b) Quickly restore the quality of water in the distribution system if a contaminant has entered the system through backflow
c) Prevent any further contamination of the distribution system

The facilities investigation should include these steps:

1) Locate the source of contamination
2) Isolate the source to protect the water distribution system from further contamination
3) Determine the extent of the spread of contamination through the distribution system and provide timely, appropriate notification to the public and it's regulatory agencies as applicable
4) Take corrective action to clean the contamination from the distribution system
5) Restore water service

7.2. Emergency Scenarios

Common scenarios causing unintended backflow forcing execution of Emergency Response may include the following:

b) Main water supply pipe break
c) Internal facility water pipe break
d) Internal facility – unprotected Cross-Connection allowing contaminant to flow into potable water distribution system
e) Report of illness due to water supply contamination
f) Report of discolored water

7.3. Sample Emergency Response Plan

BACKFLOW INCIDENT REPORT FORM

There are many backflow incidents, which occur that are not reported. This is usually because they are of short duration, are not detected, the customer is not aware they should be reported or it may not be known to whom the incident should be reported. If you have any knowledge regarding incidents, please complete the form below and return it to the Municipal Engineer at the above address.

Reporting Agency: _____Report Date: _____
Reported By: _____ Position: _____
Mail Address: _____ City: _____
Province: _____Postal Code: _____ Telephone: _____
Date of Incident: _____ Time of Occurrence: _____
General Location (Street, etc.): _____

1. Backflow Originated From:

Name of Premise: _____
Street Address: _____ City: _____
Contact Person: _____ Telephone: _____
Type of Business: _____

2. Description of Contaminant(s):
(Attach Chemical Analysis if available)
_____
_____

3. Distribution of Contaminant(s):

Contained within customer's property: Yes: ___ No: ___
Number of persons affected: _____

4. Effect of Contamination:

Illness reported: _____

Physical irritation reported: _____
_____

5. Cross-Connection Source of Contaminant:
(boiler, chemical pump, irrigation system, etc.)
_____
_____

6. **Cause of Backflow:**
(main break, fire flow, etc.)
_____
_____

7. **Corrective Measures Taken to Restore Water Quality:**
(main flushing, disinfection, etc.)
_____
_____

8. **Corrective Action Ordered to Eliminate or Protect from Cross-Connection:**
(type of backflow preventer, location, etc.)
_____
_____

9. **Previous Cross-Connection Survey of Premise:**

Date: _____ By: _____

10. **Type(s) of Backflow Preventer Isolating Property:**

RP: ___RPDA: ___ DCVA: ___ DCDA: ___ PVB: ___ SVBA: ___
AVB: ___ Air Gap: ___ None: ___ Other Type: _____

11. **Date of Latest Test of Device:** _____

12. **Notification of Health Department:**
Date: _____ Time: _____ Person Notified: _____

Attach sheets containing any additional information, sketches, etc. to the back of this form.

8. EDUCATION AND AWARENESS

The Lewes BPW staff responsible for Cross-Connection control must have a good understanding of the program. HydroCorp will ensure that Lewes BPW shall receive training of the Cross-Connection Control Program and staff receives proper in-the-field training as well as classroom education focusing on terminology, backflow prevention devices/assemblies, regulations, and hydraulic concepts. In addition, Cross-Connection control staff will be encouraged to receive continuing education to be made aware of new backflow prevention devices/assemblies, regulation changes (i.e. plumbing code updates), new water use devices that pose Cross-Connection concerns, etc.

Furthermore, attempts to educate the public about Cross-Connections will be made by distributing information on common residential Cross-Connections, providing onsite education of facility management and maintenance staff during routine inspections, speaking at HOA meetings, web site information, newsletter article(s), or posting newspaper announcements. Education content will comply with DDHSS, Div. of Public Health, 16 *Del. Admin. Code* § 4462-21.0.

Cross-Connection staff shall also be available upon request to provide backflow prevention education to pertinent community officials and Lewes BPW employees.

APPENDIX A - LOCAL RESOLUTION

[INSERT BPW RESOLUTION]

APPENDIX B - FIELD FORMS

APPENDIX C - NOTICE TEMPLATES

Cross-Connection Control Program Inspection Notice

«LetterSentDate :Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »

The Purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in the local Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

The Board of Public Works of the City of Lewes will be working jointly with inspectors from Hydro Designs Inc. to conduct these inspections. Thank you in advance for your cooperation in this matter.

As part of this program, an inspection of your facility's internal water system is to be completed. Inspectors will be reviewing your water system for connections that could possibly contaminate the water distribution system. The inspection is tentatively scheduled for **«LTR_Survey_Initial_Date »**, our inspector will do their best to be on site this day however we may be on site a day or two before or after the scheduled date. The inspection must be completed during normal business hours 8:00 AM to 5:00 PM. If you need a more specific time please call 1.800.690.6651 to arrange an appointment.

Any costs associated with the replacement, modification, installation and/or testing of backflow prevention assemblies is the responsibility of the property owner/manager and/or occupant.
«LTR_H2O_Org_Text_04 »

You will be notified following the inspection if modification(s) and/or testing of backflow prevention assemblies are necessary. We look forward to working with you in protecting the drinking water supply. If you have any questions or concerns, please contact **«LTR_H2O_Org_Text_01 »**.

«LTR_H2O_Org_Text_03 »

Cross-Connection Control Program Inspection Compliance Notice

«Current date:Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »

The purpose of the Board of Public Works of the City of Lewes'Cross-Connection Control Program, as defined in Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

As part of this program, an inspection of your facility's internal water distribution system was completed on «LTR_Survey_Comp_Date :Month Day, Year». Inspectors reviewed your water distribution system for any piping or connections that could possibly contaminate the water distribution system.

Your facility was either found compliant and/or the necessary changes made to comply with Resolution «LTR_H2O_Org_Resolution ». This inspection is valid until your facility's next scheduled inspection date. You will receive future notice for your next inspection date.

If your facility has backflow prevention assemblies requiring testing, you will be receiving additional notice detailing test requirements.

If you have any questions or require additional information, please contact **«LTR_H2O_Org_Text_01 »**.

«LTR_H2O_Org_Text_03 »

Containment Notice

<<Date>>

<<SendTo>>

RE: <<Facility>> at <<Address>>

Dear <<Contact>>,

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in the Board of Public Works of the City of Lewes' Resolution <<Resolution>>, is to help eliminate possible contamination of the public water distribution system.

"Containment" is the installation of a backflow prevention device, or a testable assembly between the facility and the public water distribution system. Containment assures there is no chance for water of questionable quality to leave your facility and to enter the public water distribution system.

As authorized by Resolution <<Resolution>>, the containment devices on the attached list are to be installed immediately after the municipal water meter and before the first tap. If a by-pass around the backflow prevention assembly is required, the by-pass shall also be protected with a backflow prevention assembly of equal protection. **Please note that the installation of a containment device will create a closed system. Proper installation of an expansion tank or other means to protect your piping system from the effects of thermal expansion may be necessary. Your facility has 30 days to install the assemblies shown on the attached pages.**

Please be advised that the installation of containment devices does not relieve your facility of the responsibility of providing potable water to its employees and visitors. In order to comply with applicable laws, and to ensure the integrity of your internal water distribution system, a comprehensive cross-connection inspection should be completed. If you have any questions, please contact Hydro Designs, Inc. at 1.800.690.6651 ext. 5026

Sincerely,

"[Enter your name]"
"[Enter your department name and title]"

<<CCInfo>>

Cross-Connection Control Program Containment Compliance Notification

«Current date:Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »,

A Cross-Connection Control inspection was performed at your facility. At that time, it was determined that your facility's potable water system is "contained" by an approved, properly installed backflow prevention device or assembly at the main inlet which is intended to minimize the potential backflow threat to the Board of Public Works of the City of Lewes' public water system. Therefore, your facility has met the intent of the inspection portion of the Cross-Connection Program as defined in Resolution «LTR_H2O_Org_Resolution ». Compliance with the inspection portion of the program requirements shall remain in effect until your facility's next scheduled inspection date.

However, to fully meet the intent of the CCC Program, two- (2) items must be addressed:

1. Inspection of the facility: **Completed**
2. Successful annual testing of any existing testable backflow prevention assemblies within your facility.

This facility will be in **Compliance** with the Cross-Connection Control Program when the existing backflow prevention assemblies are tested this year and at yearly intervals hereafter. When it is necessary to test such assemblies your facility will receive a notification letter, test forms to be completed by a certified tester for each identified testable assembly, and a list of certified testers within your facility's area. Upon the successful testing of the backflow prevention assembly, please submit a copy of the completed test record(s) to Hydro Designs.

Note however it is it still possible for existing cross-connections within your facility to potentially affect the water quality within your internal plumbing system. The installation of an approved backflow preventer at the main inlet does not relieve your facility of the responsibility of providing potable water to your employees and the public. In order to comply with all applicable codes and laws, it is recommended that your facility:

- Have a cross-connection control survey of the potable water piping system performed within your facility
- Ensure all piping systems downstream of the containment device/assembly are labeled properly
- Ensure backflow prevention assemblies connected to the potable water supply within your facility are tested annually

If you have any questions or require additional information, please contact **«LTR_H2O_Org_Text_01 »**.

«LTR_H2O_Org_Text_03 »

Request for Internal Cross-Connection Control Information Notice

«Current date:Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »,

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

As specified by Resolution «LTR_H2O_Org_Resolution », your facility is required to supply potable water free of existing and/or potential cross-connections to its employees and/or the public. Due to the complexity of your internal piping, an inspection of the potable water piping system is necessary to determine if there are any existing and/or potential cross-connections. This inspection must be completed by an individual or firm acceptable to the Board of Public Works of the City of Lewes.

The Potable Water Cross-Connection Survey Report is to be submitted within 30 days from the date of this notice. Accompanied with the Potable Water Piping Cross-Connection Survey Report shall be an Action Plan and timetable for correcting any deficiencies noted in the report.

If you have any questions or require additional information, please contact Hydro Designs, Inc. at **1.800.690.6651**. Your facility's cooperation in this matter is greatly appreciated.

Inspection Non-Compliance Notice 1

«LetterSentDate :Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

An inspection of your facility's internal water distribution system was completed on «LTR_Survey_Last_Date ». Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. A list of requirements is enclosed.

Requirements on this list must be addressed using only State approved backflow prevention devices. A licensed plumber should be able to assist you with acquiring approved backflow prevention devices. Some backflow prevention devices (assemblies) also require testing by a State Certified Tester. We suggest that the licensed plumber installing the testable assemblies also have the state certification to test assemblies. ***All testable assemblies must be tested immediately at the time of installation.***

These requirements must be completed by «LTR_Survey_Response_Date ». After the requirements and devices have been installed (if applicable) please call the number below on or before the date listed above to schedule a compliance inspection. Failure to do so will result in future non-compliant notices.

To arrange for a compliance review or if you require additional information, please contact **«LTR_H2O_Org_Text_01 »**

«LTR_H2O_Org_Text_03 »

Inspection Non-Compliance Notice 2

«LetterSentDate :Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

As part of this program, an inspection of your facility's internal water distribution system was completed on «LTR_Survey_Last_Date ». Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. A letter of notification was previously sent to you outlining the required corrective measures. For your reference, a duplicate list of requirements is enclosed.

Requirements on this list must be addressed using only State approved backflow prevention devices. A licensed plumber should be able to assist you with acquiring approved backflow prevention devices. Some backflow prevention devices (assemblies) also require testing by a State Certified Tester. We suggest that the licensed plumber installing the testable assemblies also have the state certification to test assemblies. ***All testable assemblies must be tested immediately at the time of installation.***

These requirements must be completed by «LTR_Survey_Response_Date ». After the requirements and devices have been installed (if applicable) please call the number below on or before the date listed above to schedule a compliance inspection. Failure to do so will result in future non-compliant notices.

To arrange for compliance review or if you require additional information, please contact **«LTR_H2O_Org_Text_01 »**.

«LTR_H2O_Org_Text_03 »

Cross-connection Control Program Inspection Shut-Off Notice

«LetterSentDate :Month Day, Year»

«Mailing_Address »

RE: «LTR_Facility_Name » at «[Facility]Service Address Num Alpha» «[Facility]Service Address Street Name»

Dear «Mail_Greeting »

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution «LTR_H2O_Org_Resolution », is to help eliminate possible contamination of the public water distribution system.

As part of this program, an inspection of your facility's internal water distribution system was completed on «LTR_Survey_Last_Date :Month Day, Year». Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. Two- (2) previous letters of notification were sent to you outlining the required corrective measures. For your reference, a duplicate list of requirements is attached.

We presently have no record or notification from you that corrective action has been completed. If you have already completed the requirements, please call the number below to schedule a compliance inspection.

You are hereby notified that in accordance with Resolution «LTR_H2O_Org_Resolution », the water supply to the above noted premises will be discontinued as of «LTR_Survey_Response_Date ». Water service may not be resumed until corrective measures have been addressed.

Upon completion of the required corrective action, please contact Hydro Designs, Inc. on or before the above date at 1.800.690.6651 to schedule a compliance review.

«LTR_H2O_Org_Text_04 »

Sincerely,

«LTR_H2O_Org_Contact_Person »
«LTR_H2O_Org_Text_04 »

Annual Test Notice

TEST FORM DUE NO LATER THAN: "[Insert notice respnse date]"

"[Insert date]"

"[Insert mailing address]"

RE: "[Insert facility name]" at "[Insert facility address]"

Dear "[Insert greeting]" ,

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution "[Insert Ordinance number]" , is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

This correspondence addresses testing of backflow prevention assemblies, and is independent of previous correspondence pertaining to site inspection(s). Periodic testing of backflow prevention assemblies is required to ensure proper working order.

Our records indicate it is time for testing of backflow prevention assemblies at your facility. The enclosed preprinted test forms are the only test forms that will be accepted. Testing should be completed in advance of the completion date noted to allow for repair(s) should they be necessary. **Testing of backflow prevention assemblies must be completed by a State approved certified tester. Backflow prevention assemblies installed on fire protection systems must be tested by a certified fire-protection system contractor.** A partial listing is attached for reference.

Following completion of assembly testing and/or repairs, completed test forms may either be faxed to "[Insert fax number]" , or mailed to the following address:

Board of Public Works of the City of Lewes
107 Franklin Avenue
Lewes, Delaware 19958

Backflow prevention assemblies within the "[Insert Client Name]" are required to be tested on an annual basis. Our records indicate that we have not received the annual test reports on the following backflow assemblies enclosed with this letter.

Completed test forms are to be returned by "[Insert notice respnse date]" **.** Please retain a copy of the device test results for your records.

If you have any questions or require additional information, please contact me at "[Insert phone number]" .

Sincerely,

"[Insert inspector name]"
"[Insert inspector title]"

Test Notice #2

TEST FORM DUE NO LATER THAN: "[Insert notice respnse date]"

"[Insert date]"

"[Insert mailing address]"

RE: "[Insert facility name]" at "[Insert facility address]"

Dear "[Insert greeting]" ,

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution "[Insert Ordinance number]" , is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

This is your **second notice** pertaining to testing of backflow prevention assemblies, and is independent of previous correspondence pertaining to site inspection(s). Periodic testing of backflow prevention assemblies is required to ensure proper working order.

Our records indicate 1) it is time for testing of backflow prevention assemblies at your facility and that 2) you have not yet returned the previously provided test forms. For your convenience, we have enclosed additional preprinted test forms. **Testing of backflow prevention assemblies must be completed by a State approved certified tester. Backflow prevention assemblies installed on fire protection systems must be tested by a certified fire-protection system contractor.** A partial listing is attached for reference.

Following completion of assembly testing and/or repairs, completed test forms may either be faxed to "[Insert fax number]" , or mailed to the following address:

Board of Public Works of the City of Lewes107 Franklin Avenue
Lewes, Delaware 19958

Completed test forms are to be returned by "[Insert notice respnse date]" **.** Please retain a copy of the device test results for your records.

If you have any questions or require additional information, please contact me at "[Insert phone number]" .

Sincerely,

"[Insert inspector name]"
"[Insert inspector title]"

Testing Shut-Off Notice

TEST FORM DUE NO LATER THAN: "[Insert notice respnse date]"

"[Insert date]"

"[Insert mailing address]"

RE: "[Insert facility name]" at "[Insert facility address]"

Dear "[Insert greeting]" ,

The purpose of the Board of Public Works of the City of Lewes' Cross-Connection Control Program, as defined in Resolution "[Insert Ordinance number]" , is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) site inspection, and 2) testing of backflow prevention assemblies.

This is your **third notice** pertaining to testing of backflow prevention assemblies, and is independent of previous correspondence pertaining to site inspection(s). Periodic testing of backflow prevention assemblies is required to ensure proper working order.

Our records indicate that you have not yet returned the previously provided test forms. For your convenience, we have enclosed additional preprinted test forms. **Testing of backflow prevention assemblies must be completed by a State approved certified tester. Backflow prevention assemblies installed on fire protection systems must be tested by a certified fire-protection system contractor.** A partial listing is attached for reference.

You are hereby notified that in accordance with Resolution "[Insert Ordinance number]" , the water supply to the above noted premises will be discontinued as of "[Insert notice respnse date]" . Water service may not be resumed until testing of backflow prevention assemblies has been completed.

Following completion of assembly testing and/or repairs, completed test forms may either be faxed to "[Insert fax number]" , or mailed to the following address:

Board of Public Works of the City of Lewes107 Franklin Avenue
Lewes, Delaware 19958

Please retain a copy of the device test results for your records. If you have any questions or require additional information, please contact the undersigned at "[Insert phone number]" .

Sincerely,

"[Insert inspector name]"
"[Insert inspector title]"

APPENDIX D - TEST FORM

BACKFLOW PREVENTION ASSEMBLY TEST REPORT

Hydro Designs, Inc.

BFP ID		Facility Name			
Acct Number		Meter #		**Test Report Due:**	
Service Address				Schedule Code	
				Assembly Info	(Replacement/Correction)
Equip Location				SN ☐	
Location ID		Protection Type		Mfr ☐	
Contact Name		Ph		Type ☐	
Map Page		#2		Size ☐	
				Model ☐	
				Install Date	
				Permit Num	
		Hazard Type		Haz. Level	

Line pressure at time of test: _____ **REPORT OF TEST RESULTS** ☐ Approved BFP

	Check Valve #1	Check Valve #2	Relief Valve	PVB/SVB	Shut Off Valves	#1	#2
Initial Test	☐ Held at _____ PSID	☐ Held at _____ PSID	☐ Opened at _____ PSID	☐ Air Inlet Opened at _____ PSID			
Pass	☐ Closed Tight	☐ Closed Tight		☐ Did not Open	Closed Tight	☐	☐
Fail	☐ Leaked	☐ Leaked	☐ Did Not Open	☐ Check Held at _____ PSID	Leaked	☐	☐
				☐ Leaked			
R E P A I R	☐ CLEANED REPLACED ☐ Disc ☐ Spring ☐ Guide ☐ Seat ☐ Hinge Pin ☐ Diaphragm ☐ Module ☐ _____	☐ CLEANED REPLACED ☐ Disc ☐ Spring ☐ Guide ☐ Seat ☐ Hinge Pin ☐ Module ☐ _____	☐ CLEANED REPLACED ☐ Disc ☐ Spring ☐ Diaphragm ☐ Seat ☐ O-Ring(s) ☐ Module ☐ _____	☐ CLEANED REPLACED ☐ Air Inlet Disc ☐ Airl Inlet Spring ☐ Check Disc ☐ Check Spring ☐ Float ☐ Diaphragm ☐ _____	CLEANED REPLACED REPAIR Other	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
	Other/Notes: _____						
Final Test	_____ PSID ☐ Closed Tight	_____ PSID ☐ Closed Tight	☐ Opened at _____ PSID	Air Inlet _____ PSID CK Valve _____ PSID	Closed Tight **Pass**	☐	☐

THE ABOVE REPORT IS CERTIFIED TO BE TRUE: 1A

Initial Test By	Certificate	Date:	Gauge Num	Time In	Time Out	Company	Phone
Final Test By							
Repair By							

APPENDIX E - DEFINITIONS

Air Gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet and at no time less than 1 inch.

Approved: Accepted by the authority responsible as meeting an applicable specification stated or cited in this plan or as suitable for the proposed use.

Auxiliary Water System: Any water system on or available to the premises other than the purveyor's approved public water supply.

Backflow: The undesirable reversal of flow in a potable water distribution system as a result of a Cross-Connection.

Backflow Preventer: An assembly, device or method designed to prevent backflow.

Backflow Prevention Assembly: A mechanical backflow preventer used to prevent backward flow of contaminants or pollutants into a potable water distribution system. An assembly has a resilient seated, full flow shut-off valve before and after the backflow preventer making it testable in line.

Backflow Prevention Device: A mechanical backflow preventer without shut-off valves. Typically these devices are not testable in the field.

Backpressure: A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

Backsiphonage: Backflow caused by negative or reduced pressure in the supply piping.

Contaminant: Any foreign substance (liquid, solid or gas) that degrades the quality of water and creates a health hazard.

Cross-Connection: A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances, would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or non-potable), or any matter that may change the color or add an odor to the water.

Owner: Person or entity receiving service from the public water distribution system.

Pollutant: Any foreign substance (liquid, solid or gas) that degrades the quality of water as to constitute a non-health hazard or impair the usefulness of the water.

Potable Water: Water that is safe for human consumption as described by the public health official having jurisdiction.

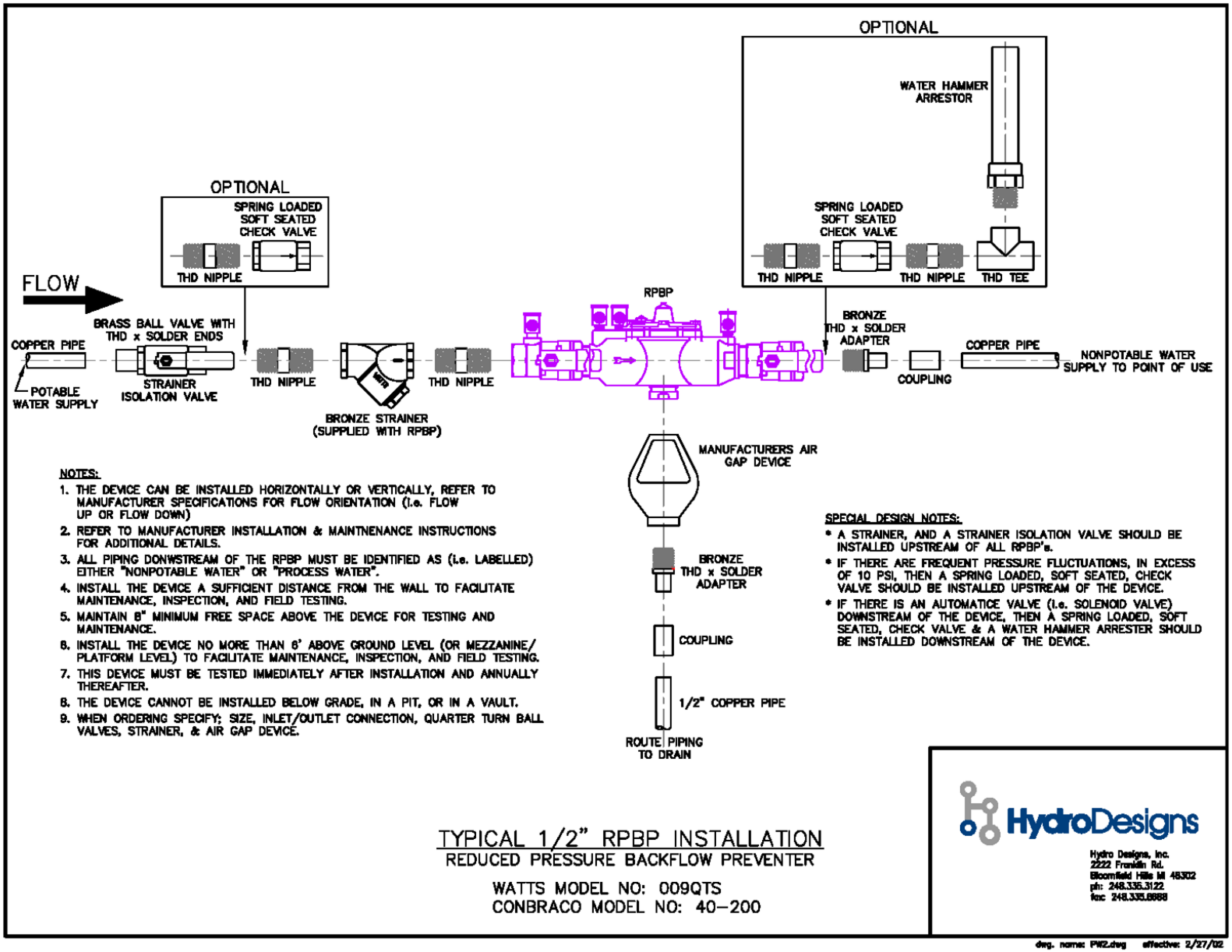
Non-Potable Water: Water that is not safe for human consumption or of questionable quality.

Reclaimed Water: Water that, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is not safe for human consumption.

Service Line Protection: Installation of an approved backflow prevention device, assembly or method at the point of service in order to confine potential contamination caused by a Cross-Connection within the facility where it arises; also referred to as containment.

APPENDIX F – INSTALLATION SCHEMATICS

Drawings contained in this section are only “typical” installations for reference purposes. All new installations must be installed per code and manufacturer specifications



NOTES:

1. THE DEVICE CAN BE INSTALLED HORIZONTALLY OR VERTICALLY, REFER TO MANUFACTURER SPECIFICATIONS FOR FLOW ORIENTATION (I.e. FLOW UP OR FLOW DOWN)
2. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. ALL PIPING DONWSTREAM OF THE RPBP MUST BE IDENTIFIED AS (i.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. INSTALL THE DEVICE A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
5. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
6. INSTALL THE DEVICE NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. THIS DEVICE MUST BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY THEREAFTER.
8. THE DEVICE CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. WHEN ORDERING SPECIFY: SIZE, INLET/OUTLET CONNECTION, QUARTER TURN BALL VALVES, STRAINER, & AIR GAP DEVICE.

SPECIAL DESIGN NOTES:

* A STRAINER, AND A STRAINER ISOLATION VALVE SHOULD BE INSTALLED UPSTREAM OF ALL RPBP's.
* IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS, IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE DEVICE.
* IF THERE IS AN AUTOMATICE VALVE (I.e. SOLENOID VALVE) DOWNSTREAM OF THE DEVICE, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE & A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE DEVICE.

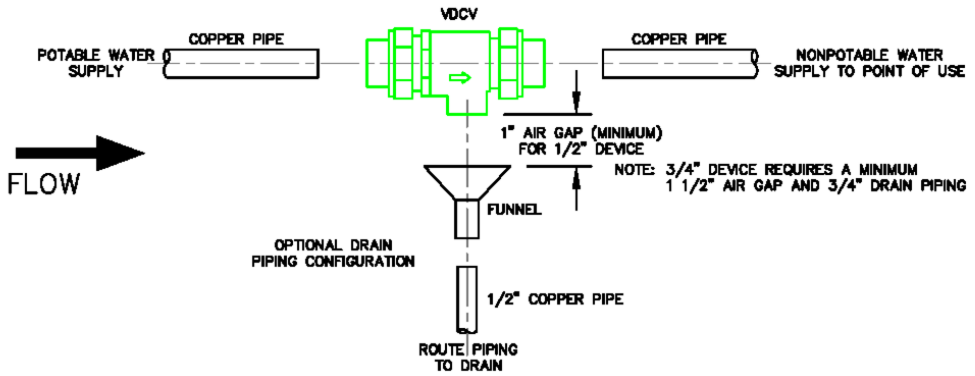
TYPICAL 1/2" RPBP INSTALLATION

REDUCED PRESSURE BACKFLOW PREVENTER

WATTS MODEL NO: 009QTS
CONBRACO MODEL NO: 40-200

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.6888

dwg. name: PW2.dwg effective: 2/27/02



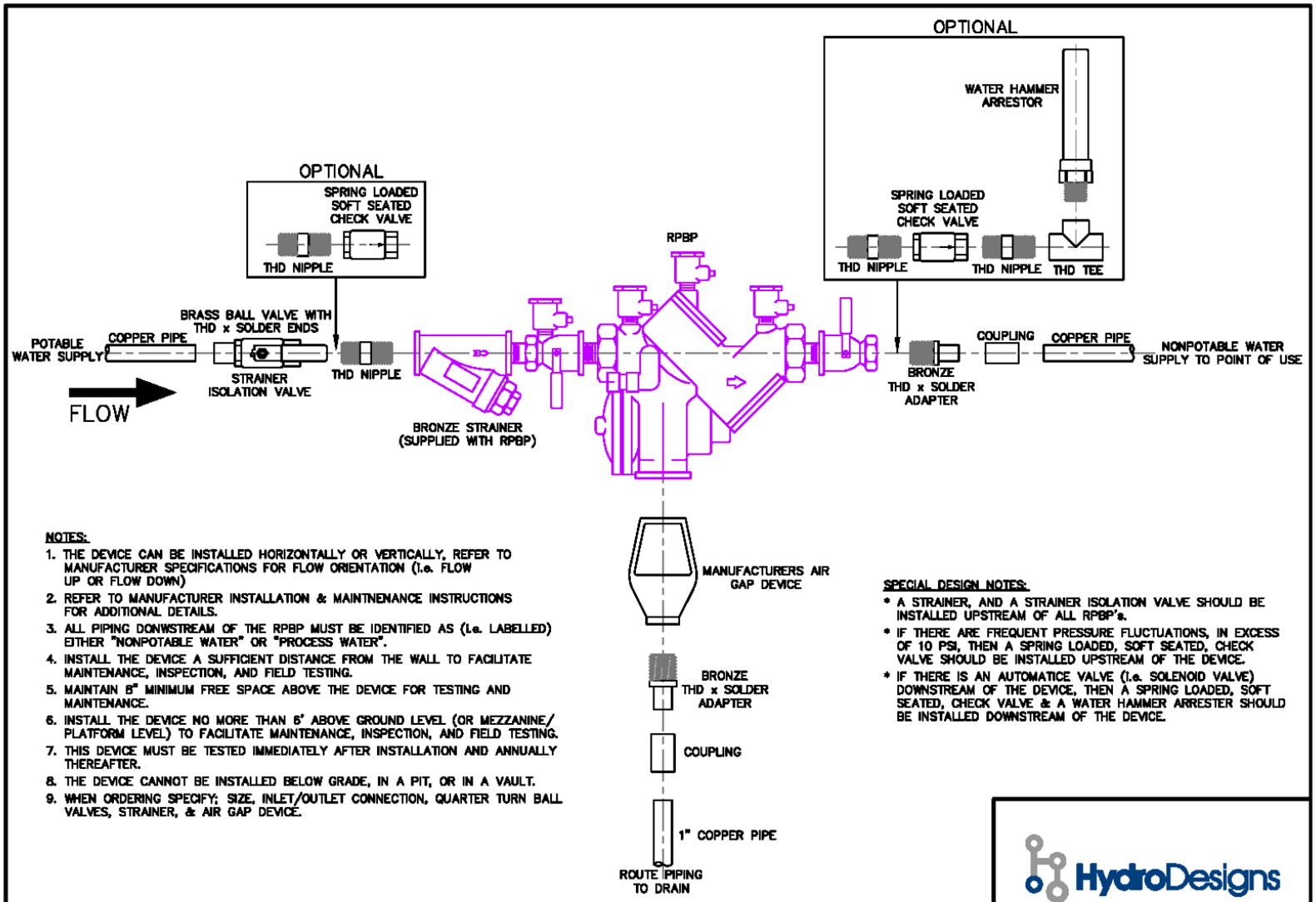
NOTES:
1. THE VDCV CAN BE INSTALLED VERTICALLY OR HORIZONTALLY.
2. REFER TO MANUFACTURERS INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. WHEN ORDERING SPECIFY: SIZE & INLET/OUTLET CONNECTION.

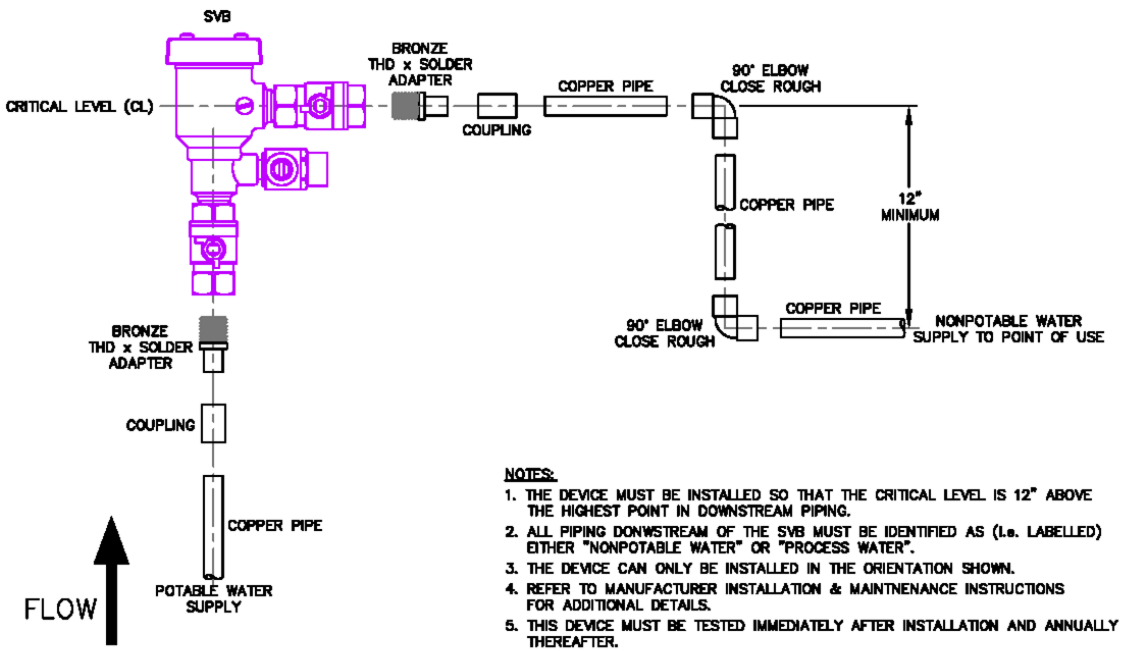
TYPICAL VDCV INSTALLATION
VENTED DUAL CHECK VALVE

WATTS MODEL NO: 9D
CONBRACO MODEL NO: 40-400

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.8688

dwg. name: PW5.dwg effective: 2/27/02


OPTIONAL
WATER HAMMER ARRESTOR
SPRING LOADED SOFT SEATED CHECK VALVE
THD NIPPLE
THD NIPPLE
THD TEE
OPTIONAL
SPRING LOADED SOFT SEATED CHECK VALVE
THD NIPPLE
RPBP
BRASS BALL VALVE WITH THD x SOLDER ENDS
POTABLE WATER SUPPLY
COPPER PIPE
STRAINER ISOLATION VALVE
THD NIPPLE
FLOW
BRONZE STRAINER (SUPPLIED WITH RPBP)
COUPLING
COPPER PIPE
NONPOTABLE WATER SUPPLY TO POINT OF USE
BRONZE THD x SOLDER ADAPTER
MANUFACTURERS AIR GAP DEVICE
BRONZE THD x SOLDER ADAPTER
COUPLING
1" COPPER PIPE
ROUTE PIPING TO DRAIN
NOTES:
1. THE DEVICE CAN BE INSTALLED HORIZONTALLY OR VERTICALLY, REFER TO MANUFACTURER SPECIFICATIONS FOR FLOW ORIENTATION (i.e. FLOW UP OR FLOW DOWN)
2. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. ALL PIPING DONWSTREAM OF THE RPBP MUST BE IDENTIFIED AS (i.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. INSTALL THE DEVICE A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
5. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
6. INSTALL THE DEVICE NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. THIS DEVICE MUST BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY THEREAFTER.
8. THE DEVICE CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, QUARTER TURN BALL VALVES, STRAINER, & AIR GAP DEVICE.
SPECIAL DESIGN NOTES:
* A STRAINER, AND A STRAINER ISOLATION VALVE SHOULD BE INSTALLED UPSTREAM OF ALL RPBP's.
* IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS, IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE DEVICE.
* IF THERE IS AN AUTOMATICE VALVE (i.e. SOLENOID VALVE) DOWNSTREAM OF THE DEVICE, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE & A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE DEVICE.
TYPICAL 3/4" - 2" RPBP INSTALLATION
REDUCED PRESSURE BACKFLOW PREVENTER
WATTS MODEL NO: 909QT-S
CONBRACO MODEL NO: 40-200
HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.333.3122
fax: 248.335.8668
dwg. name: PM3.dwg effective: 2/27/02



NOTES:

1. THE DEVICE MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 12" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. ALL PIPING DONWSTREAM OF THE SVB MUST BE IDENTIFIED AS (i.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
3. THE DEVICE CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN.
4. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
5. THIS DEVICE MUST BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY THEREAFTER.
6. INSTALL THE DEVICE NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. INSTALL THE DEVICE A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
8. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
9. THE DEVICE CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
10. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, & QUARTER TURN BALL VALVES.

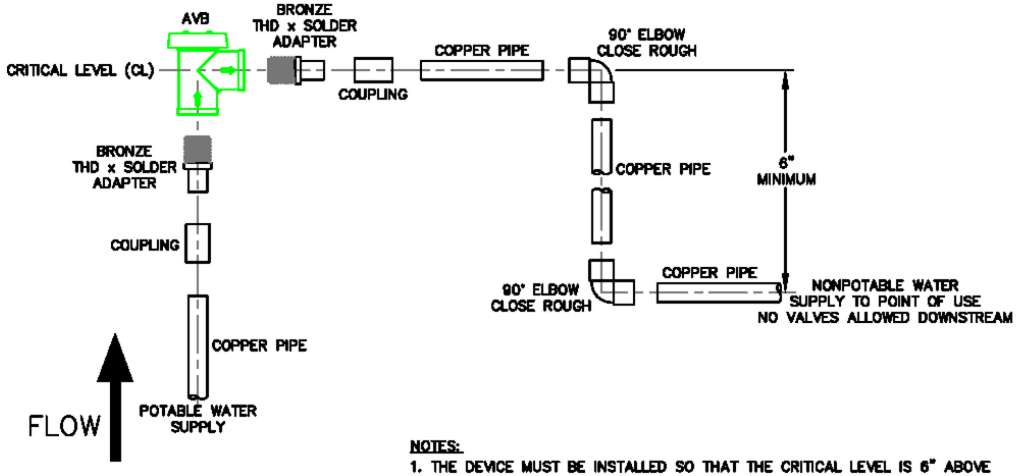
TYPICAL SVB INSTALLATION

SPILL PROOF VACUUM BREAKER

WATTS MODEL NO: 008QT
CONBRACO MODEL NO: N/A

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.8668

dwg. name: PM4.dwg effective: 2/27/02



NOTES:

1. THE DEVICE MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 6" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. NO VALVES ARE ALLOWED DOWNSTREAM OF THE AVB
3. ALL PIPING DONWSTREAM OF THE AVB MUST BE IDENTIFIED AS (I.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. THE DEVICE CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN.
5. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
6. WHEN ORDERING SPECIFY; SIZE & INLET/OUTLET CONNECTION.

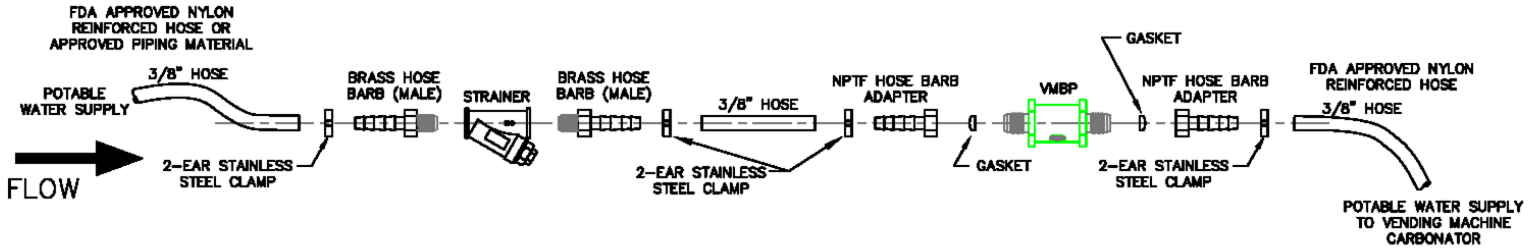
TYPICAL AVB INSTALLATION

ATMOSPHERIC VACUUM BREAKER

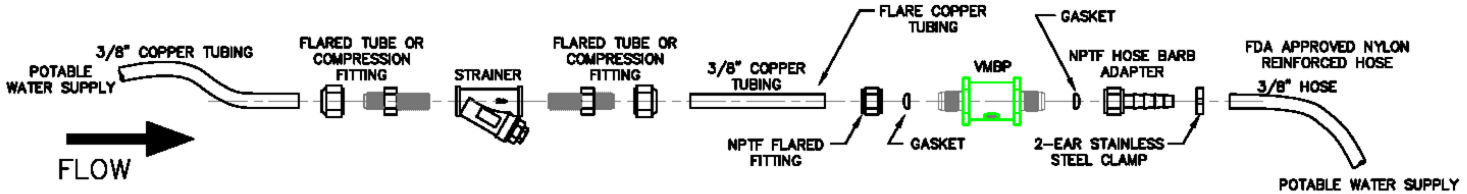
WATTS MODEL NO: 288A-C
CONBRACO MODEL NO: 38-100

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.333.3122
fax: 248.335.8888

dwg. name: PWS.dwg effective: 2/27/02



INSTALLATION ON NYLON HOSE



INSTALLATION ON COPPER TUBING

NOTES:
1. THE CONBRACO DEVICE HAS AN INTEGRAL STRAINER.
2. THE VMBP CAN BE INSTALLED VERTICALLY OR HORIZONTALLY.
3. THE WATTS DEVICE IS CONSTRUCTED OF STAINLESS STEEL; THE CONBRACO DEVICE IS PLASTIC.
4. COPPER TUBING IS NOT AN ACCEPTABLE MATERIAL DOWNSTREAM (DISCHARGE SIDE) OF THE VMBP; ACCEPTABLE MATERIALS INCLUDE FDA APPROVED NYLON REINFORCED HOSE AND STAINLESS STEEL TUBING.
5. REFER TO MANUFACTURERS INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.

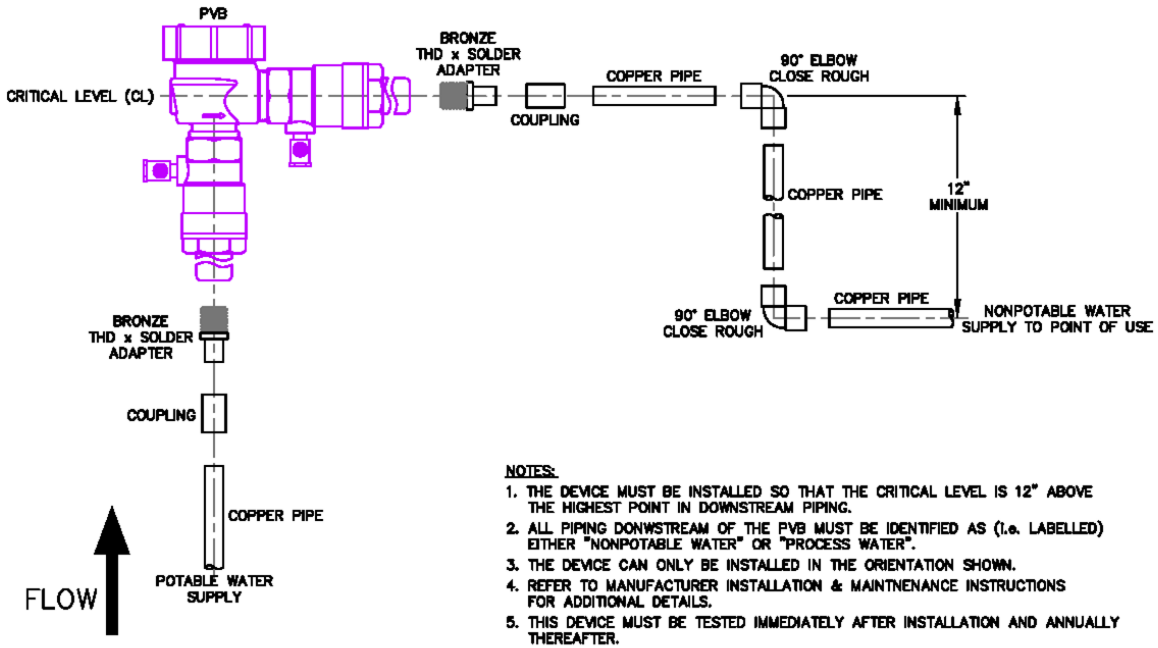
TYPICAL 3/8" VMBP INSTALLATION
VENDING MACHINE BACKFLOW PREVENTER

DEVICE: WATTS MODEL NO: SD3-MF
CONBRACO MODEL NO: 4C-100

STRAINER: WATTS MODEL NO: P777-100
CONBRACO MODEL NO: INTEGRATED INTO DEVICE

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.8888

dwg. name: PWS.dwg effective: 2/27/02



NOTES:

1. THE DEVICE MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 12" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. ALL PIPING DONWSTREAM OF THE PVB MUST BE IDENTIFIED AS (i.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
3. THE DEVICE CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN.
4. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
5. THIS DEVICE MUST BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY THEREAFTER.
6. INSTALL THE DEVICE NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. INSTALL THE DEVICE A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
8. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
9. THE DEVICE CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
10. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, & QUARTER TURN BALL VALVES.

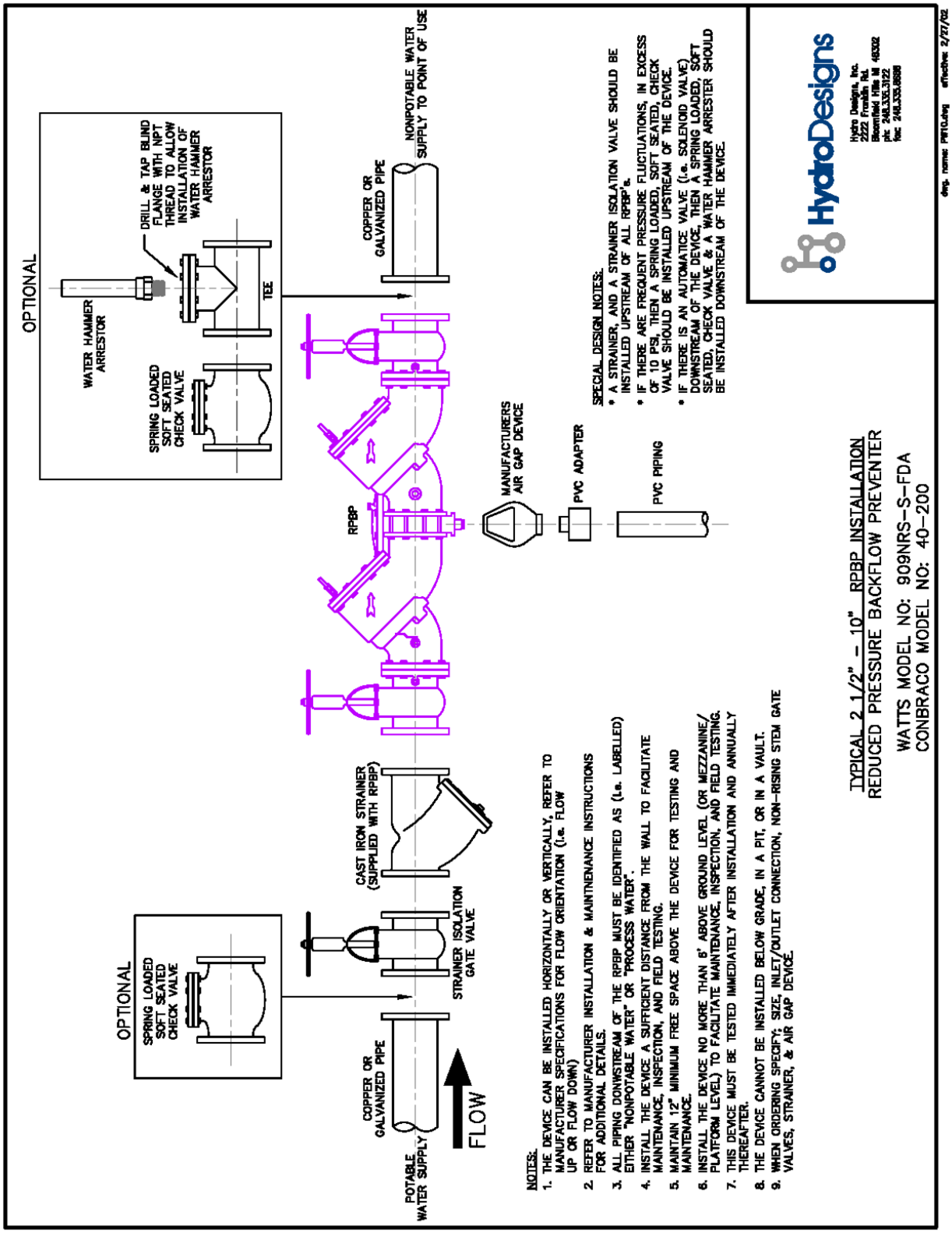
TYPICAL PVB INSTALLATION

PRESSURE VACUUM BREAKER

WATTS MODEL NO: 800M4QT
CONBRACO MODEL NO: 40-500

HydroDesigns
Hydro Designs, Inc.
2222 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.8688

dwg. name: PVB.dwg effective: 2/27/02


OPTIONAL
WATER HAMMER ARRESTOR
DRILL & TAP BLIND FLANGE WITH NPT THREAD TO ALLOW INSTALLATION OF WATER HAMMER ARRESTOR
TEE
SPRING LOADED SOFT SEATED CHECK VALVE
COPPER OR GALVANIZED PIPE
NONPOTABLE WATER SUPPLY TO POINT OF USE
RPBP
MANUFACTURERS AIR GAP DEVICE
PVC ADAPTER
PVC PIPING
OPTIONAL
SPRING LOADED SOFT SEATED CHECK VALVE
CAST IRON STRAINER (SUPPLIED WITH RPBP)
STRAINER ISOLATION GATE VALVE
COPPER OR GALVANIZED PIPE
POTABLE WATER SUPPLY
FLOW
SPECIAL DESIGN NOTES:
• A STRAINER, AND A STRAINER ISOLATION VALVE SHOULD BE INSTALLED UPSTREAM OF ALL RPBP's.
• IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS, IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE DEVICE.
• IF THERE IS AN AUTOMATICE VALVE (i.e. SOLENOID VALVE) DOWNSTREAM OF THE DEVICE, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE & A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE DEVICE.
NOTES:
1. THE DEVICE CAN BE INSTALLED HORIZONTALLY OR VERTICALLY, REFER TO MANUFACTURER SPECIFICATIONS FOR FLOW ORIENTATION (i.e. FLOW UP OR FLOW DOWN)
2. REFER TO MANUFACTURER INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. ALL PIPING DOWNSTREAM OF THE RPBP MUST BE IDENTIFIED AS (i.e. LABELLED) EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. INSTALL THE DEVICE A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
5. MAINTAIN 12" MINIMUM FREE SPACE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
6. INSTALL THE DEVICE NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. THIS DEVICE MUST BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY THEREAFTER.
8. THE DEVICE CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. WHEN ORDERING SPECIFY: SIZE, INLET/OUTLET CONNECTION, NON-RISING STEM GATE VALVES, STRAINER, & AIR GAP DEVICE.
TYPICAL 2 1/2" – 10" RPBP INSTALLATION
REDUCED PRESSURE BACKFLOW PREVENTER
WATTS MODEL NO: 909NRS-S-FDA
CONBRACO MODEL NO: 40-200
HydroDesigns
Hydro Designs, Inc.
2225 Franklin Rd.
Bloomfield Hills MI 48302
ph: 248.335.3122
fax: 248.335.8688
dwg. name: PRTV.dwg effective: 2/27/02

APPENDIX G – DELAWARE CCC REGULATION

21. Cross-Connection Control

21.1. Cross-connection control requirements and prohibitions.

21.1.1. No public water system shall install or maintain a water service connection to any premises where actual or potential cross-connections to a public water system exist unless such actual or potential cross-connections are eliminated or controlled to the satisfaction of the owner of the public water system and the Division.

21.1.2. No public water system shall install or maintain any connection whereby water from an auxiliary water system may enter a public water system unless the auxiliary water supply and the method of connection.

21.1.3. In accordance with subsection 1.12.1, public water systems shall maintain acceptable water pressure throughout the distribution system so that the risk of backflow is reduced.

21.1.4. If a cross-connection exists or backflow occurs at a consumer's water system, the public water system may discontinue service to the consumer and water service shall not be restored until the deficiencies have been corrected.

21.2. Cross-connection control programs.

21.2.1. A public water system shall develop a plan for a comprehensive cross-connection control program for the elimination, prevention. and control of cross-connections appropriate to the number of service connections. size of the distribution system, and type of customers. The cross-connection control program shall include an individual designated by the public water system and appropriately trained and experienced in cross-connection control programs to be responsible for the program.

21.2.2. A cross-connection control program shall include an inventory and records of testing, repairs. And maintenance of all backflow prevention assemblies. and backflow elimination methods.

21.2.3. A cross-connection control program shall include appropriate policies to complete assessments of customer premises for potential cross-connections to establish hazard criteria to classify customer premises consistent with Table 1, and to determine the degree of hazard and adequacy of existing preventive measures.

Table 1
Backflow Prevention Assembly Types Required for Service Line Containment

Premise - Degree of Hazard	
High Hazard	Low Hazard
Air Gap	Air Gap
Reduced Pressure Principle Back-flow Prevention Assembly	Reduced Pressure Principle Backflow Prevention Assembly
-	Double Check Valve Assembly

21.2.4. An approved backflow prevention assembly or backflow elimination method shall be installed at premises where the following conditions exist in a location intended to prevent backflow into the distribution system:

21.2.4.1. Premises having auxiliary water system:

21.2.4.2. Premise types that are deemed by the public water system or the Division to represent a health or high hazard to the public water system, to include but not be limited to:

Agricultural facilities (e.g., farms, dairies)	*Beverage bottling plants*	*Car washes*
Chemical plants	*Dry cleaners (on site processing)*	*Film processing plants*
Food processing plants	*Laboratories*	*Medical facilities*
Mortuaries	*Metal plating industries*	*Mortuaries*
Petroleum processing/storage plants	*Piers, marinas, docks and waterfront facilities*	
Radioactive material processing plants	*Wastewater treatment facilities*	

21.2.4.3. Premises where having internal cross-connections that, in the judgment of the public water system, are not correctable or are impractical to determine if cross-connections exist due to intricate plumbing arrangements:

21.2.4.4. Premises where because of security requirements or other prohibitions, it is impossible to complete a cross-connection control survey: or

21.2.4.5. Premises having a history of cross-connections being established or reestablished.

21.2.5. In lieu of assessments and installation of backflow prevention assemblies at customer premises deemed low hazard. a public water system may implement a public education program.

21.2.5.1. The public education program shall include. at minimum:

21.2.5.1.1. Causes and dangers of backflow and cross-connections. including health effects:

21.2.5.1.2. Information on how to identify actual and potential cross-connections

21.2.5.1.3. Preventive measures to reduce or eliminate cross-connection and backflow risks: and

21.2.5.1.4. Information on reporting suspected cross-connections to the

21.3. Corrections and protective devices.

21.3.1. Backflow prevention assemblies shall conform to the standards of the American Society of Sanitary Engineering (ASSE), the American Water Works Association (AWWA). and the American Society of Mechanical Engineers (ASME)

21.4. Cross-connection control records and reporting.

21.4.1. All backflow prevention assembly test records which document the test results of assemblies designed to protect the public water system shall be retained on file for a period of no less than 10 years.

21.4.2. All cross-connection control survey records which document results from the monitoring of cross-connections shall be retained on file for a period of no less than 10 years.

21.5. Violations.

21.5.1. The following items shalt be deemed to be violations of these regulations:

21.5.1.1. Failure to develop and implement a comprehensive cross-connection control program in accordance with Section 3.0 of this regulation within three years of the effective date of these regulations;

21.5.1.2. Failure to implement the cross-connection control program as prescribed; and

21.5.1.3. Failure to maintain all backflow prevention assembly test records on file for at least 10 years.

21.6. Penalty Clause.

Any person who neglects or faits to comply with these regulations shall be subject to penalty as provided in 16 Del.C. §122(3)(c).

APPENDIX H – AWWA M-14 MANUAL, 3rd EDITION