

CROSSTALK

AUTUMN 2015



Preparing Assemblies for **Freezing Temperatures**

With temperatures beginning to fall across the country, as Winter approaches, the risk of frozen water damaging water piping rises. Backflow prevention assemblies are also at risk of damage during the freezing weather. Winterizing, the process of draining water out of the water line to prevent pipes from bursting

before the freezing temperatures begin, may help but other precautions should also be taken to prevent an assembly from being damaged.

The use of resilient seated shutoff valves in approved assemblies has significantly improved the field testing

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New Members

Below is a list of those who have become members of the USC Foundation since the last *Cross Talk*.

Allen's Plumbing

Dan Lord Plumbing LLC.

Edwin Reyes

Payless Plumbing & Rooter Specialist, Inc.

Steven Mireles

Tapps Island Water System

Wenning Technical Services

Member Notes

All Foundation members should have received **Special Notice 15-001** in the mail. If you have not received the notice please contact the Foundation office to verify the mailing address on file.

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What's Included with a Foundation Membership



Membership Discounts

25% off Manual Orders

More than 25% off Training Courses

Seminars/Webinars/Training Tools are also discounted

Other Benefits

Free copy of the **Manual of Cross-Connection Control**, each time a new edition is published

E-mail notification every time the electronic copy of the **USC List of Approved Backflow Prevention Assemblies** is updated

Updates to the **USC List of Approved Backflow Prevention Assemblies** mailed quarterly

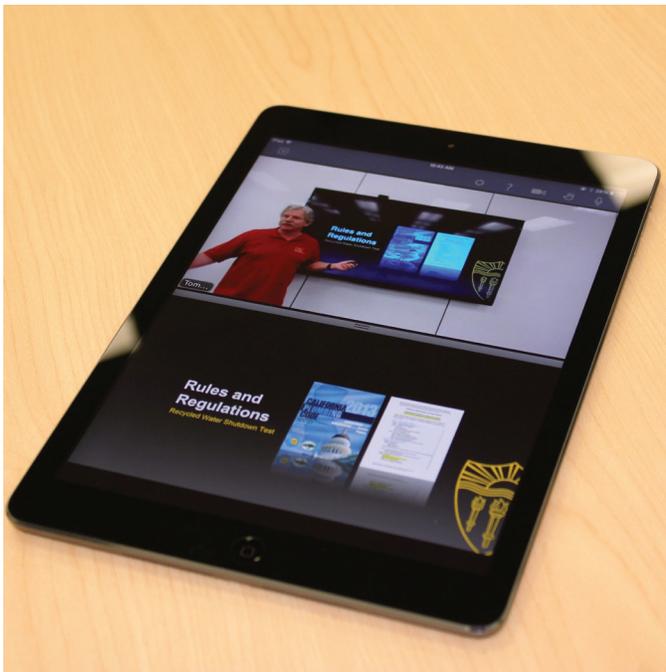
Special Notice mailed as published

New Cross Talk mailed quarterly

Cross Talk is published by the Foundation for Cross-Connection Control and Hydraulic Research, a Division of the University of Southern California, for Foundation Members.

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This coming year the Foundation will be adding a new benefit for all its members. After the success of the *One Day Seminars* two years ago, the Foundation, earlier this year, introduced the *One Day Seminar/Webinar*. Now anyone with an internet connection may participate in the Foundation's seminars without having to make the trip to Los Angeles. And beginning next year all Foundation members will be eligible to register for at least one complimentary webinar as part of the membership package.



Members may begin registering beginning with the January 21st Advanced Field Test Procedures webinar. The Foundation has scheduled eight different webinars for next year. For webinar descriptions please see the Summer 2015 Cross Talk or you may visit the Foundation's website for more information.

The number of webinars each member is eligible to receive each year is dependent on the type of membership.

COMPLIMENTARY WEBINARS for MEMBERS

- *Company Members receive one webinar per year.*
- *County Members receive two webinars per year.*
- *State or Federal Agency Members receive two webinars per year.*
- *Water Purveyor Members with less than 2,400 service connections receive one webinar per year.*
- *Water Purveyor Members with more than 2,400 service connections, but less than 20,000 service connection receive two webinars per year.*
- *Water Purveyors Members with more than 20,000 service connections receive three webinars per year.*

For any questions regarding registering for a complimentary webinar please contact the Foundation office. ■

Upcoming Seminars/Webinars

21 January

Advanced Field Test Procedures

25 February

Los Angeles/California Codes and Regulations

21 April

Grey Water Systems & Recycled Water Shutdown Test

7 June

Different Facilities;

Different Cross-Connections

Testing Detector Assemblies

Detector backflow prevention assemblies like the Double Check Detector Assembly (DCDA) and the Reduced Pressure Principle Detector Assembly (RPDA) are found in the field regularly. And, with the recent introduction of the Type II assemblies—the DCDA-II and RPDA-II—to the *USC List of Approved Backflow Prevention Assemblies*, some may have questions about field testing these types of assemblies, including which part of the detector assemblies are tested first.

Detector assemblies are designed for fire sprinkler systems. They are normally installed on water lines which are not metered. If, however, someone was to use water, the water meter on the bypass of the detector assembly would accurately record all flow up to, at least, two gallons per minute.

When testing any detector assembly, care must be taken in the notification process. These assemblies are normally tied into an alarm system, and the alarm would be activated if the shutoff valves are closed without proper notification. It is, therefore, necessary to notify the fire department or alarm company monitoring the fire system before shutting down the water.

DCDA

The DCDA is the most common of the detector assemblies. The DCDA contains a main-line double check valve assembly (DC) and a bypass which includes a DC and a water meter.

When testing the DCDA, the tester must first test the bypass assembly. Since the bypass

assembly is made up of a DC, the field test for the bypass follows the standard field test procedures for a DC. However, at the conclusion of the test, the number two shutoff valve of the bypass assembly should remain closed. This prevents the bypass from affecting the field test of the main-line assembly.

After completing the field test for the bypass assembly continue on to test the main-line assembly. The main-line assembly also follows the standard field test procedures for a DC. Once both DC's of the DCDA are tested all the shutoff valves may be opened.



In some cases, the administrative authority may want to verify that the water meter is registering. To determine whether the meter is registering please follow the steps below, which may be found in the *Manual of Cross-Connection Control, Tenth Edition*, Chapter A.5.2.1:

a. If test cock No. 4 is located at the same location as the bypass piping, then it will

be necessary to verify that the connection between the downstream bypass piping and main-line body will allow flow. See Appendix A.5.2.2. If test cock No. 4 is not located on the bypass piping, proceed to step b.

b. Slowly open test cock No. 4 of the main-line assembly to create a small flow (approximately 1 to 2 gallons per minute).

c. Verify that the water meter in the bypass indicates flow, and record as such.

d. Open all shutoff valves in the DCDA.

RPDA

The RPDA consists of a main-line reduced pressure principle assembly (RP) and a bypass which includes an RP and a water meter. Since the RPDA is made up of individual RP's, the standard field test procedures for that type of assembly are followed for each RP.

To start, the main-line assembly of the RPDA is tested first to verify its condition before testing the bypass assembly. However, before getting started the No. 2 shutoff valve of the bypass assembly must be closed. Then the tester proceeds to test the main-line assembly, according to the standard procedures for testing an RP.

Once the main-line assembly is tested and the No. 2 shutoff valve of the main-line assembly remains closed, the tester proceeds to test the bypass assembly. Once all the data is collected, the tester should open all of the shutoff valves, slowly, returning the assembly to service. As with the DCDA, there are procedures for verification of the operation of the bypass water meter. These are found in Chapter A.5.1.1 of the Tenth Edition Manual.

DCDA-II

The DCDA-II consists of a main-line DC and

USC Student Scholarship Recipients

The Southern California Water Utilities Association (SCWUA) at its November Luncheon Meeting awarded three scholarships to USC students. The USC Foundation helped select the students, who are involved in civil engineering and environmental engineering.

The SCWUA presented three scholarship checks for \$1000 to Jason Loui, Avery McEvoy and Maria Carolina Rambaldi. On hand to present the checks were David Gould, SCWUA President, Dr. J.J. Lee, Foundation Director and Dr. Lucio Soibelman, department chairman for the Sonny Astani Department of Civil and Environmental Engineering at USC Viterbi School of Engineering.



From Left: Rambaldi, Dr. Lee, Dr. Soibelman, Loui

Jason Loui is a junior at USC who is currently majoring in Civil Engineering. Loui is a recipient of the prestigious USC Presidential Scholarship and is currently on the USC Viterbi School of Engineering Dean's List. He is also a member of the USC ASCE Student Chapter, USC Hawaii Club and USC Joint Educational Project.

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preparing assemblies for freezing temperatures: continued

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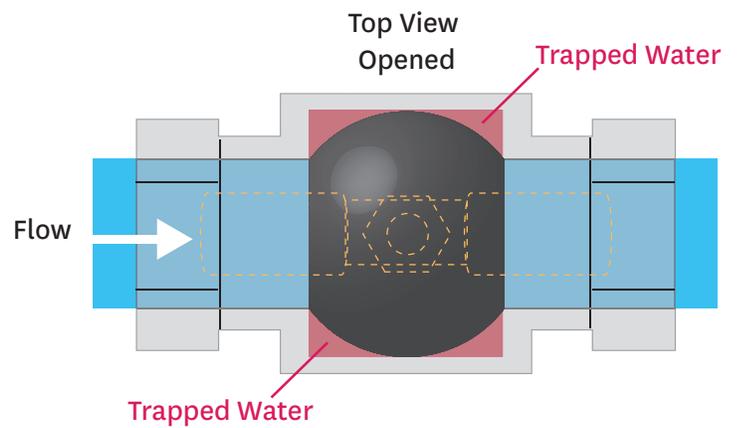
of the assemblies. Having a tight shutoff valve has made the job of the field tester considerably easier. However, those same resilient seated shutoff valves are at risk during freezing weather.

Most manufacturers select to use fully ported ball valves as their type of resilient seated shutoff valves for 2-inch and smaller assemblies. These valves have shown themselves to be effective due to the flow characteristics and their effective shut off capabilities. But, extra precaution is needed when colder temperatures run the risk of freezing water. This may lead to water trapped in the shutoff valves freezing and causing damage to the assemblies.

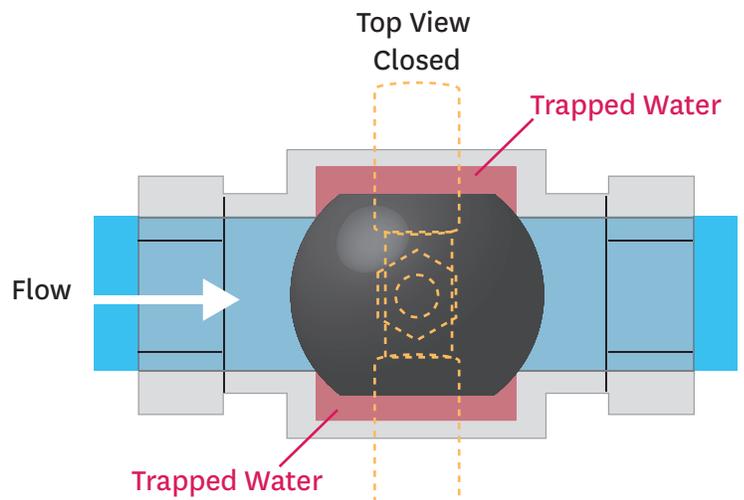
When water freezes it occupies a 9% greater volume than in its liquid form. The ice causes pressure to build inside the pipes that can cause them to burst and may cause permanent damage in shutoff valves. Winterizing a water system helps but it may not completely eliminate the possibility of the shutoff valves being damaged during the colder months.

Even with the winterizing of a water line, the ball valves may be left in the fully opened or fully closed position. When this is done there may be a small volume of water trapped between the outside of the ball and the body. With this trapped volume of water freezing, the resulting damage can be significant. Seals or components may be distorted and in extreme cases the body housing itself could be cracked. As seen in the figure, with the valve in the opened or closed position, the small pocket of water is trapped in place.

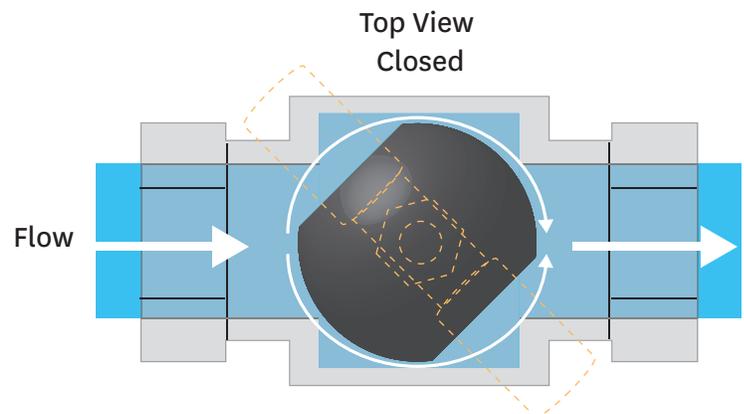
Where winterizing of a water line is necessary, it is highly recommended that ball valves be left in a partially opened position. Leaving the valve at a 45-degree angle will leave



Above you can see where the trapped water would collect if a valve is left open.



Above you can see where the trapped water would collect if a valve is left closed.



Above you can see a valve left at a 45-degree angle will allow water to escape from the pockets as a result reducing risk of damage

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preparing assemblies for freezing temperatures: continued

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this pocket unsealed and the trapping of water will be significantly reduced, thus reducing the risk of any damage to the valve.

Preferably, assemblies used in environments with freezing temperatures should be kept in an area protected from the harsh environment. However, this is not always possible or practical.

For those assemblies that are on water lines that must operate during winter months; enclosures can be used to protect the assemblies from freezing. Enclosures may generally be separated into two categories; freeze retardant enclosures (i.e., non-heated) and freeze protection enclosures (i.e., heated).

For those others that are not in use but must remain outdoors for one reason or another during freezing temperatures, winterizing the water line and leaving the ball valves partially open to prevent water trapping will go a long way in preventing any damage to either water pipes or backflow prevention assemblies.



testing detector assemblies: continued

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a bypass which includes a single check and a meter. The DCDA-II has similar field test procedures to the DCDA. The bypass single check is tested first, just like a check of a DC assembly. This prevents the bypass single check valve from affecting the test of the main-line assembly. Then, leaving the No.2 shutoff valve of the single check valve closed, the tester moves on to test the main line assembly.

RPDA-II

The RPDA-II consists of a main-line RP and a bypass which includes a single check and a water meter. The Type-II has similar procedures to the RPDA in that the main-line assembly is tested first to verify its condition before testing the bypass single check valve. Then with the No. 2 shutoff of the main-line assembly still in the closed position, the tester proceeds to test the bypass single check valve using the same procedures for testing a check valve of a DC.

Full details of field-testing detector assemblies may be found in Chapters 9.6, 9.7, 9.8 and 9.9 of the Tenth Edition Manual. For more information about the procedures to verify the operation of the water meter please see Chapter A.5. of the manual. And, for any other questions about detector assemblies please contact the Foundation office. ■

usc student scholarship recipients: continued

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Avery McEvoy, a junior at USC is currently majoring in Environmental Engineering. McEvoy is a recipient of the USC Presidential Scholarship and is currently on the USC Viterbi School of Engineering Dean's List. She is Director of Advocacy for the USC Environmental Student Assembly, which works with USC administrators and student government to encourage sustainable initiatives for the university.

Maria Carolina Rambaldi is currently pursuing a Master of Science in Civil Engineering with an emphasis in Water and Waste Management. Rambaldi works at the Foundation laboratory and interns at the California Environmental Protection Agency, Water Quality Control Board in Los Angeles. She attended the Federal University of Parana in Brazil where she received a Bachelor of Science in Civil Engineering.

The Foundation and the SCWUA congratulates all the the scholarship recipients. ■

Upcoming Training Courses

all course in Los Angeles, CA unless noted

Tester

11-15 January
9-13 May
11-15 July
3-7 October

Specialist

25-29 January
21-25 March
25-29 July

Seminars

19 January

Hands-On Field Test Procedures

21 January

Advanced Field Test Procedures

25 February

Los Angeles/California Codes and Regulations

21 April

Grey Water Systems

& Recycled Water Shutdown Test

7 June

Different Facilities;

Different Cross-Connections

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Upcoming Events

Spokane Regional

Cross Connection Control

Chapter ABPA Annual Seminar

Spokane, WA

25 February 2016

Nebraska Chapter ABPA

Annual Conference

Kearney, NE

9 March 2016

ABPA Annual Education

Conference & Trade Show

San Diego, CA

14-16 March 2016

CA/NV Section AWWA

Spring Conference

Sacramento, CA

21-24 March 2016

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