

inside: **70 years | temporary assemblies | failed assembly prevent backflow... and more**

# Cross Talk

Summer 2014

With its members continued support, the USC Foundation is celebrating its 70th anniversary this year. Established in September 1944, after a group of concerned individuals, believing that the unbiased efforts of an educational institution would serve the ultimate aim of protecting potable water supplies best, ap-

In 1943, during World War II, a supply ship was discovered to have harbor water in its potable water tanks. An investigation revealed that this was caused by a cross-connection between the city water supply and the harbor water. A group of concerned individuals approached the University.

## Celebrating 70 Years



proached the University of Southern California asking for research to be done in this area. Since then the Foundation has become one of the world's foremost authorities in backflow prevention and cross-connection control.

After several conferences, this group worked out an agreement with the University; and gave the University the sum of \$25,000 with which to establish a laboratory and employ a team of researchers. Dr. Everett Cloran was named the first Director of the Foundation for Cross-

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# Foundation

## Membership

### *What's included with a USC Foundation Membership*

#### **Membership Discounts**

- 25% off Manual Orders
- 20% off Training Courses
- 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 *List of Approved Backflow Prevention Assemblies* is updated
- Updates to the *List of Approved Backflow Prevention Assemblies* mailed quarterly
- Special Notice mailed when needed
- New *Cross Talk* mailed quarterly

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Members are encouraged to call the USC Foundation with technical questions. The USC Foundation's Engineering Staff is available to assist Members with the various aspects of field testing backflow preventers, installing backflow preventers and administering their cross-connection control program.

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

**Andrew Tanglao**

**Annette Goodwin**

**Antonio Alvarez Jr.**

**Backflow & Plumbing Solutions**

**Billy Kampen**

**Carter's Services**

**Christian Osuna**

**Guerin's Backflow Testing**

**Hawaii Rural Water Association**

**Ismael Ramos**

**Nathan Ellis**

**Ronald Nowak Inspection Services**

**Shane Kemp**

**Sierra Commercial Plumbing**

**Southern Nevada Maintenance Engineers**

**Stantec**

**Stephen Walker**

**Steven Plyler**

**Thomas Winn**

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# Field Testing Temporary Assemblies

Properly field testing backflow prevention assemblies is an integral part of maintaining an effective cross-connection control program. Temporary assemblies like those found at construction sites or on mobile units like a portable reverse osmosis (RO) system used on dialysis machines also need to be tested accordingly. Some may conclude these temporary assemblies are used sporadically and may not be required to be field tested as often as permanently installed assemblies. Yet, it is important that all assemblies be field tested regularly and according to local regulations.

Most administrative authorities require that assemblies be field tested periodically. A Water Research Foundation Study (Report 90928) indicated that 94 % of water utilities in North America require assemblies to be field tested at least every twelve months.

In addition to the periodic testing, however, many administrative authorities require that assemblies be tested after they are put in service, moved or maintained.

As an example, Title 17 of the State of California Code of Regulations, in Section 7605 c and d states:

*Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with*

*the provisions of this Chapter. Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.*



Common places where temporary assemblies are installed are construction sites. Construction sites connect to a nearby public fire hydrant and use the water for construction purposes.

Typically the administrative authorities will require an assembly to be installed at the hydrant (along with a water meter). This will prevent any contaminants or pollutants from the construction site from getting into the potable water supply.

When assemblies are required on temporary services, there is the logistical problem of ensuring that they are working properly. Some regulations (such as the California regulation mentioned above) require that assemblies must be tested every time they are moved.

So water suppliers in California, for the most part, require that assemblies on temporary services be tested each time they are installed at a new location. This is to ensure the proper operation of the assembly each time it is put into use and, in the case of California, compliance with regulations.

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# Does a Failed Assembly Prevent Backflow?

Earlier in this issue, the importance of field testing temporary backflow prevention assemblies was addressed. But what if an assembly fails? Should it be removed immediately? Is there a danger to the potable water supply? Both are valid questions. However, in most cases when an assembly does not pass a field test its ability to prevent backflow remains intact.



As mentioned in the earlier article, some regulations require assemblies be tested each time they are moved, installed or repaired. For example, California's Title 17 includes a requirement that assemblies may not be put back into service, if they are not operating "as required."

Again, different administrative authorities have interpreted these types of regulations differently. A few require that assemblies that fail a field test stay out of service until it is repaired and passes the field test. Other administrative authorities allow the assembly to go back into service, provided the test indicated that the assembly is still preventing backflow, even though it may have failed the field test.

For example, a reduced pressure principle assembly with the relief valve opening at 2.5

psid, the first check holding at 4.8 psid and the second check holding tight would fail the criteria of the field test, because the field test procedure requires that the first check hold at a value of 5.0 psid or greater.

However, this assembly is still preventing backflow and there is no indication that it would have a catastrophic failure to the point of allowing backflow to occur. In this case, most administrative authorities would allow the assembly to remain in service, until repairs are made. There may, however, be some requirements as to how soon repairs must be made.

In either of these cases, it is important that those testing and installing the assemblies are familiar with the regulations and policies in the local jurisdiction in which they are working. The administrative authority having jurisdiction should be consulted if there are any questions regarding the local field testing protocols. ■

## Training Course Dates Notifications

Everyone is encouraged to sign up for training course dates notifications directly from the Foundation website or by following the direct link (<http://fccchr.usc.edu/requestcourses.html>).

Notifications are sent every month highlighting upcoming tester/specialists course and one day update seminars. And when a new course or one day seminar has been added everyone on the list is immediately notified.



## Field Testing **Temporary Assemblies** : continued

continued from **page 3**

Even though testing a temporary assembly each time it is installed may seem excessive, it is important. When assemblies are shut down and removed from the water line, there is a much greater chance that debris could be introduced into the assembly, because it has been opened to the atmosphere. Especially, when an assembly is in the area of construction, debris from the construction process can easily be introduced into the assembly. Therefore testing it again, once it is installed in a new location, ensures that the assembly's capabilities have not been compromised.



For mobile units that include truck mounted tanks like street cleaning trucks, dust control and spray rigs the Foundation has found most areas tend to use air gaps. An air gap ensures a physical separation between the water supply line and the receiving vessel.

Although the air gap is a very effective means of preventing backflow, it is not practical in every case; once potable water passes through an air gap into an open vessel, two things occur. Sanitary control of the water is lost, and the supply pressure is lost.

Should an assembly be mounted on the truck, routine field testing of the assembly would be necessary. The frequency of field testing might be tied to the overall usage of the tank fill line.

Some agencies test the assemblies on their trucks quarterly or monthly. However, if this is a private contractor's truck, then the regular testing of the assembly is hard to regulate. This is why most agencies seem to use an air gap fill line, since the air gap can be seen and verified when in use, without the need for field testing.

In the case of a portable reverse osmosis system, such as those found on dialysis machines, recommendations have been made to install a reduced pressure principle assembly (RP) prior to the RO unit feeding the dialysis equipment. The standards from the Association for the Advancement of Medical Instrumentation (AAMI) want to see the RP prior to the RO unit, and not after. Again, the frequency of use may suggest the frequency of field testing the RP.

Whatever the case may be regarding the frequency of field testing backflow prevention assemblies it is vital that all assemblies either permanently installed or temporary be field tested. Contact your local administrative authority for more information regarding field testing temporary or mobile assemblies. ■

### Upcoming One Day **Seminar Topics**

#### **Nov. 13: Field Test Procedures**

Discussions will include the differences between the Ninth and Tenth Edition field test procedures and diagnostic scenarios that may be causing a backflow preventer to fail during the field test procedure.

#### **Dec. 11: Recycled Water Shutdown Test**

Various testing methods including the pressure test, shutdown test and dye test will be discussed.

Sign up today at [fccchr.usc.edu](http://fccchr.usc.edu)

# 70 Years of the USC Foundation : continued

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Connection Control Research and Mr. E. D. Alterton and Mr. William Tibbetts as the initial laboratory technicians joined him.

For the next 20 years the Foundation made great strides in the field of cross-connection control.

In 1947 the original funding for the Foundation ran out and the original research team found work elsewhere since, during this time period, there was no regular funding for the operation of the Foundation.

But, fortunately for the Foundation, the School of Engineering had just secured the services of Dr. Kenneth C. Reynolds as Professor of City Engineering. Dr. Reynolds was named the second Director of the Foundation.



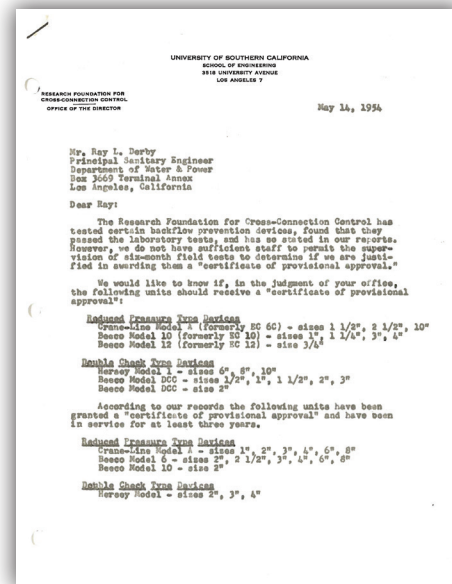
*Foundation Laboratory on USC Campus*

A hydraulic laboratory was constructed on the campus of the University, housing a large vacuum system for simulating backsiphonage conditions. Tests of various check valve designs were conducted in the laboratory.

However, much of the initial work conducted by the laboratory technicians was field testing a variety of existing backflow preventers and gathering data regarding their effectiveness in preventing backflow. This data was compiled as part of an initial document by the Foundation and published by the University's School

of Engineering as *Paper No. 5*. (Papers No. 1 through 4 produced by other departments of the School of Engineering were on subjects unrelated to cross-connection control.)

In 1948, *Paper No. 5*, the Foundation's first publication, reviewed the existing products used for backflow prevention, and contained a detailed set of design, material and operating specifications for double check valve devices and reduced pressure principle backflow prevention devices.



*The first List published in 1954*

For a product to comply with these specifications required that they not only successfully complete a set of laboratory tests (i.e., hydrostatic, flow rate versus pressure loss, etc.) but also exhibit acceptable performance under actual field conditions. The Field Evaluation was established to ensure that these health-protecting products worked under "real-world" conditions. The first *List of Approved Backflow Prevention Assemblies* was published in 1954 and it included ten assemblies.

Make sure to look for more about the Foundation's history in next month's Cross Talk. ■

*Look for more 'Celebrating 70 Years' in the next issue of Cross Talk, Fall 2014.*

# Approval of Backflow Preventers Brochure

Earlier this year the USC Foundation published the *Approval of Backflow Preventers* brochure to familiarize customers with the Foundation and its approval program for backflow prevention assemblies.

Initially, the Foundation mailed a copy of the brochure to state health agencies and made it available on its website for anyone to view ([fccchr.usc.edu/approval.html](http://fccchr.usc.edu/approval.html)).

Some members have asked the Foundation for additional copies to give to their customers or others in the industry to help them understand the USC approval process. Now, Members who wish to distribute the brochure may contact the Foundation and request copies free of charge.



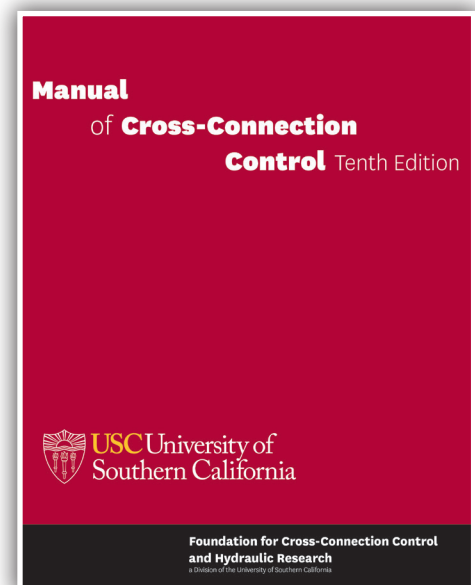
The brochure is printed on 8.5 x 4.25-inch high quality card stock. The brochure highlights the history, standards, and the approval program of the Foundation. Customers who wish to introduce the Foundation to colleagues and customers are encouraged to request copies from the Foundation Office. ■

## Tenth Edition Price Change

The *Manual of Cross-Connection Control, Tenth Edition* has been received well by the industry. Published in 2009, the *Tenth Edition* continues to be a best seller for the Foundation and as a result the manual now enters its third printing.

As the Foundation continuously evaluates costs involved in the creation of its products, it has become evident that a price increase will be necessary for the *Tenth Edition*. Once the second printing of the *Tenth Edition* becomes exhausted, the price of the manual will increase slightly.

Once the third printing of the *Tenth Edition* is in use, the Foundation member price for a single copy of the Manual will be \$80. This is more than a twenty-five percent discount from the non-member price of \$110. The changeover is expected to take place in early October. The *Tenth Edition* continues to be an excellent tool for those involved in backflow prevention and cross-connection control. ■



# Training

## Courses 2014/15

all courses in Los Angeles, CA unless noted

### Tester Course

20-24 October '14

12-16 January '15

4-8 May '15

13-17 July '15

### Specialist Course

26-30 January '15

23-27 March '15

27-31 July '15

### One Day Update Seminar

13 November '14

Field Test Procedures

11 December '14

**ADDED DUE TO POPULAR DEMAND**

Recycled Water Shutdown Test

## Social Media

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# Upcoming

## Events

Mid-Atlantic Cross Connection Control  
Conference (MAC-4)

Washington, D.C.

9 October 2014

Western Washington

Cross Connection Control Seminar

Tacoma, WA

22 October 2014

Northern California Backflow Prevention  
Association (NCBPA) General Meeting

San Ramon, CA

30 October 2014

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