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CALIFORNIA

*Foundation for
Cross-Connection
Control and
Hydraulic Research*

TALK

CROSS

Spring 2004

Field Modifications DC to a DCDA

Many have inquired of the Foundation regarding the field modifications of various backflow prevention assemblies. One of the most frequent requests asked is, "is it possible to convert a double check valve assembly into a double check detector assembly in the field?"

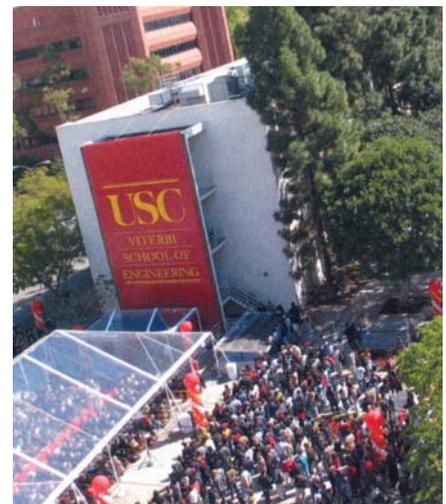


The conversion of a DC to a DCDA in the field is reasoned by many to be a very simple task. One can remove the Nos. one and four test cocks of a larger assembly and attach a bypass at those ports. As long as the bypass has a double check valve assembly and a meter, shouldn't everything work? In one sense the reasoning is correct. As long as there are two approved double check valve assemblies in parallel, that will provide the same level of protection as a double check valve assembly. So, the level of backflow protection is maintained. However, it is very unlikely that the newly created "DCDA" will operate as a DCDA.

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A New Era: USC Viterbi School of Engineering

Andrew J. and Erna Viterbi gave \$52 million to the University of Southern California, lending a name that has become a legend in information theory, telecommunications and entrepreneurship to the university's School of Engineering.



"We are deeply grateful to Andrew and Erna Viterbi for this extraordinary gift, which will forever associate USC's engineering school with one of the most illustrious engineering names of our times," said USC President Steven B. Sample in announcing the gift.

"As an academic, an entrepreneur, a corporate leader, an alumnus of this university and a member of our Board of Trustees, Andrew Viterbi has

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Foundation Membership

The Foundation's Membership Program provides many benefits to the Members of the Foundation. These include: twenty percent discount on Foundation Training Courses for any employee of the Member company/organization, the *List of Approved Backflow Prevention Assemblies*, printed quarterly, and access to the up-to-the-minute version of the List for those Members with Internet access.

Members are encouraged to call the Foundation with technical questions. The 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've become members of the Foundation this past quarter:

A 2 Z Plumbing
A.R.I.
Adam's Backflow
American Automatic Sprinkler
American AVK Company
Arizona West Fire & Safety LLC
Construction Education Foundation
DBL Enterprises
Deetz, Inc.
Edgewood Water Co.
Edwards Backflow Testing & Repair
Govatos Professional Corp.
Great Basin Backflow
Hydro-Logic Plumbing Co.
Hydro-Pure
J. R. Simplot
Kapco Engineering
KSL Services
Lamac Engineering Co., Inc.
Mactec, Inc.
Maryland Environmental Service
Tomlin Consulting
Premier
Sinacori Plumbing
Stetson Engineering, Inc.
University of California - Riverside Extension
Walker Backflow Services, LLC
Warner Brothers Studios Facilities

Contacting the Foundation

Mailing Address:

Foundation for Cross-Connection Control and Hydraulic Research
University of Southern California
Kaprielian Hall 200
Los Angeles, CA 90089-2531

Phone:

866 545 6340 Toll Free
213 740 2032

FAX:

213 740 8399

e-mail:

fccchr@usc.edu

Web Site:

www.usc.edu/fccchr

The Foundation accepts Purchase Orders via mail or fax and credit card orders (Visa, MasterCard, Discover) via telephone and the Web.

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Manual Update

The Tenth Edition of the *Manual of Cross-Connection Control* slowly but surely presses on towards publication. Unfortunately, with many technical issues still to be resolved, it is not possible to give a precise publication date. As soon as these issues are resolved, we will proceed with publication. We are hoping to have the technical issues resolved within the next several months.

There are, however, some changes that are taking place in the Tenth Edition that Members may want to be aware of.

This edition of the Manual will have a brief history of backflow prevention and cross-connection control. For those involved in cross-connection control, this has always been an interesting subject. This chapter specifically discusses early backflow incidents in the United States and the very early cross-connection control programs that were started as a result of these incidents.

The Manual, for the first time, will include a section covering some general hydraulics and an introduction to the concepts of backflow and cross-connection control. This information has been very popular in Foundation Training courses for years, however, it was never included in the Manual. These additions will help make the Manual a more complete training tool. The basic hydraulics will include general information on backflow to help people understand what backflow is and how it occurs. This

will help students in a training course get up-to-speed and understand background information before digging into field-testing.

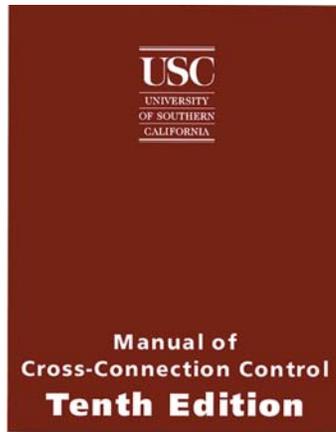
A chapter on the basic elements of a cross-connection control program will be included to help those involved in administering a cross-connection control program know what they need to include

in the program and how to get started. This chapter will summarize some of the information conveyed in the Foundation's *Course for the Training of Cross-Connection Control Program Specialists*. This chapter will discuss the administrative aspects of a cross-connection control program, such as:

- The legal authority needed to carry out a program
- The requirement for approved backflow prevention assemblies
- The need for certified testers and cross-connection control program specialists
- Records of backflow assembly tests and site surveys
- The important need for education and training

In order to detail some of the other work done by a cross-connection control program specialist, another chapter is being added which will help the specialist carry out a cross-connection control site survey. This information will walk the specialist through some suggestions for preparing for a site survey how to conduct the survey and also how to handle non-compliance.

Overall these new chapters in the Tenth Edition of the Manual will make it a



The Manual, for the first time, will include a section covering some general hydraulics and an introduction to the concepts of backflow and cross-connection control.

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Member Password

For several years the Foundation has offered access to the *List of Approved Assemblies* on the Internet to its members. By providing the List on-line, members have been given the opportunity to stay current with all new approvals and, in the process, it's become a valuable tool for anyone involved in cross-connection control.

Providing the List immediately to its members has always been a priority for the Foundation. All members are mailed a copy of the List every three months and all have access to it from the Foundation website (www.usc.edu/fccchr).

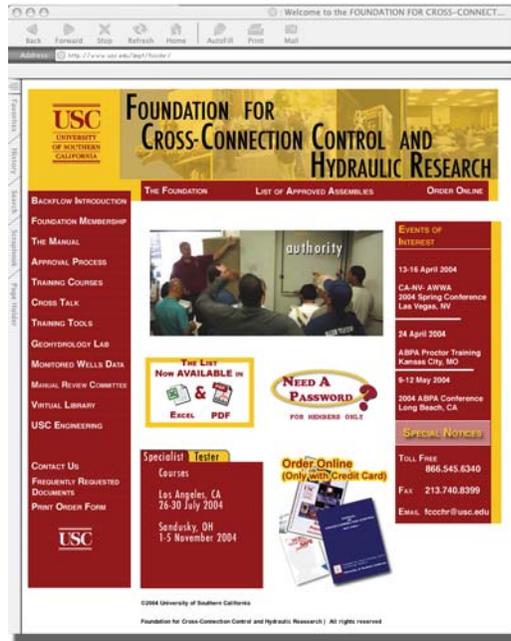
Organizations, like municipalities, that have a membership with the Foundation are encouraged to inform their employees that those who need access to the list are welcome to click on the 'Need A Password' link on the Foundation website. All an employee needs to know is the following information: Company Name, Contact Name and provide an e-mail address where the password can be sent. The Foundation will then verify that the membership is current and e-mail a password to the e-mail address submitted.

Furthermore, it's vitally important that all members of the Foundation go to the website and click on the 'Need A Password' link to ensure that they will receive the latest password information as it becomes available. The Foundation from time to time

does reset the password for its members, and therefore it is essential that all members follow the above-mentioned steps to prevent any disruption in list accessibility.

If you have any questions about password availability, feel free to email the Foundation at

fccchr@usc.edu or you may call the office at our toll-free telephone number 866.545.6340. ■



By providing the List on-line, members have been given the opportunity to stay current with all new approvals and , in the process, it's become



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a valuable tool for anyone involved in cross-connection control.

NOW AVAILABLE

Working Together for Safe Water DVD

* Includes English and Spanish Subtitles

MEMBER PRICE \$25

E. Kent Springer Award Recipient

For nearly 20 years, Professor E. Kent Springer headed the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research. Springer was responsible for establishing the Foundation's Field Evaluation Program for the evaluation of backflow prevention assemblies — the only full-time program of its kind in the world — and he developed the Foundation's five-day course for the training of backflow prevention assembly testers.

While teaching at the University of Wisconsin as an instructor and later as an assistant professor, he earned a master's degree in mechanical engineering in 1945. He joined the USC Viterbi School of Engineering as an associate professor of mechanical engineering in 1946 and became a full professor there in 1951. He was recognized as an outstanding teacher and gave much time to being the advisor to graduate programs at Edwards Air Force Base and at NASA, with students including Neil Armstrong and Norman Schwarzkopf.

He became interested in the work of the Foundation in the mid 1950's and co-authored the document USCEC 48-101, published in 1959, which became the basis for the 1st Edition of the *Manual of Cross-Connection Control*. Professor Springer served as director of the Foundation for Cross-Connection Control and Hydraulic Research from 1965 until his retirement in 1984. He passed away on 4 December 1995, in Pasadena. He was 83.

It is in honor of Professor E. Kent Springer that the Southern California Chapter of the American Backflow Prevention Association has established an award in his name.

The first annual E. Kent Springer Award was presented to Paul Schwartz, P. E. at the American Backflow Prevention Association International Conference on 10 May 2004. On hand to make the presentation was Bruce Springer, P. E., Professor



Springer's son. Bruce Springer was a classmate of Paul and they worked together as student engineers at the Foundation Laboratory. Paul earned his B.S. in Mechanical Engineering from the USC Viterbi School of Engineering and has been the Chief Engineer of the Foundation for over 25 years. The Foundation is honored that Paul Schwartz was named as the first recipient of the E. Kent Springer award. ■

Manual Update

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much more versatile training tool. The illustrated field test procedures will still be there for those desiring to learn to field test backflow preventers, but they will also have the opportunity to gain the basic information on hydraulics and backflow from the new manual.

Overall, the additions, the manual will be a much more effective tool in classrooms and as a reference for those already involved in cross-connection control. ■

**Springer was
responsible for
establishing the**

Foundation's Field

Evaluations Pro-

gram for the

evaluation of

backflow preven-

tion assemblies —

the only full-time

program of its

kind in the world...

A New Era

continued from page one

demonstrated intellectual dexterity, creativity, and spirit in every arena,” Sample continued. “The Viterbi’s gift to USC will serve as a powerful catalyst for bold research and innovation in an engineering school that is experiencing a rapid ascent.”



Engineering dean C.L. Max Nikias added, “To have our School bear the name of the creator of the Viterbi Algorithm and the co-founder of Qualcomm Corporation will be a source of tremendous pride for our faculty, students and alumni, Viterbi has one of the most brilliant careers in engineering history — and he is a USC alumnus, one of our own.”

The USC Viterbi School of Engineering is the only school in California, and one of only four in the nation, to house two active National Science Foundation supported Engineering Research Centers. In 2003, USC bested a field of 72 to become the site of the Department of Homeland Security’s first Center of Excellence,

The Viterbi School now enrolls 1,858 undergraduate and 3,325 graduate students, including 915 Ph.D. students and 2,410 masters degree candidates. About 800 of the masters degree students are pursuing their studies through the school’s innovative Distance Education Network. ■

The Foundation at the ABPA Conference

The 20th Annual American Backflow Prevention Association (ABPA) International Conference & Tradeshow was held in Long Beach, CA on May 9-12, 2004. More than 300 people attended the conference. The Foundation staff is actively involved every year in this conference. Several of the Foundation staff made presentations at the conference and the Foundation had a booth on display at the tradeshow.

Dr. Jiin-Jen Lee, Professor of Civil and Environmental Engineering and Director of the Foundation spoke to at a joint session on “Understanding Hydraulics and How Backflow Happens.” Mr. Patrick Sylvester, the Foundation’s Marketing/Communications Manager spoke to the joint session concerning the status of the 10th Edition of the Manual and highlighted the new features in the upcoming edition. A summary of this



information can be found on page three. Mr. Henry Chang provided a demonstration of the testing procedures for the RP, DC, PVB and SVB. He also made a presentation on “Common Errors in Field Testing Backflow Preventers.”

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“...To have our School bear the name of the creator of the Viterbi Algorithm and the co-founder of Qualcomm Corporation will be a source of tremendous pride for our faculty, students and alumni...”

DC to a DCDA

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One of the requirements of the double check detector assemblies is that all water flows exclusively through the bypass arrangement and registers accurately on the meter when flows are three gallons per minute or less. In order for this to occur, the components of the assemblies are carefully matched. The springs of a DCDA will not necessarily be the same as the springs in the corresponding DC. It should be noted that even if the meter does register, this doesn't mean that it is registering accurately.

Additionally, if the administrative authority involved requires a USC approved assembly, any field modification invalidates the Foundation's approval. The only exceptions would be the replacement of a bypass meter with one that is specifically approved and shown on the List of Approved Assemblies for the size and model of assembly needing the replacement. Also shutoff valves which are specifically designated for use on each model and size of backflow preventer shown on the list may be used to replace shutoff valves on currently approved assemblies.

It is always good to keep in mind that any modification to any backflow preventer will likely invalidate the Foundation's approval. If unsure, please contact the Foundation office.

■

ABPA Conference

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In Dr. Lee's presentation, he presented a brief summary of the hydraulic principles governing flow in piping networks, namely continuity, energy and momentum principles. He demonstrated how the interplay of hydraulic principles such as changes in system configurations and sudden changes in water demands can drastically alter the system pressure and flow directions. In many situations, such change could cause the system pressure to become sub-atmospheric as well as effecting reversals of flow. Thus system protection through cross-connection control is needed to protect the integrity of the water supply.

Dr. Lee also presented the essential elements (or the ABCs) of a comprehensive cross-connection control program, which include; Authority, Backflow preventers, Certified personnel, Defensible and detailed records and Education and training of professionals and the general public.

In Mr. Chang's presentation, he used a self-contained demonstration apparatus and showed step by step the testing procedures of each of the backflow preventers used in cross-connection control. This includes DC (double check valve assembly), RP (reduced pressure principle assembly), PVB (pressure vacuum breaker) and SVB (spill-resistant vacuum breaker).

He also summarized the commonly committed errors in field-testing procedures. The attendees thus benefited from a wealth of practical information accumulated by the Foundation throughout the last 60 years of work in cross-connection control. ■



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Training Courses

Tester Course

Los Angeles, CA
12-16 July 2004

Incline Village, NV
9-13 August 2004

Honolulu, HI
4-8 October 2004

Specialist Course

Los Angeles, CA
26-30 July 2004

Sandusky, OH
1-5 November 2004

Upcoming Events

*AWWA- Annual Conference
& Exposition*
•Orlando, FL
13-17 June 2004

*ABPA Hawaii Chapter
Pacific Rim Conference*
•Honolulu, HI
29 Sept.- 1 Oct. 2004

*SCWUA Field Trip to
Foundation Laboratory*
•Los Angeles, CA
26 August 2004

*BCA Football Classic
USC vs. Virginia Tech*
•Landover, MD
28 August 2004

*CA/NV AWWA
Fall Conference*
•Sacramento, CA
12-15 October 2004



**Foundation for Cross-Connection
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University of Southern California
Kaprielian Hall 200
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