Cross Talk

UNIVERSITY OF SOUTHERN CALIFORNIA

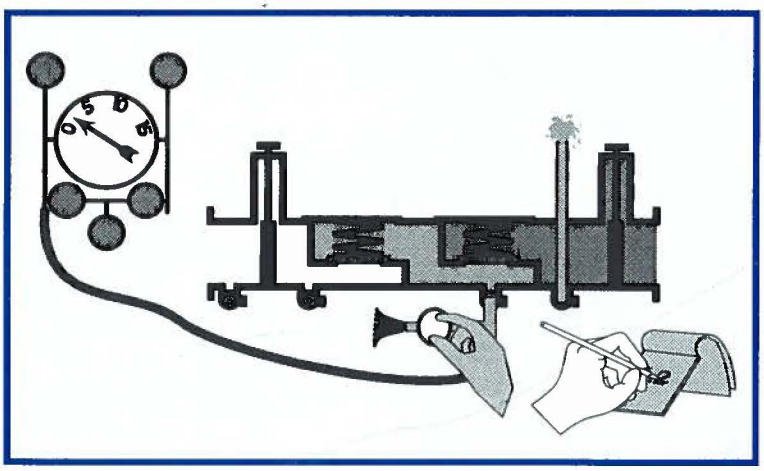
FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH

Volume 12 / Number 1 / February 1994

Ninth Edition Published

After almost three years of revisions, the new Manual is now available

The Ninth Edition of the *Manual of Cross Connection Control* has been published. This Ninth Edition of the Manual is the most comprehensive revision of the Manual since the publication of the First Edition in 1960. The Manual Review Committee spent almost three years working on various improvements.



The most noticeable improvements in the Manual may be found in Section Nine, *Backflow Prevention Assembly Field Test Procedures and Gage Accuracy Verification.* The field test procedures have been changed to illustrated procedures. Every step of the procedures includes an illustration that shows which needle valves on the gage should be open and where the hoses should be attached. This illustrated procedure makes the learning process much more simple for those learning the testing procedures.

The Foundation used this new Manual in the *Course for the Training of Backflow Prevention Assembly Testers* offered during the first week of January. The students found it very easy to follow.

Another major change in Section Nine is the change in testing procedures for the double check valve assembly. Before the publication of the Ninth Edition, the Foundation used a backpressure test for the field test on double check valve assemblies. The Ninth Edition of the Manual uses a direction of flow test to assure the check valves hold at least one pound per square inch (psi) in the direction of flow. This one psi design requirement for the backflow preventers is nothing new This requirement was first published in 1948. The check valves of double check valve assemblies must hold this one psi in the direction of flow. This is determined during the laboratory evaluation. Additionally, the Foundation has

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50 Years

The Foundation is now celebrating its fiftieth Anniversary. It seems appropriate to discuss briefly the history of the Foundation and list some of the historical highlights.

In 1943 a cross-connection was discovered to be the cause of harbor water being pumped into the fresh water tanks of a supply ship in the Los Angeles Harbor. Following an investigation to determine how this could happen, and recognizing the

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Highlights

Membership

The Foundation Membership grew again in this last quarter. The newest Members are listed below. The Foundation encourages Members to take advantage of the many benefits of Foundation Membership. Additional copies of the *Manual of Cross-Connection Control* are available to Members at a 25% discount. Members receive a 20% discount on training courses and 25% discounts on the Training Tools. Members are also encouraged to contact the Foundation office with any questions regarding cross-connection control.

A.G. Vento & Sons
Alstons Manor
City of Angola
Apollo Plumbing
Arkansas Plumbing Inspector's Assoc.
Backflow Prevention Supply Inc.
City of Brentwood
Brownson Technical School
California Correctional Institution
Central Nevada Utilities Co.
Central Service & Supply
Cross Connection Foundationi of the Niagara Frontier
City of Culver City
Damacio De Los Rios Nevarez
Des Moines Water Works
Donner Summit P.U.D.
City of Douglas
Down to Earth Sprinklers
The Earl's Plumbing, Inc.
Elliott's Sprinkler & Landscape
Fox Sales, Inc.
Freemont Department of Utilities
Fulton Backflow Management Services
Gatlinburg Utility Department
City of Golden Colorado - Env. Serv.
Hydrotech Pureflo
Indiana Dept. of Environmental Management
Jacot Plumbing, Inc.
City and Borough of Juneau, Alaska
Joe Saubert, Inc.
Kaiser Hospital
City of Kamloops
Marine Corps Mountain Warfare Training Center
Martin Friebert
Norris-RBAAP
State of Oregon
P.T. Morimura & Associates
Phelps Dodge Morenci, Inc.
Pima Community College
ASETT Center
Po River Water & Sewer Co.
Premier Plumbing
Quad Three Group, Inc.
City of Redding - Water Div.
Roadrunner Fire & Safety
City of Salisbury
City of Show Low
Steffen Plumbing
Tamsberg Plumbing Co. Inc.
Tokay Software
City of Unalaska, Alaska
V.J. Stanley, Inc.
Ventura College Bookstore
Village Backflow Prevention Service
Washington State Dept. of Health
Washoe County Utility Division
Wasilla, City of
Westinghouse Electric Corporation
WILLCO, Inc.
Gary Zeiders

USC RECYCLED PAPER

Cross Talk is published by the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research for its Members. Additional Copies are available to the Members upon request. (213) 740-2032

DELAYED DELAYED DELAYED

Many Foundation Members have ordered additional copies of the Ninth Edition *of Manual of Cross-Connection Control*. The initial shipment of Manuals the Foundation received from the printer was sent to the Foundation Members and used to fill some of the orders received. The rest of the order was damaged and had to be re-printed. In fact, some of the Manuals shipped may have not been assembled correctly. If you have a problem, please contact the Foundation office. The Manuals were re-printed two more times and still problems persisted. Ultimately the order had to be canceled and placed with another printer. The Foundation staff apologizes for any problems these delays have caused. By the time you receive this issue of *Cross Talk,* the Manuals will have been delivered to the Foundation and, in turn, shipped to those with pending orders.

This problem has also caused a delay in the this issue of Cross Talk and the next issue of *the List of Approved Backflow Prevention Assemblies.* The next issue of the List can be expected in mid-March. We would like to thank those of you who have been awaiting additional copies of the Manual for your patience. It was a great disappointment each time the Manuals were delivered with yet another problem, knowing that we would not be able to get the Manuals into the hands of those who needed them. Please accept our apologies.

☑ Check Your Manual!

The initial shipment of the Ninth Edition of the *Manual of Cross-Connection Control* went to the Members of the Foundation. Some of these Manuals have been discovered to be defective. Please check your copy of the Manual carefully. Check to make sure the cover is securely attached and all of the pages are included. If you experience a problem, please send the Manual back to the Foundation Office along with your shipping address. The Foundation will replace the Manual immediately.

The Ninth Edition Published

Continued from page 1

been testing the check valves which are under field evaluation to assure they meet this requirement for several years.

The Foundation taught this new testing method during the *Course for the Training of Backflow Prevention Assembly Testers* in January. The students seemed to grasp this method much more easily than the previous method. The illustrations make it easy for the tester to comprehend the new testing procedure, since each step is illustrated showing the tester which valves are open and the location of the gage hose(s).

The Ninth Edition of the Manual is a great improvement over the Eighth Edition. Members receive one complimentary copy of the Manual and additional copies are available at a twenty-five percent discount.

Tester Course

The Foundation Laboratory
16 - 20 May 1994
11 - 15 July 1994
3 - 7 October 1994
Charleston, SC
25 - 29 April 1994
Kauai, HI
13 - 17 June 1994
Incline Village, NV
1 - 5 August 1994

Non-Members $750.00
Members $600.00

Program Specialist Course

USC Campus
18 - 22 July 1994
Incline Village, NV
21 - 25 March 1994
Monterey, CA
12 - 16 September 1994

Non-Members $800.00
Members $640.00

Courses may be added throughout the year. Please contact the Foundation office for information on courses in your area or for an application for the next USC Training Course. You may also send a hard copy of a purchase order or a check to the Foundation office to reserve a space. Please be advised that some of these courses fill six to eight weeks in advance.

A Purchase Order may be sent via FAX to the Foundation office at (213) 740-8399 or call (213) 740-2032 for more information.

Fifty Foundational Years

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danger posed to the potable water distribution system of the city, a small group of concerned citizens decided that something constructive must be done. Feeling that the unbiased efforts of an educational institution would better serve the ultimate aim of protecting the water supply system, this group approached the University of Southern California requesting a research group be established with the specific charge of working on this problem. After several conferences, this group worked out an agreement with the University; and, one of their members, who wished to remain anonymous, gave the University a modest sum with which to establish a laboratory and employ a team of researchers. Thus, in 1944, the Foundation for Cross-Connection Control Research was established by the Trustees of the University of Southern California. The name has since been changed to the Foundation for Cross-Connection Control and Hydraulic Research.

During this initial period a small laboratory was built behind the engineering building on the University Campus. The Foundation thus began drafting definitions and specifications covering cross-connection control and the assemblies required for the control of these problems. This small laboratory served the Foundation until it was demolished in 1962 to make room for a new engineering building.

1944-The Board of Trustees of the University of Southern California establishes the Foundation.

1948-Paper No. 5, the Foundation's first publication, including testing procedures and specifications for double check valve assemblies and reduced pressure principle assemblies, is published.

1959-USCEC 48-101 is published updating Paper No. 5.

1960-The *Manual of Cross-Connection Control, Recommended Practice* is published.

1962-The original laboratory of the Foundation is demolished to make way for a new engineering building on the USC Campus. Laboratory work is performed by contracting with local pump manufacturers for use of their facilities.

1964-Professor E. Kent Springer assumes Directorship of the Foundation.

1965-The *Manual of Cross-Connection Control, Recommended*

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Manual Available

The Ninth Edition of the Manual of Cross-Connection Control has finally been published and is available for purchase. Foundation Members receive a 25% discount from the list price of the Manual. Manual Pricing is as follows:

Members	**$36.00**
Non-Members	**$48.00**

Manuals are typically shipped within three days of receipt of the order. With the printing problems and delays there is quite a backlog of orders to get through. Manuals may take as long as two weeks to receive once the order has been received. Once the backlog of orders has been filled, Manuals will be shipped within three days of receiving the order. To order Manuals a purchase order or check may be sent to the Foundation office. To expidite the order a purchase order may be sent via FAX.

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Fifty Foundational Years

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Practice, Second Edition is published.

1966-The *Manual of Cross-Connection Control, Recommended Practice,* Third Edition is published.

1967-With the help of the Southern California Water Utilities Association, the Foundation's Membership Program is established assuring a financial base for continued operation.

1968-The Foundation's current laboratory, an old pumping station of the Los Angeles Department of Water and Power, becomes operational.

1969-The *Manual of Cross-Connection Control,* Fourth Edition is published.

1970-Foundation offers the first five day *Course for the Training of Backflow Prevention Assembly Testers.*

1974-The *Manual of Cross-Connection Control,* Fifth Edition is published.

1979-The *Manual of Cross-Connection Control,* Sixth Edition is published.

1982-The *Manual of Cross-Connection Control,* Revised Sixth Edition is published.

1985-Professor J. J. Lee assumes Directorship of the Foundation. The Manual of Cross-Connection Control, Seventh Edition is published.

1988-The *Course for the Training of Cross-Connection Control Program Specialists* is established. *The Manual of Cross-Connection Control,* Eighth Edition is published.

1989-The film *Working Together for Safe Water* is produced.

1993-The *Manual of Cross-Connection Control,* Ninth Edition is published.

Over the years the Foundation has grown to meet the needs of its many Members in different ways. The Foundation continues to provide more services and products which will help those involved in cross-connection control to more effectively carry out their work.

Currently, the Foundation has several different means of serving those involved in cross-connection control: the Manual of Cross-Connection Control, the Foundation's Training Program, the Evaluation Program for backflow prevention assemblies, the Membership Program, and various training tools are some of the ways the Foundation provides information and services to those dedicated to protecting the potable water supplies through cross-connection control.

Video

Working Together for Safe Water

This fifteen minute video is designed to explain how backflow can occur and what can be done to prevent it. It is ideal for introducing nontechnical groups or students to the concepts of backflow prevention. It is especially helpful in explaining these concepts to water consumers which may not fully understand why they must meet certain cross-connection control requirements.

Contact the Foundation office for an order form or send a hard copy of a purchase order (POs may be FAXed) or a check to the Foundation office to receive a copy of the Film/Video. California residents must add appropriate sales tax.

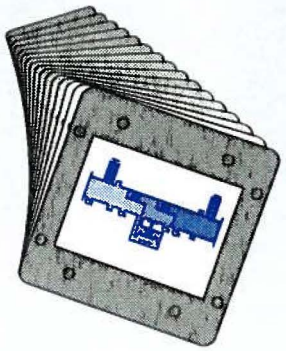
VHS Video

Members:	$60.00
Non-Members:	$80.00

16mm Film

Members	$150.00
Non-Members	$200.00

The Essentials of Cross-Connection Control
A Graphic Slide Presentation



This set of sixty color graphic slides can be used for any length or type of presentation. The slides come with a three-ring binder which includes explanations of each slide. Your own photographic slides can be added at the appropriate points to help explain certain details or to relate theoretical concepts to specific local situations.

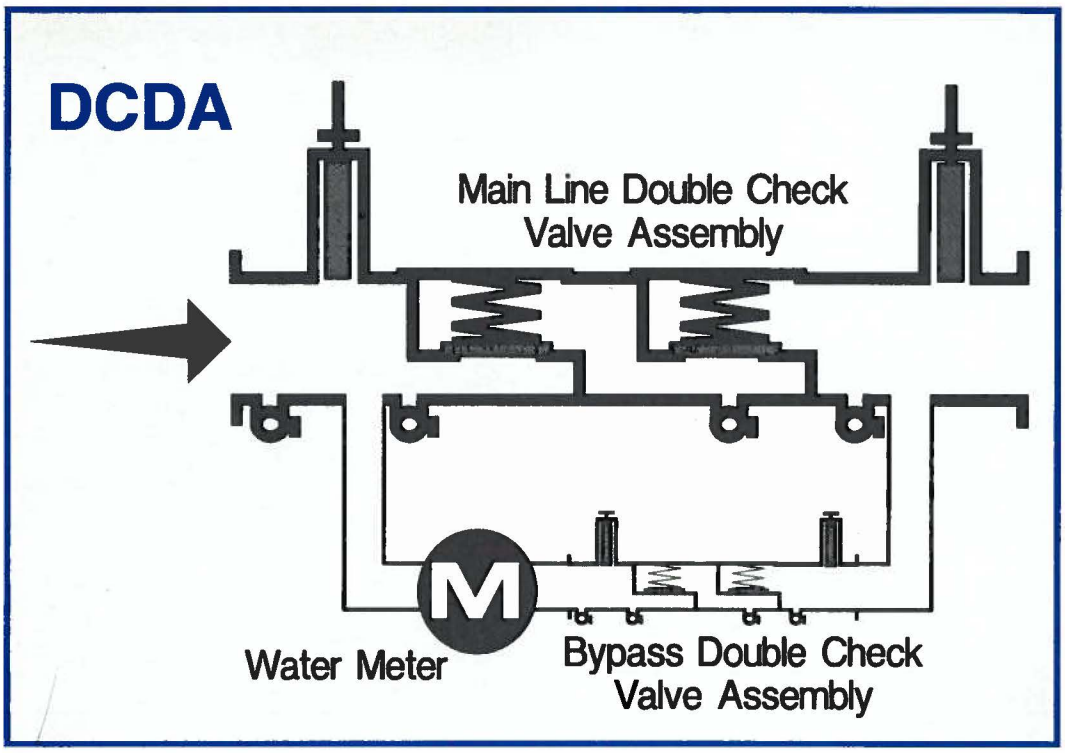
For shorter presentations, slides can be removed so you can cover only the information you want to convey in the time allotted.

Member Price
$100

Non-Member Price
$135

Testing Double Detector Assemblies

The Ninth Edition of the Manual of Cross-Connection Control includes testing procedures for the double check detector assembly (DCDA) and the reduced pressure principle detector assembly (RPDA). With the new testing procedures for the double check valve assembly, the tester may notice some interesting test results. The DCDAs are designed to cause all flows up to at least three gallons per minute (GPM) to flow only through the bypass assembly and register accurately on the water meter. Once the flow increases above this *crossover point,* the mainline backflow preventer will open and allow water to flow through the mainline assembly. The water meter will still register, but not accurately.

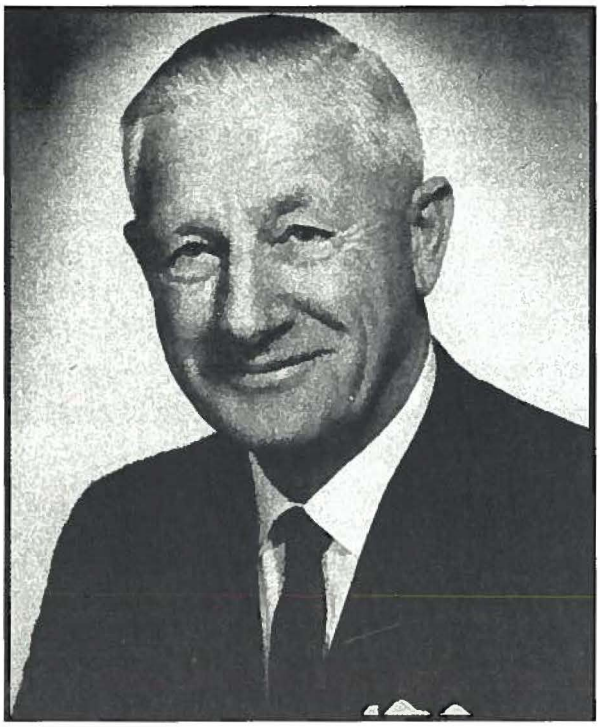


In order to force the water through the bypass arrangement, the pressure loss across the mainline assembly must be higher than that of the bypass arrangement. This is because water will flow through the path of least resistance. Since the check valves of double check valve assemblies must hold at least one pound per square inch (psi) in the direction of flow, the spring loading on all of the check valves within the assembly are similar. The tester may notice in many of the detector assemblies a greater spring loading than expected, or greater than the comparable model double check valve assembly. This is a characteristic built into the assembly which causes the water to flow through the bypass exclusively until the higher flow rate (at least three GPM) is reached.

In some cases the first check valve of the mainline assembly may have a higher spring loading. In other cases, the second check may have a higher loading. It is possible that both check valves of the assembly have high loadings and, therefore, may have readings slightly above the one psi minimum required in the specifications for double check valve assemblies and DCDAs. The tester should be aware of the fact that different models may have different characteristics. However, the minimum specifications are the same for all double check valve assemblies and DCDAs. Each check valve must hold at least one psi in the direction of flow.

The same principle occurs in the RPDAs. However, the first check valves of the RPDA's are already loaded much higher than those of the double checks because the RPDAs have a higher loading on the first check. Again, the RPDAs may have an even higher loading on the first check of the mainline assembly. Or, in many cases, the second check of the mainline assembly may have an increased load. If this is the case, the tester may never notice a difference unless the second check of the mainline reduced pressure principle assembly is tested for its static pressure drop in the direction of flow. (This testing procedure is shown as an optional test in the *Manual of Cross-Connection Control* - Ninth Edition in the Appendix under Section A.2.2.) If this field testing procedure is used, the tester may notice a slightly higher reading than that typical of the second check valve of an RPDA. This is simply part of the design characteristics and should not be considered abnormal.

Ninth Edition Dedicated to Walter Weight and William Whiteside



Walter Weight

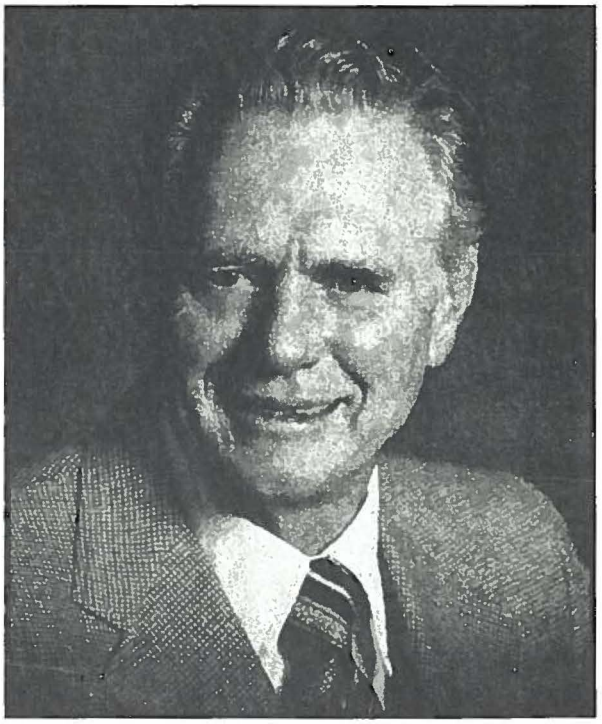
Each edition of the *Manual of Cross-Connection Control* is dedicated to a person or persons who have contributed greatly to the advancement of cross-connection control. This Edition of the Manual has been dedicated to two outstanding pioneers in the field of cross-connection control, Mr. Walter O. Weight and the late Mr. William Whiteside.

Walter Weight has been involved in cross-connection control since the early 1940s. He was instrumental in securing the Foundation's present laboratory in the mid 1960s. Walter was the first person in the American Water Works Association to be recognized for recruiting one thousand new members and he received the *Platinum Award* for this achievement. He also received the highly esteemed *Fuller Award* for his many contributions to industry.

Walter was instrumental in setting up the Foundation's Membership Program. As president of the Southern California Water Utilities Association, he encouraged many of its Members to contribute to the work of the Foundation. The first check was presented to Dr. Norman Topping, then President of USC. This $10,000 gift began the Foundations Membership Program. At ninety-seven years old Walter is still getting more people interested in providing a safer water supply.

William Whiteside became active in the American Water Works Association in 1950. He was elected as the Chairman of the California/Nevada Section of the AWWA in 1976. He also served as a Director to the National Board of the American Water Works Association until 1981. In 1972 he received the *Fuller Award* for his outstanding contributions to the water works industry. Mr. Whiteside served as a member of the Foundation's Board of Directors from 1966 until 1991. He tirelessly contributed time, wisdom, and experience to assure the continued success of the Foundation.

In 1991, in memory of William Whiteside and his great contributions to the water industry and the field of cross-connection control, his friends established the *William Whiteside Scholarship Fund* at the University of Southern California. This is an endowment fund designed to perpetuate the scholarships. Each year scholarships are awarded to outstanding USC students involved in water related fields. For information on contributing to this fund, contact the Foundation office.



William Whiteside

Calendar of Events

This calendar shows some of the activities which the Foundation is currently planning on participating in. For more information contact the Foundation office.

16 February 1994 - Western States Symposium Association Meeting, Buena Park, CA

23 February 1994 - Southern California Chapter American Backflow Prevention Association Ninth Edition Update, San Marcos, CA

24 February 1994 - Orange County Cross-Connection Control Group - Ninth Edition Update, Anaheim, CA

18 - 19 March 1994 - Michigan Chapter American Backflow Prevention Association, East Lansing, MI

21 - 25 March 1994 - Program Specialist Course, Incline Village, NV

20 - 22 April 1994 - CA/NV Section AWWA Spring Conference, Sacramento, CA

25 - 29 April 1994 - Tester Course, Charleston, SC

1 - 4 May 1994 - American Backflow Prevention Association, International Conference, Knoxville, TN

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