

# NORTH MARIN WATER DISTRICT

## STANDARD SPECIFICATIONS

### SECTION 15112 BACKFLOW PREVENTION ASSEMBLIES

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

This section includes materials, installation, and testing of various backflow prevention assemblies including reduced pressure principle detector backflow prevention assemblies; double check detector backflow prevention assemblies; reduced-pressure principle backflow prevention assemblies and double check valve assemblies. Air gap type backflow prevention is not covered in this Standard Specifications. For District managed capital improvement projects, this section may be modified as needed to reflect the needs of a specific project.

##### 1.02 DEFINITIONS

Wherever the following terms or abbreviations occur in this section, the intent and meaning shall be interpreted as follows:

- A. **Backflow Prevention Assembly (BPA)** means a mechanical assembly designed and constructed to prevent backflow, such that while in-line it can be repaired and its ability to prevent backflow, as designed, can be tested or, for an air gap (AG), inspected and evaluated
- B. **Cross-connection** means any actual or potential connection or structural arrangement between a public water system, including a piping system connected to the public water system and located on the premises of a water user or available to the water user, and any source or distribution system containing liquid, gas, or other substances not from an approved water supply
- C. **Double check detector backflow prevention assembly (DCDA)** means a double check valve backflow prevention assembly that includes a bypass with a water meter and double check backflow prevention assembly, with the bypass's water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow. This type of assembly may only be used to isolate low hazard cross-connections.
- D. **Reduced pressure principle backflow prevention assembly (RP)** means an assembly with two independently acting internally-loaded check valves, with a hydraulically operating mechanically independent differential-pressure relief valve located between the check valves and below the upstream check valve. The assembly shall have shut-off valves located upstream and downstream of the two check-valves, and test cocks to enable accurate field testing of the assembly.
- E. **Reduced pressure principle detector backflow prevention assembly (RPDA)** means a reduced pressure principle backflow prevention assembly that includes a bypass with a water meter and reduced pressure principle backflow prevention assembly, with the bypass's water meter accurately registering flow rates up to two gallons per minute and visually indicating all rates of flow

### 1.03 REFERENCE STANDARDS

The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise called for.

State of California

Department of Health Services Division of Drinking Water and  
Environmental Management, Approved Backflow Prevention Assemblies  
for Service Isolation  
Environmental Protection Agency, State Water Resources Control Board,  
Cross-Connection Control Policy Handbook Standards and Principles for  
California's Public Water Systems

AWWA C510 - Double Check Valve Backflow-Prevention Assembly  
AWWA C511 - Reduced-Pressure Principle Backflow-Prevention Assembly  
AWWA M14 - Recommended Practice for Backflow Prevention and Cross-Connection  
Control

### 1.04 OTHER REFERENCES

The publication listed below, although not an adopted standard or code, is referenced herein as a recognized guidance manual for the materials and procedures described herein. Reference shall be made to the latest edition.

Manual of Cross-Connection Control, University of Southern California (USC) Foundation for Cross-Connection Control and Hydraulic Research

### 1.05 RELATED WORK SPECIFIED ELSEWHERE

Agencies of Jurisdiction Rules and regulations regarding "Cross Connection Control and Backflow Prevention"

NMWD Standard Drawings

NMWD Standard Specifications 02223, 03300, 09910, 15000, 15041, 15044, 15056, 15057, 15061, 15064 and 15100.

### 1.06 SERVICE APPLICATION

- A. Reduced pressure principle backflow prevention assemblies shall be required on all commercial and industrial water services at the service connection.
- B. Reduced-pressure backflow prevention assemblies shall be required on dedicated irrigation services where served by potable water at the service connection.
- C. Reduced-pressure backflow prevention assemblies shall be required on potable water services where recycled water, well water or any other water supply is served to the same property.
- D. Reduced pressure principle backflow prevention assemblies shall be required at all points of connections to District sources at construction sites.

- E. Double check detector assemblies shall be required on all fire services. Depending on the degree of hazard, as determined by the District, an RPDA shall be required. Examples include but are not limited to chemical additives or where delivery of auxiliary water for fire suppression systems.
- F. The District shall be the final authority as to the location, installation, and type of backflow prevention assembly required.

#### **1.07 GENERAL DESIGN CONSIDERATIONS**

- A. The Design and construction of the backflow prevention assembly shall meet the requirements called for in this specification except that any modifications specifically shown on the Approved Plans shall take precedence over these general standards.
- B. The nominal size of the backflow prevention assembly shall be equal to or greater than the size of the purchased meter. For example, a one (1) inch meter shall have a one (1) inch or larger backflow device.
- C. The nominal size of double check detector assemblies or reduced-pressure principle detector assemblies shall be as shown on the Approved Plans or as directed by the District.
- D. Enclosures and concrete slabs shall be provided only as shown on the Approved Plans or as required by the District.

#### **1.08 DELIVERY, STORAGE AND HANDLING**

Backflow prevention assemblies shall be delivered and stored in accordance with AWWA C210, AWWA C213, and AWWA C550. The port openings shall be covered with plastic, cardboard, or wood while in transit and during storage in the field. These covers shall remain in place until the backflow assembly is ready to be installed. Backflow assemblies shall not be stored in contact with bare ground. Backflow assemblies shall not be stacked.

#### **1.09 RECYCLED WATER IDENTIFICATION**

Backflow prevention assemblies and enclosures, if required, for recycled water shall be identified with purple-colored coating, identification labels, or signs in accordance with Section 15151.

#### **1.10 SUBMITTALS**

The following shall be submitted and reviewed by the District prior to shipping of backflow prevention assemblies:

- A. Product Data: Submit catalog data for backflow assemblies, including any separate component being furnished.
- B. Parts List: Submit a Parts List of assemblies, including list of recommended spares.

### **PART 2 MATERIALS**

#### **2.01 BACKFLOW PREVENTION ASSEMBLIES**

Backflow prevention assemblies shall be among those listed on the most current District Approved Material List. The District will coordinate updates to its Approved Material List with those assemblies

approved by the USC Foundation for Cross-Connection Control and Hydraulic Research. In general, the District may rely on the latest addition of the USC listing prior to periodic updates to its Approved Material List at its discretion.

## **2.02 CONCRETE**

Concrete used for pads, slabs and anchor or thrust blocks shall be in accordance with Section 03300.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Installation shall comply with the latest edition of the California Plumbing Code, the State Water Resources Control Board, Cross-Connection Control Policy Handbook, applicable local agency, and District requirements.
- B. Backflow prevention assemblies shall be installed in accordance with the Standard Drawings.
- C. Water service and fire service shut-off valves will be secured closed during installation until an approved backflow prevention assembly is installed and tested in compliance with this specification. The assembly must have passing test results as a condition of service.
- D. When static pressure exceeds 150 psi, or when recommended by the backflow device manufacture, a pressure-reducing valve shall be installed as directed by the manufacturer or the District Engineer.

### **3.02 CONCRETE**

Concrete thrust or anchor blocks and slabs shall be installed in accordance with Section 03000 and the Standard Drawings. Refer to Section 03000 for the minimum concrete curing time required.

### **3.03 ENCLOSURES**

Enclosures shall be installed where shown on the Approved Plans or as directed by the District.

### **3.04 DISINFECTION**

Disinfection and flushing shall be performed in accordance with Section 15041, as part of the process of disinfecting the main pipeline. The backflow assemblies shall be operated during the disinfection period to completely disinfect all internal parts.

### **3.05 HYDROSTATIC TESTING**

Backflow assemblies shall not be hydrostatically tested as part of or in conjunction with the pipeline to which they are connected.

### **3.06 TESTING**

The District will inspect each backflow prevention assembly after installation is complete. If installed by the District, the District will perform the initial test for acceptance into service. If installed by

others, the Owner will be responsible for providing the District with evidence of an initial passing test report.

### **3.07 OWNERSHIP**

The limits of District and Owner responsibility once the backflow assembly is installed, tested and accepted is shown on the Standard Drawings or as indicated in the District Regulations.

END OF SECTION