

Section 6

Backflow Prevention Assembly Installation Requirements

All backflow preventers installed in the District of Columbia for facility containment must conform to the installation requirements outlined in this section. Air gaps are addressed first, followed by mechanical devices. Instructions to the consumer for obtaining the necessary installation approval from WASA and the plumbing permit from DCRA are provided in Section 6.3.

6.1 Air Gap Separation Using Receiving Tanks

The receiving tank must be installed inside the building near the service connection. For the purpose of inspection, the water supply pipe between the meter and the tank must be exposed. The distance between the free flowing discharge end of supply line and the overflow rim of the tank must be at least twice the diameter of the water supply outlet, and never less than 1 inch. The pipe between the meter and the discharge point can not contain any outlet, tee, tap or any other connection.

6.2 Mechanical Devices

6.2.1 General Requirement of Installation

Backflow prevention assemblies must be installed by a **licensed plumber** (see Section 9 of this manual for certification requirements). Backflow preventers must also be initially tested by a **certified backflow prevention assembly tester** (this person must also be a licensed plumber) using the procedures outlined in Section 8. The consumer is responsible for contracting with a certified backflow prevention assembly tester for this work. WASA will maintain a current list of certified persons in the District.

Mechanical backflow prevention devices must be located to permit easy access and adequate and convenient space for maintenance, inspection, and testing.

Whenever possible, an approved backflow prevention assembly should be installed within a building on the service connection after, but close, to the meter. In certain cases as approved by WASA's cross-connection control office, backflow prevention assemblies may be installed at an alternative location such as outdoors. Installation of DCVA's in pits shall be approved only as provided in item 6.2.4 of this section. Installation of RPBA's in pits is prohibited due to flooding concerns. Regardless of its location, assemblies must be protected from freezing, flooding, and mechanical damage.

In some facilities, backflow prevention assemblies installed in parallel may be necessary to meet the needs of the facility:

- 1) If the facility requires uninterrupted service and where it is not possible to shut down the water lines to permit necessary testing and maintenance
- 2) If the service line to be protected is considered greater than 10 inches

If a bypass line is required, both lines shall be equipped with approved backflow prevention assemblies. The combined hydraulic capacity of the parallel lines/backflow preventers shall be equal to or greater than the line that is being subdivided.

The backflow unit must be maintained as an assembly. The device must be equipped with proper shutoff valves, attached to the assembly, for maintenance and testing. For fire protection systems, shutoff valves must be UL or FM approved. Approved assemblies should be shipped from the manufacturer with shutoff valves and test cocks. The installation of a strainer before the device is recommended to prevent mechanical damage.

6.2.2 Installation of Approved RPBA and RPDA

Reduced pressure principle assemblies must be installed a minimum of 12-inches and a maximum of 5 feet from the floor to the bottom of the device. The device must be a minimum of 12 inches from any wall. Devices must be installed in horizontal alignment unless the device is approved by WASA for vertical installation. Drainage must be provided for the relief valve port and must meet minimum air gap requirements. See **Figure 6-1** for indoor installation of an RPBA.

6.2.3 Installation of Approved DCVA and DCDA

Double check valve assemblies must be installed a minimum of 12-inches and maximum of 5 feet from the floor to the bottom of the device. The device must be minimum of 12 inches from any wall. Devices must be installed in horizontal alignment unless the device is approved by WASA for vertical installation. See **Figure 6-2** for indoor installation of a DCVA. Protection against freezing and vandalism must be provided for outdoor installations. See Section 6.2.4 for requirements for pit installations.

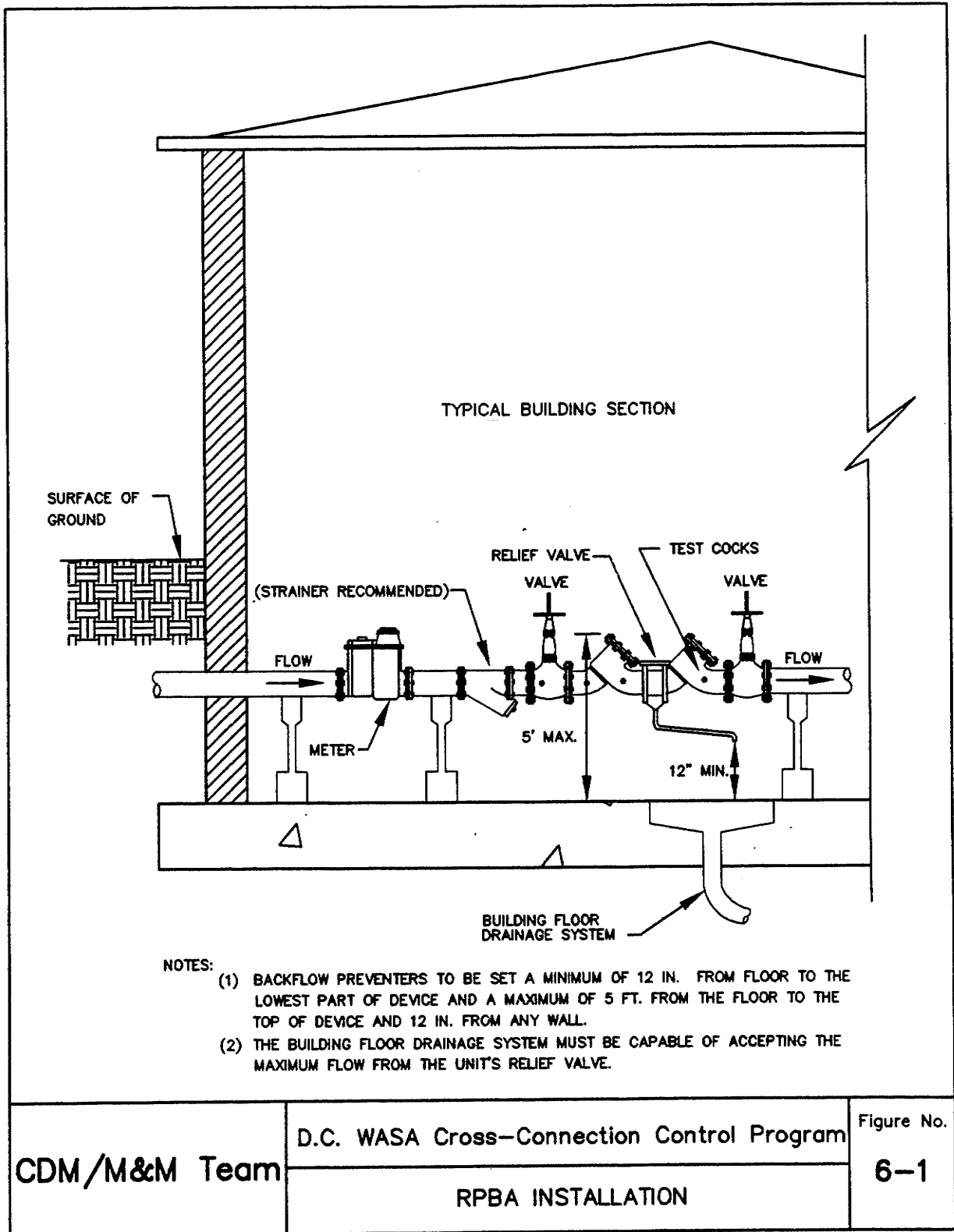


Figure Adapted from Information Contained in Reference 4

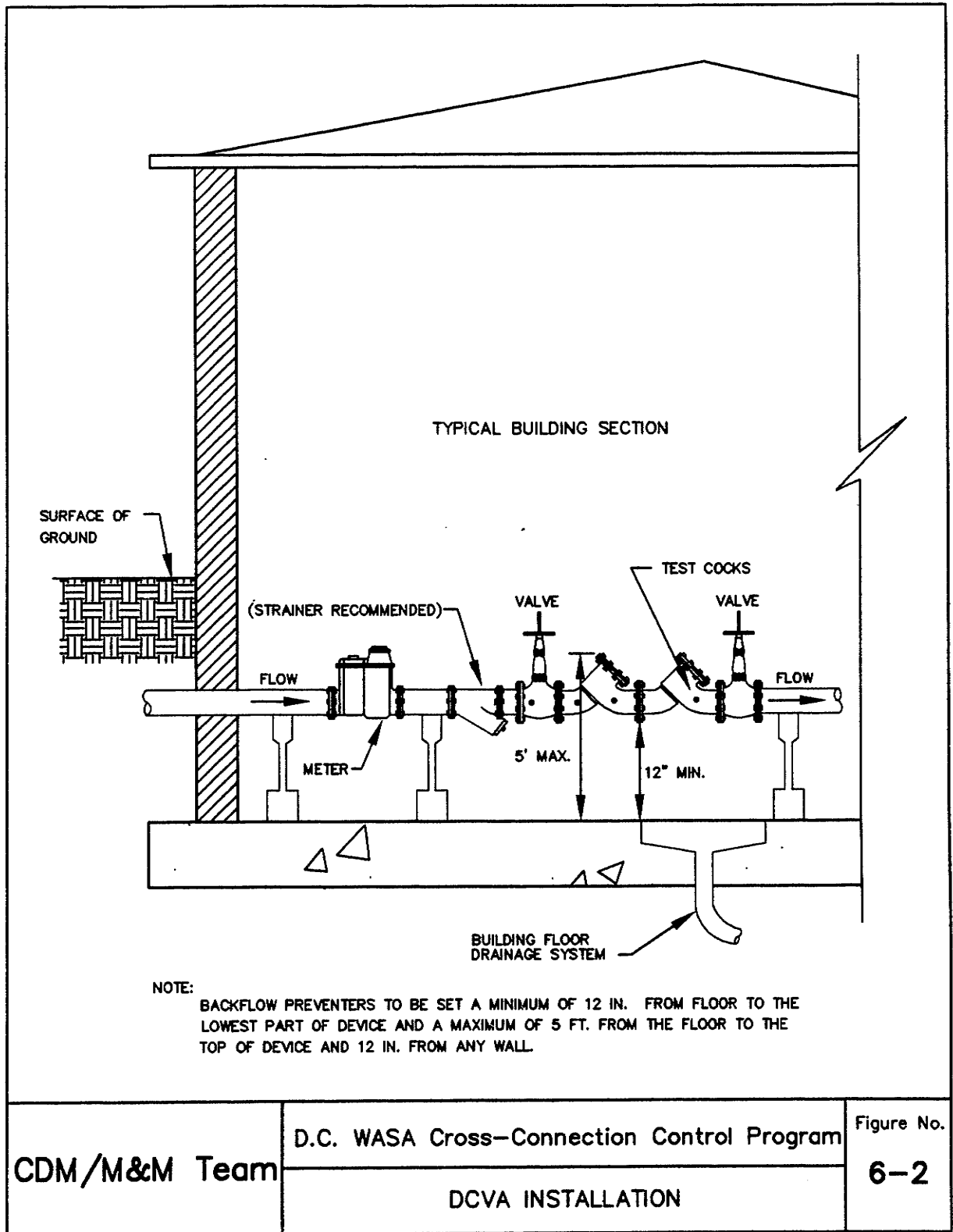
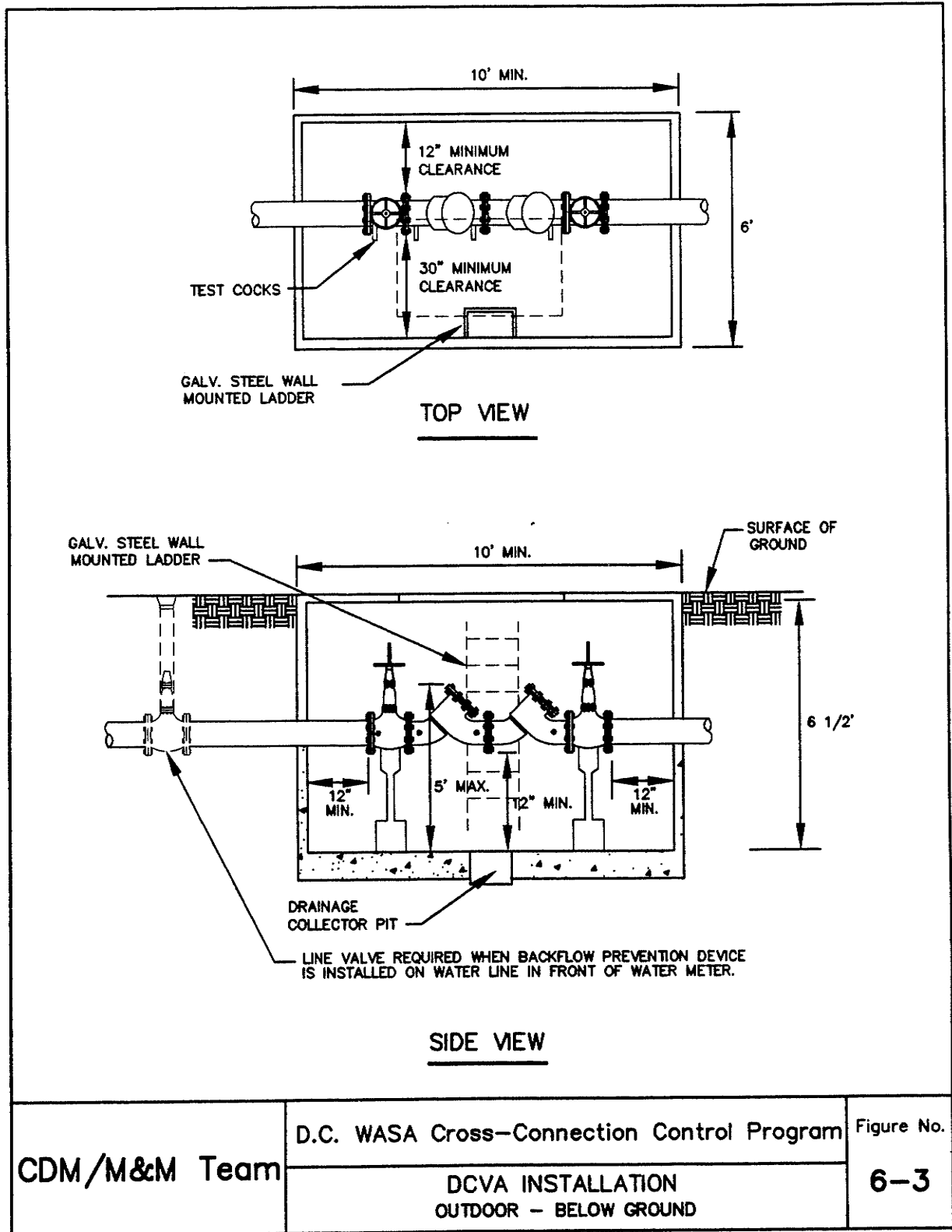


Figure Adapted from Information Contained in Reference 4

6.2.4 Installation of DCVA's and DCDA's in Below-Ground Pits:

- 1) **Installation of RPBA's and RPDAs in below ground pits is prohibited.** Installation of DCVAs and DCDA's in below ground pits is allowed in certain circumstances if approved by the WASA Water Quality Office. Installations must comply with OSHA standards where applicable for work in confined spaces.
- 2) The pit interior must be a minimum of 10 feet long, 6 feet wide, and must have a clear height 6 ½ feet high.
- 3) The pit must be watertight. Adequate drainage must be provided. The drain line must not be connected to a sewer.
- 4) The pit opening and manhole cover must be at least 30 inches in diameter.

See **Figure 6-3** for installation requirements for DCVA's and DCDA's in below-ground pits.



CDM/M&M Team	D.C. WASA Cross-Connection Control Program	Figure No.
	DCVA INSTALLATION OUTDOOR - BELOW GROUND	6-3

Figure Adapted from Information Contained in Reference 4

6.3 Backflow Preventer Installation Plan Approval

Plans for installation of backflow prevention assemblies in existing buildings must be submitted to the WASA Water Quality Division for review and approval. (See Directory in front of manual). The submittal must include the following:

1) Facility Information

- Facility Name
- Address
- Contact Person/Agency
- Telephone number of facility contact person
- Indicate whether facility is new or existing
- Describe generally the type of business or activities carried out at this facility

2) Device Data (for each device)

- Type of Backflow Prevention Assembly
- Manufacturer
- Model No.
- Size
- Location of Device
- Bypass Arrangement
- Type of Gate Valve (Gate Valve if are used for fire protection systems must be UL-or FM-approved.)

3) Plumbing Plan

- a. Completed title block (name of facility, address, date, preparer, scale, etc.)
- b. Schematic plumbing system (at least 8 ½" x 11") using accepted symbols and nomenclature, detailing:
 - Clearances in device installation
 - Location of upstream and downstream shutoff valves
 - Make, model, size and alignment of device
 - Location of potable water lines
 - System, source, or equipment downstream of device, complete with information on the secondary system (operating pressure, chemical treatment, etc.)

Where installation will involve large or complex plumbing systems, formal prints must be submitted with a Professional Engineers stamp.

Mechanical backflow prevention assemblies should be sized hydraulically, taking into account both volume requirements of the service and head loss of the assembly. Installation plans must address thermal expansion.

After approval from WASA, the consumer must obtain the proper approval from the plumbing official (DCRA). Installation plans for fire protection systems must also be approved by the DC fire department.